

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

1 ID: Q20176 Points: 1.00

Which **ONE** of the following sequences occurs to open the Reactor Trip Circuit Breakers for an automatic reactor trip?

- A. Trip unit relays *deenergize*;
Matrix relays *deenergize*;
Trip paths *deenergize*
- B. Trip unit relays *energize*;
Matrix relays *deenergize*;
Trip paths *deenergize*
- C. Trip unit relays *energize*;
Matrix relays *energize*;
Trip paths *energize*
- D. Trip unit relays *deenergize*;
Matrix relays *energize*;
Trip paths *deenergize*

Answer: A

Answer Explanation:

- A. Correct - RPS is designed to fail safe. All components *deenergize* to cause a reactor trip.
- B. Incorrect - The Trip Units *deenergize*. RPS is designed to fail safe. All components *deenergize* to cause a reactor trip.
- C. Incorrect - RPS is designed to fail safe. **All** components **deenergize** to cause a reactor trip.
- D. Incorrect - The Matrix Relays *deenergize* to cause a trip. RPS is designed to fail safe. All components *deenergize* to cause a reactor trip.

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Question 1 Info	
Topic:	Which RPS response is correct for a reactor trip?
Tier/Group:	1/1
K/A Info:	<p>EPE - 007 Reactor Trip</p> <ul style="list-style-type: none"> • EK2 Knowledge of the interrelations between a reactor trip and the following: <ul style="list-style-type: none"> • EK2.02 - Breakers, relays and disconnects
RO Importance:	2.6
Proposed references to be provided to applicant:	None
Learning Objective:	LOI-58-1-01
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use - LOI 2008 RPS, AOP-7H, Power Distribution T.S. Exam (June, 2009)
Technical references:	RPS Lesson Plan LOI-58-1-01
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

2

ID: Q92131

Points: 1.00

Which **ONE** of the following conditions requires notification of Site personnel via plant-wide announcement?

- A. Completion of Shift Turnover.
- B. A Containment entry is made at power.
- C. EOP-6, Steam Generator Tube Rupture, is implemented.
- D. Entry into T.S. Limiting Conditions for Operation.

Answer: C

Answer Explanation:

- A. Incorrect - Completion of Shift Turnover is **not** specifically called out for announcement to the Site by CNG-OP-101-2001, Communications and Briefings
- B. Incorrect - Containment entry is **not** specifically called out for announcement to the Site by CNG-OP-101-2001, Communications and Briefings
- C. Correct - Implementation of an EOP is specifically called out for announcement to the Site by CNG-OP-101-2001, Communications and Briefings
- D. Incorrect - Entry into a T.S. LCO is **not** specifically called out for announcement to the Site by CNG-OP-101-2001, Communications and Briefings

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Question 2 Info			
Topic:	Plant page announcements during AOP / EOP conditions.		
Tier/Group:	1/1		
K/A Info:	038 - Steam Generator Tube Rupture (SGTR) <ul style="list-style-type: none">• 2.1.14 - Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trips, mode changes, etc.		
RO Importance:	3.1		
Proposed references to be provided to applicant:	None		
Learning Objective:			
10 CFR Part 55 Content:	55.41(b)(10)		
Question source:	<input type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	N/A		
Exam Bank History:	None		
Technical references:	NO-1-200, Conduct of Operations; CNG-OP-101-2001, Communications and Briefings		
Comments:	None		

EXAMINATION ANSWER KEY

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3 ID: Q25950 Points: 1.00

The Technical Requirements Manual requires a minimum RCS flow during boron dilution to ensure adequate mixing and gradual reactivity changes.

Which **ONE** of the following is the minimum allowable RCS flow during dilution operations?

- A. 3000 GPM
- B. 1700 GPM
- C. 1500 GPM
- D. 1000 GPM

Answer: A

Answer Explanation:

- A. Correct - TRM 15.1.1 specifies Reactor Coolant System (RCS) flow rate shall be \geq 3,000 GPM. APPLICABILITY Modes 1, 2, 3, 4, 5, and 6, whenever a reduction in RCS boron concentration is being made from a source whose boron concentration is less than the present Shutdown Margin requirements (Refueling Boron for Mode 6) per COLR.
- B. Incorrect - Per OP-7; Maximum SDC Flow is 1700 GPM when the Reactor is defueled and the UGS is installed. This will prevent damage to the ICI Thimbles.
- C. Incorrect - The bases for T.S. SR 3.9.4.1 states; The flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability, and to prevent thermal and boron stratification in the core.
- D. Incorrect - Per OP-7; When entering reduced inventory two LPSI header stops are shut and the remaining two LPSI loop header stops are throttled to limit flow to a maximum of 1000 GPM per loop

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Question 3 Info	
Topic:	Required flow for dilution
Tier/Group:	2/1
K/A Info:	005 - Residual Heat Removal System (RHRS) <ul style="list-style-type: none">• K5 Knowledge of the operational implications of the following concepts as they apply the RHRS:<ul style="list-style-type: none">• K5.09 - Dilution and boration considerations
RO Importance:	3.2
Proposed references to be provided to applicant:	None
Learning Objective:	CRO-203-5-3-009
10 CFR Part 55 Content:	55.41(b)(5)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use - 2002
Technical references:	Technical Requirements Manual; Technical Specifications
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

4

ID: Q92611

Points: 1.00

CCW Temperature Controller, TIC-223, for the Letdown HX, fails to 100% output, causing the valve to close.

Which condition below will occur? Assume no Operator action is taken.

- A. RCS boron lowers; T_{COLD} rises as reactor power rises
- B. RCS boron is unaffected; T_{COLD} and reactor power remain constant.
- C. RCS boron rises; T_{COLD} lowers as reactor power lowers.
- D. RCS boron rises; T_{COLD} rises as reactor power rises.

Answer: C

Answer Explanation:

- A. Incorrect - CVCS Ion Exchangers slough boron as L/D temperature rises, thus [B] would rise.
- B. Incorrect - CVCS Ion Exchangers slough boron as L/D temperature rises, thus [B] would rise.
- C. Correct - CVCS Ion Exchangers slough boron as L/D temperature rises. [B] rises which lowers reactor power, lowering T_{COLD} .
- D. Incorrect - Rising [B] would cause reactor power to lower, lowering T_{COLD} .

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Question 4 Info			
Topic:	Explain the effects of increasing/decreasing Letdown temperature		
Tier/Group:	2/1		
K/A Info:	004 - Chemical and Volume Control System <ul style="list-style-type: none"> • K3 Knowledge of the effect that a loss or malfunction of the CVCS will have on the following: <ul style="list-style-type: none"> • K3.06 - RCS temperature and pressure 		
RO Importance:	3.4		
Proposed references to be provided to applicant:	None		
Learning Objective:			
10 CFR Part 55 Content:	55.41(b)(7)		
Question source:	<input checked="" type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	No record of use on an NRC exam		
Exam Bank History:	Last use – LOI 2008 Nuclear Instrumentation Exam (May, 2009)		
Technical references:	OI-16, Component Cooling System, Precaution "C"		
Comments:	Adaptation of Bank question "Q14535"		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

5

ID: Q28840

Points: 1.00

Unit 1 is operating at 100% power. 11B RCP parameters are as follows:

- VCT pressure 40 PSIG
- 11B RCP upper seal 1100 PSIA
- 11B RCP middle seal 2150 PSIA
- 11B RCP lower seal cavity temperature 160 °F
- 11B RCP bleedoff flow 2.0 GPM
- Controlled bleedoff temperature 152 °F

Which one of the following statements correctly describes the condition of 11B RCP seals?

- A. No RCP seal is failed
- B. Lower RCP seal is failed
- C. Middle RCP seal is failed
- D. Upper RCP seal is failed

Answer: B

Answer Explanation:

- A. Incorrect - RCP Middle seal pressure is equal to RCS pressure indicating failure of the Lower seal.
- B. Correct - RCP Middle seal pressure is approximately equal to RCS pressure indicating failure of the Lower seal.
- C. Incorrect - RCP Middle seal pressure \square P indicates the seal is functioning correctly (given the failure of the Lower seal).
- D. Incorrect - RCP Upper seal pressure \square P indicates the seal is functioning correctly (given the failure of the Lower seal).

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Question 5 Info	
Topic:	11B RCP seal status
Tier/Group:	2/1
K/A Info:	003 Reactor Coolant Pump System (RCPS) <ul style="list-style-type: none">• K1 Knowledge of the physical connections and/or cause-effect relationships between the RCPS and the following systems:<ul style="list-style-type: none">• K1.03 RCP seal system
RO Importance:	3.3
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(3)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use – LOI 2008 Diesel Generators Exam (May, 2009)
Technical references:	OI-1A, REACTOR COOLANT SYSTEM AND PUMP OPERATIONS
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

6

ID: Q28439

Points: 1.00

A caution within EOP-3, Loss of All Feedwater, states that Once Through Core Cooling (OTCC) must be initiated before CETs reach or exceed 560 °F.

What is the basis for this temperature limit?

- A. Ensures the RCS is maintained in a subcooled state throughout the OTCC assuming one HPSI pump running and one PORV open.
- B. Ensures the inventory in the core will not be displaced into the Pressurizer when the PORVs are opened to commence the OTCC flowpath.
- C. Ensures RCS saturation pressure is low enough to support sufficient core cooling flow via HPSI.
- D. Ensures RCS pressure will remain high enough to prevent HPSI Pump damage due to pump runout conditions.

Answer: C

Answer Explanation:

- A. Incorrect - The RCS will be in a saturated condition due to the PORVs being opened
- B. Incorrect - The RCS will be in a saturated condition due to the PORVs being opened. Water will be displaced into the low pressure area (the Pressurizer).
- C. Correct - Per the EOP-3 Basis Doc, If OTCC initiated above this value the HPSI pump flow may be insufficient for core cooling flow.
- D. Incorrect - Runout of the HPSI pumps is not probable (DBA). Would also be prevented by complying with procedure direction to verify HPSI flow PER EOP ATTACHMENT(10), HIGH PRESSURE SAFETY INJECTION FLOW

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Question 6 Info	
Topic:	Basis for initiating OTCC prior to 560 °F
Tier/Group:	1/1
K/A Info:	CE/E06 - Loss of Feedwater <ul style="list-style-type: none"> • EK3 - Knowledge of the reasons for the following responses as they apply to the (Loss of Feedwater) <ul style="list-style-type: none"> • EK3.2 - Normal, abnormal and emergency operating procedures associated with (Loss of Feedwater).
RO Importance:	3.2
Proposed references to be provided to applicant:	None
Learning Objective:	SRO-201-3-1-14
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use – 2006
Technical references:	EOP-3, Loss of All Feedwater
Comments:	None

EXAMINATION ANSWER KEY

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7 ID: Q28803 Points: 1.00

A charging header leak could be positively identified by which **ONE** of the following?

- A. Lowering Pressurizer level with minimum letdown flow and one charging pump operating.
- B. Charging header pressure greater than RCS pressure with two charging pumps operating.
- C. Charging header flow equals letdown flow with one charging pump operating and VCT level is lowering.
- D. Charging header pressure less than RCS pressure with one charging pump operating.

Answer: D

Answer Explanation:

- A. Incorrect - This would be true for any leak greater than about 12 GPM but does not distinguish a charging header leak.
- B. Incorrect - A charging header leak can be disguised with 2 CHG pumps running.
- C. Incorrect - Is true for any small leak and would not distinguish a leak on the charging header.
- D. Correct - per AOP-2A, a leak on the Charging header which exceeds the capacity of the charging pumps can be identified by Charging header pressure indicating less than RCS pressure. Identification of the leak may be missed if more than one charging pump is running.

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Question 7 Info	
Topic:	Charging header leak identification
Tier/Group:	1/1
K/A Info:	022 Loss of Reactor Coolant Makeup <ul style="list-style-type: none"> • AA2. Ability to determine and interpret the following as they apply to the Loss of Reactor Coolant Makeup: <ul style="list-style-type: none"> • AA2.01 Whether charging line leak exists
RO Importance:	3.2
Proposed references to be provided to applicant:	None
Learning Objective:	CRO-107-1-3-50
10 CFR Part 55 Content:	55.41(b)(5)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use – LOI 2008 AOP / EOP Exam (April 2010)
Technical references:	AOP-2A, Excessive Reactor Coolant Leakage
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

8

ID: Q42247

Points: 1.00

Unit-1 is operating at 100% power, End-of-Life (EOL). It has been at this power level for seven (7) months. An I&C technician was given permission to work behind 1C06 to terminate several leads for the RCP oil lift pumps. During the maintenance activity, the technician accidentally causes a short across the trip portions of the 11A and 11B RCP handswitches.

Assuming all equipment responds as designed, and NO operator action has been performed, which of the following best describes the heat removal parameters after 11A and 11B RCP's have completely stopped?

- A. 12 S/G steam flow greater than 11 S/G steam flow;
12 S/G pressure greater than 11 S/G pressure;
12 FRV bypass output is equal to 11 S/G FRV bypass output
- B. 12 S/G steam flow is equal to 11 S/G steam flow;
12 S/G pressure is equal to 11 S/G pressure;
12 FRV bypass output is equal to 11 S/G FRV bypass output
- C. 12 S/G steam flow greater than 11 S/G steam flow;
12 S/G pressure greater than 11 S/G pressure;
12 FRV bypass output greater than 11 S/G FRV bypass output
- D. 12 S/G steam flow less than 11 S/G steam flow;
12 S/G pressure is equal to 11 S/G pressure;
12 FRV bypass output less than 11 S/G FRV bypass output

Answer: A

Answer Explanation:

- A. Correct - RPS will trip the unit when the first RCP is tripped. Once both RCP's stop rotating, the flow through 11 S/G will reverse and be less than 12 Loop. This will cause 12 S/G pressure to be higher and flow from it to be higher. Digital feed will be unaffected by the trip and will position both FRBVs to the same output.
- B. Incorrect - The flow through 11 S/G will reverse causing 11 S/G temperature to be lower than 12 S/G temperature. This will cause 11 S/G pressure to be lower and flow from it to be lower.
- C. Incorrect - Digital feed will be unaffected by the trip and will position both FRBVs to the same output.
- D. Incorrect - Digital feed will be unaffected by the trip and will position both FRBVs to the same output.

EXAMINATION ANSWER KEY

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Question 8 Info	
Topic:	Loss of a pair of RCPs
Tier/Group:	1/1
K/A Info:	015/017 - Reactor Coolant Pump (RCP) Malfunctions <ul style="list-style-type: none"> • AK1. Knowledge of the operational implications of the following concepts as they apply to Reactor Coolant Pump Malfunctions (Loss of RC Flow): <ul style="list-style-type: none"> • AK1.04 Basic steady state thermodynamic relationship between RCS loops and S/Gs resulting from unbalanced RCS flow
RO Importance:	2.9
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(10)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use - 2004
Technical references:	
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

9

ID: Q39488

Points: 1.00

Unit-1 is operating at 100% Reactor Power when an electrical perturbation occurs causing the Backup and 2nd Backup Charging Pumps to start.

- (1) What is the **minimum** Bus lost and;
- (2) What stabilizing actions are expected to be performed?

- A. 1Y09;
Promptly reduce Turbine load.
- B. 1Y10;
Adjust Turbine load to maintain T_{COLD} on program.
- C. MCC-104R;
Fast Borate to reduce reactor power.
- D. MCC-114R;
Align Charging Pump suction to the VCT.

Answer: B

Answer Explanation:

- A. Incorrect – Symptom provided is indicative of a loss of 1Y10. A loss of 1Y10 results in Charging Pump suction shifting to the RWT with resultant boration of the RCS. Stabilizing actions are to secure boration and adjust Turbine load to maintain T_{COLD} on program.
- B. Correct – Symptom provided is indicative of a loss of 1Y10. A loss of 1Y10 results in Charging Pump suction shifting to the RWT with resultant boration of the RCS. Stabilizing actions are to secure boration and adjust Turbine load to maintain T_{COLD} on program.
- C. Incorrect – Symptom provided is indicative of a loss of 1Y10 which is powered from MCC-104. 1Y10 would be the “minimum” Bus lost.
- D. Incorrect – Symptom provided is indicative of a loss of 1Y10 which is powered from MCC-104. 1Y10 would be the “minimum” Bus lost.

EXAMINATION ANSWER KEY

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Question 9 Info			
Topic:	Loss of 2Y10		
Tier/Group:	1/1		
K/A Info:	057 - Loss of Vital AC Electrical Instrument Bus <ul style="list-style-type: none">AK3. Knowledge of the reasons for the following responses as they apply to the Loss of Vital AC Instrument Bus:<ul style="list-style-type: none">AK3.01 - Actions contained in EOP for loss of vital ac electrical instrument bus		
RO Importance:	4.1		
Proposed references to be provided to applicant:	None		
Learning Objective:	AOP-7I-02		
10 CFR Part 55 Content:	55.41(b)(10)		
Question source:	<input checked="" type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	No record of use on an NRC exam		
Exam Bank History:	Last use – LOI 2006 Comprehensive Exam (Sept, 2008)		
Technical references:	AOP-7I, Loss of 4KV, 480 Volt or 208/120 Volt Instrument Bus Power		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

10 ID: Q40530 Points: 1.00

A steam line rupture has occurred on Unit-1 and indications show an uncontrolled cooldown is taking place. SIAS has actuated, RCS pressure is 1000 PSIA and dropping.

What is the major concern if the RCS repressurizes after S/G blowdown is complete?

- A. Damage to HPSI pumps running at shutoff head
- B. Excessive differential pressure across the S/G tube sheet
- C. Pressurizer PORV actuation
- D. Pressurized Thermal Shock of the reactor vessel

Answer: D

Answer Explanation:

- A. Incorrect - HPSI Pumps would be injecting a total of approximately 750 GPM at the stated RCS pressure. HPSI Pumps are nowhere near running at shutoff head.
- B. Incorrect - S/G tubes are designed to withstand full RCS pressure on the primary side with atmospheric pressure on the secondary side.
- C. Incorrect - The unaffected S/G must be used to stabilize RCS temperature to prevent RCS inventory expansion which could cause the Pressurizer to go solid and induce conditions susceptible to Pressurized Thermal Shock.
- D. Correct - The unaffected S/G must be used to stabilize RCS temperature to prevent RCS inventory expansion which could cause the Pressurizer to go solid and induce conditions susceptible to Pressurized Thermal Shock.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 10 Info			
Topic:	PTS		
Tier/Group:	1/1		
K/A Info:	040 - Steam Line Rupture <ul style="list-style-type: none"> • AK1. Knowledge of the operational implications of the following concepts as they apply to Steam Line Rupture: <ul style="list-style-type: none"> • AK1.04 - Nil ductility temperature 		
RO Importance:	3.2		
Proposed references to be provided to applicant:	None		
Learning Objective:	LOR-201-4-S-06		
10 CFR Part 55 Content:	55.41(b)(10)		
Question source:	<input checked="" type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	No record of use on an NRC exam		
Exam Bank History:	Last use - 2006		
Technical references:	EOP-4, Excess Steam Demand Event		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

11

ID: Q91975

Points: 1.00

Using provided references:

Unit-1 is operating at 100% power. Unit-2 is in Mode 5, preparing to enter Mode 6. A loss of offsite power has resulted in an automatic trip of Unit-1. Make-up to the Condensate Storage tanks is not available. Tank levels are:

- 11 CST 30.75'
- 12 CST 24.5'
- 21 CST 18.75'

A cooldown to 300 °F is required for U-1.

What is the minimum amount of time Unit-1 must wait before the cooldown is commenced?

- A. 1 Hour
- B. 12 Hours
- C. 24 Hours
- D. 36 Hours

Answer: C

Answer Explanation:

- A. Incorrect - To commence cooldown 1 hour after shutdown requires 647,031 Gallons of CST Inventory. The available inventory, when corrected for usable volume, is 636,027 Gallons. If the student did not incorporate the correction factor for usable tank volume he would arrive at 713,121 Gallons of CST inventory. This volume would accommodate commencing cooldown 1 hour after shutdown.
- B. Incorrect - To commence cooldown 12 hours after shutdown requires 646,543 Gallons of CST Inventory. The available inventory, when corrected for usable volume, is 636,027 Gallons.
- C. Correct - The 66 feet (corrected) of CST volume available (636,027 Gallons) provides adequate volume to maintain Hot Standby conditions for 24 hours (209,464 Gallons) while still maintaining the necessary inventory (422,783 Gallons) to cooldown to 300°F.
- D. Incorrect - Because the question is asking for the soonest cooldown can commence this selection is wrong. The 66 feet (corrected) of CST volume available (636,027 Gallons) provides adequate volume to maintain Hot Standby conditions for 24 hours **and beyond** (209,464 Gallons) while still maintaining the necessary inventory (422,783 Gallons) to cooldown to 300 °F.

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Question 11 Info	
Topic:	LOOP time to cooldown **CALCULATION**
Tier/Group:	1/1
K/A Info:	<p>056 - Loss of Offsite Power</p> <ul style="list-style-type: none"> • AK3 - Knowledge of the reasons for the following responses as they apply to the Loss of Offsite Power: <ul style="list-style-type: none"> • AK3.02 - Actions contained in EOP for loss of offsite power.
RO Importance:	4.4
Proposed references to be provided to applicant:	Unit-1 EOP Attachments, ATTACHMENT (9)
Learning Objective:	LOR-201-2/7-S09
10 CFR Part 55 Content:	55.41(b)(10)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	EOP-2, Loss of Offsite Power/Loss of Forced Circulation.
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

12

ID: Q92132

Points: 1.00

Given the following:

- Unit-1 is at 100% power
- RCS Pressure Control in AUTO
- RCS Pressure is 2250 PSIA

What is the **IMMEDIATE** plant response if the selected Pressurizer Pressure controller setpoint fails to 1500 PSIA?

- A. Spray valves open, proportional heaters output goes to maximum, and all backup heaters energize if in "AUTO".
- B. Spray valves shut, proportional heaters output goes to minimum, and all backup heaters remain off if in "AUTO".
- C. Spray valves shut, proportional heaters output goes to maximum, and all backup heaters energize if in "AUTO".
- D. Spray valves open, proportional heaters output goes to minimum, and all backup heaters remain off if in "AUTO".

Answer: D

Answer Explanation:

- A. Incorrect - Proportional Heaters go to minimum.
- B. Incorrect - The Pressurizer Spray valves would open.
- C. Incorrect - The Pressurizer Spray valves would open and the Proportional Heaters would go to minimum.
- D. Correct - The Pressurizer Spray valves would open and the Proportional Heaters would go to minimum.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 12 Info	
Topic:	Plant response to a change in the Pzr pressure controller setpoint.
Tier/Group:	1/1
K/A Info:	027 - Pressurizer Pressure Control System (PZR PCS) Malfunction: <ul style="list-style-type: none">• AK2 - Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following:<ul style="list-style-type: none">• AK2.03 - Controllers and positioners
RO Importance:	2.6
Proposed references to be provided to applicant:	None
Learning Objective:	LOI-064A2-1
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input type="checkbox"/> Bank <input checked="" type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	SD-064D, RCS Instrumentation
Comments:	Modified version of Q14490

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

13

ID: Q92750

Points: 1.00

Unit 1 was conducting a plant startup with the following events and conditions:

- Annunciator "LOSS OF LOAD CH TRIP BYP" is in alarm
- The turbine has just been paralleled to the grid when condenser vacuum begins to degrade
- AOP-7G, Loss of Condenser Vacuum, has been implemented
- Condenser vacuum suddenly dropped to 22 inches Hg and stabilized at that value

Which one of the following statements describes the expected system response and/or required operator actions?

- A. The turbine will trip automatically; the operators will trip the reactor; heat removal will be on the ADVs; SGFPs will continue to operate.
- B. The reactor and turbine will be manually tripped; heat removal will be on the TBVs; SGFPs will continue to operate.
- C. The turbine will trip automatically; the operators will trip the reactor; heat removal will be on the ADVs; SGFPs will trip.
- D. The turbine will trip automatically; the operators will trip the reactor; heat removal will be on the TBVs; SGFPs will continue to operate.

Answer: A

Answer Explanation:

- A. Correct - These actions are specified, for the given conditions, in AOP-7G.
- B. Incorrect - The turbine will trip automatically at & the TBVs will be shut due to Condenser vacuum being less than 22.5"
- C. Incorrect - The SGFPs will remain in operation (trip stpt = 20")
- D. Incorrect - Heat removal will be via the ADVs, the TBVs will be shut due to Condenser vacuum being less than 22.5".

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 13 Info	
Topic:	AOP-7G operator response(s).
Tier/Group:	1/2
K/A Info:	051 - Loss of Condenser Vacuum <ul style="list-style-type: none">• AA2. Ability to determine and interpret the following as they apply to the Loss of Condenser Vacuum:<ul style="list-style-type: none">• AA2.02 Conditions requiring reactor and/or turbine trip
RO Importance:	3.9
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(5)
Question source:	<input type="checkbox"/> Bank <input checked="" type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	AOP-7G, Loss of Condenser Vacuum
Comments:	Modified version of Q50782

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

14 ID: Q20736 Points: 1.00

Unit-1 was operating in Mode-5 when a loss of Shutdown Cooling occurred. Heat removal has been restored using 11 LPSI Pump.

Which **ONE** of the following instruments may be used to ensure RCS Cooldown limits are not exceeded?

- A. PAMS Display, Heated Junction Thermocouples
- B. PAMS Display, Core Exit Thermocouples
- C. TI-112C or TI-122C, RCS Cold Leg Temperature indication
- D. TR-351, Shutdown Cooling Temperatures.

Answer: D

Answer Explanation:

- A. Incorrect – Heated Junction Thermocouples are associated with RVLMS, are located in the area above the core and would not provide an accurate indication of RCS Cooldown rate with Shutdown Cooling in service.
- B. Incorrect – Core Exit Thermocouples are located in the area above the core and would not provide an accurate indication of RCS Cooldown rate with Shutdown Cooling in service.
- C. Incorrect - RCS Cold Leg Temperature indications are not accurate due to flow stagnation.
- D. Correct - Per OI-3B and OP-5 "SDC Flow: read TR-351"

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 14 Info	
Topic:	Monitoring RCS Cooldown on restoration of SDC
Tier/Group:	1/1
K/A Info:	025 Loss of Residual Heat Removal System (RHRS) <ul style="list-style-type: none">• AA1. Ability to operate and / or monitor the following as they apply to the Loss of Residual Heat Removal System:<ul style="list-style-type: none">• AA1.08 RHR cooler inlet and outlet temperature indicators
RO Importance:	2.9
Proposed references to be provided to applicant:	None
Learning Objective:	CRO-7-1-5-24
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use - 2006
Technical references:	AOP-3B, Abnormal Shutdown Cooling Conditions; OI-3B, Shutdown Cooling
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

15 ID: Q24750 Points: 1.00

Which **ONE** of the following must be operable to ensure the Containment Purge System will be automatically secured should a fuel handling incident occur inside the Containment?

- A. Containment High Range Monitors (RE-5317 A/B)
- B. Main Vent Gaseous Monitor (RE-5415)
- C. Containment Area Radiation Monitors (RE-5316 A thru D)
- D. Wide Range Noble Gas Monitor (RIC-5415)

Answer: C

Answer Explanation:

- A. Incorrect - The Containment High Range monitor has no connection to the Containment Purge System.
- B. Incorrect - Main Vent Gaseous Monitor provides no automatic functions.
- C. Correct - Per OI-36, Containment Purge System: **IF** moving irradiated fuel assemblies within the containment, **THEN** all four channels of Containment Area Radiation Monitors RI-5316A, B, C, and D are operable on the unit to be purged. (Tech Spec 3.3.7).
- D. Incorrect - WRNGM provides no automatic functions.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 15 Info	
Topic:	Which instrument ensures that Containment Purge will be secured on a Fuel Handling Incident?
Tier/Group:	1/2
K/A Info:	<p>036 - Fuel Handling Incidents</p> <ul style="list-style-type: none"> • AA1. Ability to operate and / or monitor the following as they apply to the Fuel Handling Incidents: <ul style="list-style-type: none"> • AA1.01 Reactor building containment purge ventilation system
RO Importance:	3.3
Proposed references to be provided to applicant:	None
Learning Objective:	CRO-134-1-5-36
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use – LOI 2008 Panel Comprehensive Exam (October, 2009)
Technical references:	Tech Spec 3.9.9
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

16

ID: Q20295

Points: 1.00

Given a loss of Instrument Air on Unit-1 at 100% power.

Which **ONE** of the following alarms is expected to be received 10 PSIG **BELOW** the pressure at which a reactor trip is required?

- A. BACK-UP IA INITIATED
- B. FRV PNEUMATIC PRESS LO
- C. INSTR AIR SYS MALFUNCTION
- D. CNTMT IA ISOL 1-IA-2085-CV CLOSED

Answer: B

Answer Explanation:

- A. Incorrect - This alarm indicates 1-PCV-6301 has opened as a result of I/A header pressure less than 85 PSIG (87 - 83 PSIG)
- B. Correct - Alarms at approx. 40 PSIG. AOP-7D (LOSS OF INSTRUMENT AIR) directs tripping the reactor at 50 PSIG IA pressure.
- C. Incorrect - Alarms at approx. 90 PSIG IA pressure.
- D. Incorrect - Alarms at Approx. 75 PSIG IA pressure.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 16 Info			
Topic:	Loss of Instrument Air effects		
Tier/Group:	1/1		
K/A Info:	065 - Loss of Instrument Air <ul style="list-style-type: none"> • 2.4.45 Ability to prioritize and interpret the significance of each annunciator or alarm. 		
RO Importance:	4.1		
Proposed references to be provided to applicant:	None		
Learning Objective:	LOR-202-7-S-01-1		
10 CFR Part 55 Content:	55.41(b)(10)		
Question source:	<input checked="" type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	No record of use on an NRC exam		
Exam Bank History:	No history of previous use		
Technical references:	1C03-ALM, Window C-40 "FRV PNEUMATIC PRESS LO; AOP-7D, Loss of Instrument Air		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

17

ID: Q92610

Points: 1.00

You are the CRO on Unit-1 when a plant trip occurs. While addressing the Vital Auxiliary safety function, you cannot verify CC flow to the RCPs. You attempt to stop 11A RCP by opening the normal feeder breaker from 1C06 but the breaker does not open.

Which **ONE** of the following actions would be appropriate?

- A. Open 252-1201 (RCP Bus Unit-1 feeder breaker), from 1C19.
- B. Open the Alternate feeder breaker for 11A RCP, on 1C06.
- C. Have the OSO open the RCP Bus Unit-1 feeder breaker in the Unit-2 Metalclad.
- D. Open 252-2202 (RCP Bus Unit-1 feeder breaker), from 1C20.

Answer: A

Answer Explanation:

- A. Correct - Opening breaker 252-1201 deenergizes the Unit-1 RCP Bus, securing all four RCPs, and all RCPs are being secured anyway.
- B. Incorrect - If the normal feeder breaker is closed, the alternate feeder breaker would already be open.
- C. Incorrect – Manual operation of the RCP Feeder versus remote operation is not preferred due to the industrial safety concerns with manual operation of a 13KV Breaker. Additionally, the RCP breaker needing to be opened is in the U-1 Metalclad, not the U-2 Metalclad.
- D. Incorrect - Breaker 252-2202 is a normally open breaker

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 17 Info			
Topic:	RCP trip		
Tier/Group:	2/1		
K/A Info:	003 Reactor Coolant Pump System <ul style="list-style-type: none">• 2.1.30 - Ability to locate and operate components, including local controls.		
RO Importance:	4.4		
Proposed references to be provided to applicant:	None		
Learning Objective:			
10 CFR Part 55 Content:	55.41(b)(7)		
Question source:	<input type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	N/A		
Exam Bank History:	None		
Technical references:			
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

18

ID: Q50764

Points: 1.00

Units 1 and 2 were operating at 100% power when a rupture occurred on the Unit 1 Instrument Air header. Given the following events and conditions:

- Plant air pressure dropped to 80 PSIG.
- The air leak was isolated by manual operator action
- Instrument air pressure increased to normal operating pressure

Which one of the following statements correctly describes:

(1) The response of 1-CV-2059 (PA HDR ISOL VLV) to the Instrument Air header rupture.
(2) The actions required to restore the Plant Air system when Instrument Air system has been repressurized?

- A. (1) Plant Air will supply Instrument Air by automatically opening 1-PA-2059-CV.
(2) The Plant Air must be isolated from Instrument Air by manually closing 1-PA-2059-CV.
- B. (1) Plant Air will supply Instrument Air by automatically opening 1-PA-2059-CV.
(2) The Plant Air will automatically isolate from Instrument Air by closing 1-PA-2059-CV, when Instrument Air pressure increases above 85 PSIG.
- C. (1) 1-PA-2059-CV will shut to isolate Plant Air loads.
(2) The Plant Air loads must be restored by manually opening 1-PA-2059-CV.
- D. (1) 1-PA-2059-CV will shut to isolate Plant Air loads.
(2) 1-PA-2059-CV automatically opens to restore Plant Air loads, when Instrument Air pressure increases above 85 PSIG.

Answer: C

Answer Explanation:

- A. Incorrect - 1-PA-2059-CV is the Plant Air to Plant Air isolation valve, not the PA to IA cross-connect.
- B. Incorrect - 1-PA-2059-CV is the Plant Air to Plant Air isolation valve, not the PA to IA cross-connect.
- C. Correct - Per AOP-7D, 1-PA-2059-CV automatically isolates P/A to P/A and must be manually opened.
- D. Incorrect - 1-PA-2059-CV does not open automatically.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 18 Info	
Topic:	Identify the design features that provide a backup for the instrument air system during a partial or
Tier/Group:	2/2
K/A Info:	079 - Station Air System (SAS) <ul style="list-style-type: none"> • K1 Knowledge of the physical connections and/or cause effect relationships between the SAS and the following systems: <ul style="list-style-type: none"> • K1.01 IAS.
RO Importance:	3.0
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(4)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use - 2006
Technical references:	AOP-7D, Loss of Instrument Air
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

19

ID: Q50736

Points: 1.00

Unit 1 was operating at 100% power when a LOCA occurred. Given the following events and conditions:

- 0200 LOCA occurred inside the Containment
- 0203 Containment pressure peaked at 20 PSIG
- 0240 Containment pressure dropped below 4 PSIG
- 0245 RWT level reached 0.75 feet but RAS failed to actuate

- Containment pressure is 3.5 PSIG and slowly lowering
- Containment sump level is 40 inches and rising
- CSAS has NOT been reset

Which **ONE** of the following statements correctly describes:

- (1) Containment Spray (CS) pump configuration at the time of the RAS failure.
- (2) Required Operator action, in EOP-5, to respond to the RAS failure.

- A. (1) CS pumps are running with suction from the RWT.
(2) No Operator Action required.
- B. (1) CS pumps are running with suction from the RWT.
(2) Align CS pump suction to the Containment Sump.
- C. (1) CS pumps are stopped.
(2) Align CS pump suction to the Containment Sump.
- D. (1) CS pumps are stopped.
(2) No Operator Action required.

Answer: B

Answer Explanation:

- A. Incorrect - With RAS failure, Operator action is required to realign CS suction to the Contmt Sump.
- B. Correct - CS pumps should be running with suction aligned to the RWT. With RAS failure, Operator action is required to realign CS pump suction to the Contmt Sump.
- C. Incorrect - CS pumps are not secured on RAS or when containment pressure is less than CSAS.
- D. Incorrect - CS pumps are not secured on RAS or when containment pressure is less than CSAS; With RAS failure, Operator action is required to realign CS suction to the Contmt Sump.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 19 Info	
Topic:	RECALL the operation of ESFAS that includes: Failure of RAS
Tier/Group:	2/1
K/A Info:	026 - Containment Spray System (CSS) <ul style="list-style-type: none"> • K4 Knowledge of CSS design feature(s) and/or interlock(s) which provide for the following: • K4.07 Adequate level in containment sump for suction (interlock)
RO Importance:	3.8
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use – LOI 2006 RO Audit Exam
Technical references:	EOP-5, Loss of Coolant Accident
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

20

ID: Q25464

Points: 1.00

In addition to the "CSAS ACTUATED" annunciator alarm, which of the following conditions is verified to ensure Containment Spray Actuation has occurred per EOP-0, Post Trip Immediate Actions?

- A. Operable Containment Air Coolers have shifted to "LOW" speed, Containment Spray Valves have opened and required flow is indicated.
- B. Containment Spray Valves open with flow indicated and Condensate Booster pumps tripped.
- C. Both MSIVs and MSIV Bypasses are shut, S/G Blowdown isolations are shut, and proper flow is indicated in each spray header.
- D. SGFPs have tripped, MSIVs and MFW isolations are shut, and Containment Spray Pumps have started.

Answer: B

Answer Explanation:

- A. Incorrect - Containment Coolers shift to "Low" on SIAS Actuation (not CSAS).
- B. Correct - EOP-0 Basis Doc states: If pressure continues to rise and exceeds 4.25 PSIG, then CSAS is verified to have actuated to control containment pressure. This check should consist of ensuring that the alarm is received, the Containment Spray Valves are open, Spray flow is indicated and the Condensate Booster Pumps have tripped.
- C. Incorrect - These actions do occur, however, EOP-0 Basis Doc states: If pressure continues to rise and exceeds 4.25 PSIG, then CSAS is verified to have actuated to control containment pressure. This check should consist of ensuring that the alarm is received, the Containment Spray Valves are open, Spray flow is indicated and the Condensate Booster Pumps have tripped.
- D. Incorrect - These actions do occur, however, EOP-0 Basis Doc states: If pressure continues to rise and exceeds 4.25 PSIG, then CSAS is verified to have actuated to control containment pressure. This check should consist of ensuring that the alarm is received, the Containment Spray Valves are open, Spray flow is indicated and the Condensate Booster Pumps have tripped.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 20 Info	
Topic:	CSAS Verification
Tier/Group:	2/1
K/A Info:	022 Containment Cooling System (CCS) <ul style="list-style-type: none">• A3 Ability to monitor automatic operation of the CCS, including:<ul style="list-style-type: none">• A3.01 Initiation of safeguards mode of operation
RO Importance:	4.1
Proposed references to be provided to applicant:	None
Learning Objective:	SRO-201-0-8
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use – 2008 LOR Quiz
Technical references:	EOP-O Technical Basis Doc; NPOSSO 09-05, Standardization of Verifying ESFAS/AFAS Actuations
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

21

ID: Q20772

Points: 1.00

Unit-1 is at 100% power when scheduled maintenance on 1-PT-1023, #12 S/G pressure channel "C" transmitter, results in it being inoperable. Which ESFAS signals are potentially affected by this transmitter inoperability?

- A. SGIS and SGIS block
- B. SGIS block and CSAS
- C. SGIS and AFAS Start
- D. AFAS block and CIS

Answer: A

Answer Explanation:

- A. Correct - S/G Pressure is an input to both SGIS and SGIS Block
- B. Incorrect - S/G Pressure is not an input to CSAS (CSAS actuates on high Containment Pressure)
- C. Incorrect - S/G Pressure is not an input to AFAS Start (AFAS Start actuates on low S/G level)
- D. Incorrect - S/G Pressure is not an input to CIS (CIS actuates on high Containment Pressure)

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 21 Info			
Topic:	S/G pressure transmitter impact on ESFAS		
Tier/Group:	2/1		
K/A Info:	013 - Engineered Safety Features Actuation System (ESFAS) <ul style="list-style-type: none">• K6 Knowledge of the effect of a loss or malfunction on the following will have on the ESFAS:<ul style="list-style-type: none">• K6.01 Sensors and detectors		
RO Importance:	2.7		
Proposed references to be provided to applicant:	None		
Learning Objective:	CRO-63-1-3-03		
10 CFR Part 55 Content:	55.41(b)(7)		
Question source:	<input checked="" type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	No record of use on an NRC exam		
Exam Bank History:	Last use – LOI-2008 Panel Comp Remediation Exam (October, 2009)		
Technical references:	LD-58; Engineered Safety Features System Description (No. 48)		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

22

ID: Q23850

Points: 1.00

What requirements must be met in order to operate Unit-1 above 50% reactor power with only one Steam Generator Feed Pump?

- A. Suction flow rate below 18,000 GPM, Turbine speed below 5350 RPM and Suction pressure above 250 PSIG
- B. Suction flow rate 2400 GPM, Turbine speed 2100 RPM, and Suction pressure above 300 PSIG
- C. Suction flow rate below 18,000 GPM, Turbine speed below 5350 RPM, and Suction pressure below 250 PSIG
- D. Suction flow rate 4000 GPM, Turbine speed 3100 RPM, and Suction pressure above 300 PSIG

Answer: A

Answer Explanation:

- A. Correct - From AOP-3G: If **ALL** the following conditions are maintained, then one SGFP operation above 440 MWE is permitted:
 - SGFP suction flow rate is below 18,000 GPM
 - SGFP suction pressure is above 250 PSIG
 - SGFP speed is below 5350 RPM (5100RPM)
- B. Incorrect - All 3 listed parameters are incorrect.
- C. Incorrect - Suction must be ABOVE not BELOW 250 PSIG.
- D. Incorrect - All 3 listed parameters are incorrect.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 22 Info	
Topic:	SGFP operating limitations
Tier/Group:	2/1
K/A Info:	<p>059 - Main Feedwater System (MFW)</p> <ul style="list-style-type: none"> • A1 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MFW controls including: <ul style="list-style-type: none"> • A1.03 - Power level restrictions for operation of MFW pumps and valves.
RO Importance:	2.7
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(5)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	No history of previous use
Technical references:	AOP-3G, Malfunction of Main Feedwater System
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

23

ID: Q25461

Points: 1.00

When implementing EOP-0 Alternate Actions for an ATWS, which of the following parameters/indications are used to check the reactor has tripped?

- A. Delta-T power, Startup Rate, RCS Boron Concentration.
- B. NI power, CEA lower electrical limit lights, turbine load.
- C. TCB position, Delta-T power, CEAPDS.
- D. NI power, Startup Rate

Answer: D

Answer Explanation:

- A. Incorrect - Per EOP-0, a prompt drop in NI Power and a negative startup rate are used to verify the reactor is tripped for a normal trip and for an ATWS.
- B. Incorrect - Per EOP-0, a prompt drop in NI Power and a negative startup rate are used to verify the reactor is tripped for a normal trip and for an ATWS.
- C. Incorrect - Per EOP-0, a prompt drop in NI Power and a negative startup rate are used to verify the reactor is tripped for a normal trip and for an ATWS.
- D. Correct - Per EOP-0, a prompt drop in NI Power and a negative startup rate are used to verify the reactor is tripped for a normal trip and for an ATWS.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 23 Info	
Topic:	Indications used to verify a reactor trip has occurred
Tier/Group:	1/1
K/A Info:	029 Anticipated Transient Without Scram (ATWS) <ul style="list-style-type: none">• EK3 Knowledge of the reasons for the following responses as they apply to the ATWS:<ul style="list-style-type: none">• EK3.01 Verifying a reactor trip; methods
RO Importance:	4.2
Proposed references to be provided to applicant:	None
Learning Objective:	SRO-201-0-8
10 CFR Part 55 Content:	55.41(b)(5)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use - 2003
Technical references:	EOP-0 Basis document
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

24

ID: Q74575

Points: 1.00

Given the following conditions on Unit 1:

- Reactor power is 100%.
- 1C13, K-17, CC HEAD TANK LEVEL annunciator alarm
- CC Head Tank indicates 35 inches and lowering slowly

Which of the following describes?

- 1) A possible location of a Tube Leak and;
- 2) The action required?

- A. 1) RCP Seal Cooler;
2) Ensure proper operation of M/U CV to CC HD TK, 1-CC-3820-CV, and refer to AOP-7C, Loss of Component Cooling Water, for additional actions.
- B. 1) RCP Seal Cooler;
2) Ensure CC pumps are operating properly and direct Chemistry to sample the CC Head Tank.
- C. 1) CEDM Cooler;
2) Ensure proper operation of M/U CV to CC HD TK, 1-CC-3820-CV, and refer to AOP-7C, Loss of Component Cooling Water, for additional actions.
- D. 1) CEDM Cooler;
2) Ensure CC pumps are operating properly and direct Chemistry to sample the CC Head Tank.

Answer: C

Answer Explanation:

- A. Incorrect - RCP seal cooler is at higher pressure than CC Head Tank and would cause CC Head Tank level to rise. Actions are correct
- B. Incorrect - RCP seal cooler is at higher pressure than CC Head Tank and would cause CC Head Tank level to rise. Actions for sample are for high level, and CC Pump operation is checked in AOP-7C when level is lower
- C. Correct - Per 1C13-ALM for window K-17, CC HEAD TK LVL
- D. Incorrect - Actions for sample are for high level, and CC Pump operation is checked in AOP-7C when level is lower

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 24 Info	
Topic:	Given any alarm, associated with the CCW system, identify the most likely cause of the alarm
Tier/Group:	1/1
K/A Info:	<p>026 Loss of Component Cooling Water (CCW)</p> <ul style="list-style-type: none"> • AA1. Ability to operate and / or monitor the following as they apply to the Loss of Component Cooling Water: <ul style="list-style-type: none"> • AA1.05 The CCWS surge tank, including level control and level alarms, and radiation alarm
RO Importance:	3.1
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use – LOI 2006 Audit Exam
Technical references:	1C13-ALM; AOP-7C, Loss of Component Cooling Water
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

25

ID: Q92150

Points: 1.00

A loss of P-13000-1 has occurred.

Assume associated DG's do **NOT** repower their respective 4 KV buses and respective 4 KV Bus Alternate Feeder Breakers cannot be closed.

Which answer correctly identifies **ALL** HPSI pumps having the capability of being started from the Control Room?

- A. 12 and 22 HPSI's
- B. 13 and 23 HPSI's
- C. 12, 13, 22, and 23 HPSI's
- D. 11, 13, 21, and 23 HPSI's

Answer: C

Answer Explanation:

- A. Incorrect - 11 & 21 HPSIs are powered from the Black Bus. Students may pick this answer if they don't recognize the disconnect/power alignment capability of 13 and 23 HPSI's.
- B. Incorrect - While 13 and 23 HPSI **can** be electrically aligned to the ZB train power supply via disconnect alignment performed remotely in the Control Room, 12 and 22 HPSI's are powered from the Red Bus via P13000-2 and still have power available as well. Students may select this answer if they don't understand the normal power supply alignment.
- C. Correct - 12 and 22 HPSI's are powered from the Red Bus via P13000-2 and still have power available. 13 and 23 HPSI can be electrically aligned to the ZB train power supply via disconnect alignment performed remotely in the Control Room.
- D. Incorrect - While 13 and 23 HPSI can be electrically aligned to the ZB train power supply via disconnect alignment performed remotely in the Control Room, 11 & 21 HPSIs are powered from 11 & 21 4KV Busses which are powered from the Black Bus. Students may select this answer if they don't understand the normal power supply alignment.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 25 Info	
Topic:	Loss of 500KV Black Bus effects on HPSI Pumps
Tier/Group:	2/1
K/A Info:	062 A.C. Electrical Distribution <ul style="list-style-type: none">• K2 Knowledge of bus power supplies to the following:<ul style="list-style-type: none">• K2.01 Major system loads
RO Importance:	3.3
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input type="checkbox"/> Bank <input checked="" type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	OI-27C, 4.16 KV System
Comments:	Modified version of Q75490

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

26

ID: Q19202

Points: 1.00

Using Provided References:

After a control room evacuation, the CRS directs you to commence boration on Unit-1.

- Initial RCS boron concentration is 300 ppm
- BAST concentration is 7.3%
- 11 BAST level is 119 inches
- 12 BAST level is 118.5 inches

How long will you have to borate with 11 Charging Pump to reach the required RCS boron concentration?

- A. 140-150 minutes
- B. 170-180 minutes
- C. 280-290 minutes
- D. 340-350 minutes

Answer: C

Answer Explanation:

- A. Incorrect - This value would be obtained if the student used the curve for two Charging Pumps borating at the stated BAST concentration.
- B. Incorrect - This value would be obtained if the student used the curve for two Charging Pumps borating with a BAST concentration of 6.25%.
- C. Correct - This value is obtained using AOP-9, Attachment 2, for one Charging Pump borating with a BAST concentration of 7.25%.
- D. Incorrect - This value would be obtained if the student used the curve for one Charging Pump borating with a BAST concentration of 6.25%.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 26 Info	
Topic:	AOP-9A boration time **CALCULATION**
Tier/Group:	Generic K & A
K/A Info:	2.1.25 - Ability to interpret reference materials, such as graphs, curves, tables, etc.
RO Importance:	3.9
Proposed references to be provided to applicant:	AOP-9 Attachments, ATTACHMENT 2
Learning Objective:	LOR-020060320-001
10 CFR Part 55 Content:	55.41(b)(10)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use – LOI 2006 Panel Exam
Technical references:	AOP-9A, Control Room Evacuation and Safe Shutdown Due to a Severe Control Room Fire
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

27

ID: Q25102

Points: 1.00

A reactor trip with a SIAS occurred on Unit-2. While implementing EOP-0 the following indications are noted:

- 2 stuck CEAs.
- Boration in progress.
- Main turbine and generator are tripped.
- Pressurizer level indication is 120 inches and stable.
- RCS subcooling is 100 °F.
- Pressurizer pressure is 1925 PSIA and lowering.
- S/G levels are both -120 inches and lowering.
- S/G pressures are both 800 PSIA and lowering.
- Containment press. is 1.0 PSIG and rising.
- Containment temp is 165 °F and rising.
- 11 4KV Bus is de-energized.

No additional actions have been taken.

Which **ONE** of the following groups of safety functions should be reported as "cannot be met"?

- A. Reactivity Control and RCS Pressure/Inventory Control.
- B. Reactivity Control and Core/RCS Heat Removal.
- C. Vital Auxiliaries and Containment Environment.
- D. Core/RCS Heat Removal and Containment Environment.

Answer: D

Answer Explanation:

- A. Incorrect - Boration is in progress. Reactivity Control is complete.
- B. Incorrect - Boration is in progress. Reactivity Control is complete.
- C. Incorrect – Vital Auxiliaries is complete.
- D. Correct - S/G pressure and level are not trending in a positive manner, containment pressure and temperature are also trending in the wrong direction.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 27 Info	
Topic:	A reactor trip and safe injection has occurred on Unit-2. While implementing EOP-0 the following(2)
Tier/Group:	2/1
K/A Info:	<p>103 Containment System</p> <ul style="list-style-type: none"> • A1 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the containment system controls including: <ul style="list-style-type: none"> • A1.01 Containment pressure, temperature, and humidity
RO Importance:	3.7
Proposed references to be provided to applicant:	None
Learning Objective:	201-0-8-S-02
10 CFR Part 55 Content:	55.41(b)(5)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	No history of previous use
Technical references:	EOP-0, Post Trip Immediate Actions; NO-1-201, Calvert Cliffs Operating Manual
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

28

ID: Q20320

Points: 1.00

Why do the Instrument Air compressors receive a permissive start signal from the Shutdown sequencer but not the LOCI sequencer?

- A. Service Water cooling to the IA Compressors is isolated by SIAS.
- B. To prevent overloading the safety related DGs.
- C. The Instrument Air system is not required during a LOCA.
- D. During a LOCA, power is unavailable to the air compressors.

Answer: A

Answer Explanation:

- A. Correct - SRW is isolated, to the Turbine Building, by SIAS resulting in a loss of cooling to all Turbine Building loads including the I/A and P/A Compressors.
- B. Incorrect - SRW is isolated, to the Turbine Building, by SIAS resulting in a loss of cooling to all Turbine Building loads including the I/A and P/A Compressors. The EDGs are capable of carrying the additional load imposed by the compressors.
- C. Incorrect - SRW is isolated, to the Turbine Building, by SIAS resulting in a loss of cooling to all Turbine Building loads including the I/A and P/A Compressors. Key Instrument Air loads are supplied by the SWACs which receive a start signal as a result of a SIAS
- D. Incorrect - SRW is isolated, to the Turbine Building, by SIAS resulting in a loss of cooling to all Turbine Building loads including the I/A and P/A Compressors. Power remains available to the compressors as long busses are powered.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 28 Info	
Topic:	Why do the instrument air compressors receive a permissive start signal from the Shutdown sequencer
Tier/Group:	2/1
K/A Info:	078 Instrument Air System <ul style="list-style-type: none"> • K1 Knowledge of the physical connections and/or cause-effect relationships between the IAS and the following systems: <ul style="list-style-type: none"> • K1.04 Cooling water to compressor
RO Importance:	2.6
Proposed references to be provided to applicant:	None
Learning Objective:	CRO-63-1-3-42
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use – LOI 2006 Panel Exam
Technical references:	SD-019, Compressed Air Systems
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

29

ID: Q92751

Points: 1.00

Which of the following sets:

1. Represent the **minimum** conditions requiring "Double Protection" when Tagging a mechanical system
2. What are the requirements if "Double Protection" is not possible?
 - A.
 - 1) A piping system that contains fluids greater than 500 PSIG or 200 °F;
 - 2) Shift Manager approval of single boundary isolation is required.
 - B.
 - 1) A piping system that contains fluids greater than 200 PSIG or 250 °F;
 - 2) GS-Ops Support approval of single boundary isolation is required.
 - C.
 - 1) A piping system that contains fluids greater than 500 PSIG or 250 °F;
 - 2) CRS approval of single boundary isolation is required.
 - D.
 - 1) A piping system that contains fluids greater than 200 PSIG or 200 °F;
 - 2) OWC approval of single boundary isolation is required.

Answer: A

Answer Explanation:

- A. Correct - Per CNG-OP-1.01-1007; the use of two isolation points in series to provide an added measure of protection when the energy source exceeds or could exceed 200 °F or 500 PSIG pressure or contains an explosive, oxidizing gas, or hazardous material for mechanical systems. Authorizing the isolation of equipment per this procedure. The Work Center Senior Reactor Operator (SRO), Fix It Now (FIN) SRO, or Control Room Supervisor (CRS) may perform the functions for the SM described in this procedure as his designee, when the individual is knowledgeable of current plant conditions and designated by the SM. The SM or designee shall: ... Approve the use of single boundary valve use when double valve isolation is required
- B. Incorrect - 200 PSIG, 250 °F, and GS-Ops Support are incorrect.
- C. Incorrect - 250 °F is incorrect
- D. Incorrect - 200 PSIG is incorrect

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 29 Info	
Topic:	Apply the Requirements of NO-1-112, Safety Tagging
Tier/Group:	Generic K & A
K/A Info:	2.2.13 Knowledge of tagging and clearance procedures
RO Importance:	4.1
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(10)
Question source:	<input type="checkbox"/> Bank <input checked="" type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	CNG-OP-1.01-1007 Clearance and Safety Tagging
Comments:	Modified version of Q51180

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

30

ID: Q92632

Points: 1.00

Unit-1 is operating at 100% power, what effect does an inadvertent AFAS "B" have?

- A. AFW Flow of 300 GPM is initiated to each S/G.
- B. No effect, Block valves prevent flow to the S/Gs.
- C. AFW Flow of 150 GPM is initiated to 12 S/G only.
- D. AFW Flow of 150 GPM is initiated to each S/G.

Answer: D

Answer Explanation:

- A. Incorrect - AFAS "B" starts only the Steam Driven AFW Pump aligned for auto initiation. Flow will be regulated at 150 GPM each to 11 and 12 S/Gs.
- B. Incorrect - The Blocking valves are normally open and will only close automatically if a S/G DP of 115 PSID is sensed.
- C. Incorrect - AFAS "B" starts only the Steam Driven AFW Pump aligned for auto initiation. Flow will be regulated at 150 GPM each to 11 and 12 S/Gs.
- D. Correct - AFAS "B" starts only the Steam Driven AFW Pump aligned for auto initiation. Flow will be regulated at 150 GPM each to 11 and 12 S/Gs.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 30 Info	
Topic:	Assuming Middle of Cycle MTC, and the unit at 100% power, how does an inadvertent AFAS affect react
Tier/Group:	2/1
K/A Info:	061 Auxiliary / Emergency Feedwater (AFW) System <ul style="list-style-type: none">• K3 Knowledge of the effect that a loss or malfunction of the AFW will have on the following:<ul style="list-style-type: none">• K3.02 S/G
RO Importance:	4.2
Proposed references to be provided to applicant:	None
Learning Objective:	CRO-34-2-3-21
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	SD-036, AFW System Description
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

31

ID: Q38849

Points: 1.00

With the ADVs in AUTO, how do they function following a Reactor Trip from 50% Reactor power?

- A. ADVs will Quick OPEN until T_{AVE} is less than 535 °F then they will modulate to maintain temperature between 535 °F and 540 °F.
- B. ADVs will modulate to maintain T_{AVE} between 535 °F and 540 °F.
- C. ADVs will modulate to maintain Main Steam Pressure less than 900 PSIG
- D. ADVs will Quick OPEN until T_{AVE} is less than 535 °F then they will modulate to maintain Main Steam pressure less than 900 PSIG.

Answer: B

Answer Explanation:

- A. Incorrect - The ADVs will not quick open as the quick open override is not enabled until RRS T_{AVE} exceeds 557 °F which equates to a reactor power of approximately 62%.
- B. Correct - The ADVs are controlled by RRS T_{AVE} with the valves beginning to open at a T_{AVE} of approximately 540 °F to lower T_{AVE} to a value of approximately 535 °F.
- C. Incorrect - This would be a correct statement for the TBVs. The ADVs are controlled by RRS T_{AVE} with the valves beginning to open at a T_{AVE} of approximately 540 °F to lower T_{AVE} to a value of approximately 535 °F.
- D. Incorrect - The ADVs will not quick open as the quick open override is not enabled until T_{AVE} exceeds 557 °F which equates to a reactor power of approximately 62%.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 31 Info	
Topic:	ADV control, on a Reactor trip, with an initial Reactor power of 50%
Tier/Group:	2/1
K/A Info:	<p>039 Main and Reheat Steam System (MRSS)</p> <ul style="list-style-type: none"> • K4 Knowledge of MRSS design feature(s) and/or interlock(s) which provide for the following: <ul style="list-style-type: none"> • K4.02 Utilization of T-ave. program control when steam dumping through atmospheric relief/dump valves, including T-ave. limits
RO Importance:	3.1
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	No history of previous use
Technical references:	SD-056, Reactor Regulating System
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

32

ID: Q24945

Points: 1.00

During a reactor startup, as the RO commences withdrawing Regulating Group 2, he notices the reactor is critical.

Which ONE of the following describes the actions necessary to restore shutdown margin?

- A. Insert all Shutdown CEAs.
- B. Trip the reactor.
- C. Insert all Regulating CEAs.
- D. Initiate fast boration.

Answer: D

Answer Explanation:

- A. Incorrect – This action does not restore shutdown margin.
- B. Incorrect – This action does not restore shutdown margin.
- C. Incorrect – This action does not restore shutdown margin.
- D. Correct – Initiation of boration is the sole method available to restore SDM to within limit. Fast boration is the appropriate method for quickly reestablishing required Shutdown Margin.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 32 Info	
Topic:	During a reactor startup all shutdown groups are fully withdrawn.
Tier/Group:	1/2
K/A Info:	024 Emergency Boration <ul style="list-style-type: none"> • AK3. Knowledge of the reasons for the following responses as they apply to Emergency Boration: <ul style="list-style-type: none"> • AK3.01 When emergency boration is required
RO Importance:	4.1
Proposed references to be provided to applicant:	None
Learning Objective:	203-1-S-06
10 CFR Part 55 Content:	55.41(b)(10)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use - LOR Quiz (February, 2010)
Technical references:	OP-2, Plant Startup from Hot Standby to Minimum Load, Section 6.6, Withdraw Regulating CEA Groups Above ZPDIL
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

33

ID: Q92170

Points: 1.00

With Unit 1 at 100% power, the Control Room receives various panel alarms. A loss of 1Y09 is diagnosed.

Which **ONE** of the following responses will result from this loss of power?

- A. The process indicator on 1-HIC-100 fails downscale causing selected Pressurizer Spray Valve(s) to be unavailable.
- B. Feedwater Heater and Heater Drain Tank High Level Dump valves fail shut.
- C. Component Cooling Normal Header pressure indication, 1-PI-3814, fails low causing the standby Component Cooling Pump to start.
- D. Charging Pump suction shifts to the RWT with all operable Charging pumps running.

Answer: A

Answer Explanation:

- A. Correct - Power is lost to HIC-100 resulting in its indication failing downscale. Its output also fails to zero, resulting in no signal to open the Pressurizer Spray Valves.
- B. Incorrect - High Level Dump Valves fail open on a loss of 1Y09.
- C. Incorrect - CCW Pumps do not auto-start on low CC Header Pressure.
- D. Incorrect - These actions result from a loss of 1Y10.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 33 Info	
Topic:	Loss of 1Y09 effects on Pressurizer Pressure control
Tier/Group:	2/1
K/A Info:	010 Pressurizer Pressure Control System (PZR PCS) <ul style="list-style-type: none"> • K2 Knowledge of bus power supplies to the following: <ul style="list-style-type: none"> • K2.02 Controller for PZR spray valve
RO Importance:	2.5
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	AOP-7I, Loss of 4KV, 480 Volt or 208/120 Volt Instrument Bus Power; Unit-1 Stabilizing Actions Plaque
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

34

ID: Q92171

Points: 1.00

Unit-2 has been operating at 100% power for 65 days when a small RCS break occurs. The appropriate Optimal Recovery Procedure has been implemented. RCS pressure is stable at 1200 PSIG. You have been assigned the task of completing the SIAS Verification Checklist using EOP Attachment (2).

Which of the following groups of component actuations will be verified using this attachment?

- A. 21 Condensate Booster Pump secured; 21 Heater Drain Pump secured
- B. 21 Charging Pump running; 21 Boric Acid Pump running
- C. 21 CS HDR Valve 2-SI-4150-CV open; 22 CS HDR Valve 2-SI-4151-CV open
- D. 21 MSIV shut; 21 S/G Feedwater Isolation Valve shut

Answer: B

Answer Explanation:

- A. Incorrect - Condensate Booster Pumps and Heater Drain Pumps are verified on Attachment 3, CSAS Verification Checklist, and Attachment 7, SGIS Verification Checklist.
- B. Correct - ATTACHMENT (2), Page 3 of 5, SIAS VERIFICATION CHECKLIST, verifies 11, 12 and 13 CHG PPs running and 11 and 12 BA PPs running
- C. Incorrect - CS HDR V/ivs are verified on Attachment 3, CSAS Checklist
- D. Incorrect - FW ISOL valves are verified on Attachment 3, CSAS Verification Checklist, and Attachment 7, SGIS Verification Checklist.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 34 Info	
Topic:	SIAS Verification Checklist
Tier/Group:	1/1
K/A Info:	009 Small Break LOCA <ul style="list-style-type: none">EA2 Ability to determine or interpret the following as they apply to a small break LOCA:<ul style="list-style-type: none">EA2.29 CVCS pump indicating lights for determining pump status
RO Importance:	3.2
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(10)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	EOP Attachments
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

35

ID: Q92850

Points: 1.00

Following a Large Break LOCA on Unit-2 the following conditions exist:

- RAS has actuated
- HPSI has been throttled to minimum flow per Attachment 10
- 21 and 23 HPSI pump amperage and flow indications are oscillating

Which **ONE** of the following actions is preferred to mitigate these plant conditions?

- A. Shut Mini Flow Returns to the RWT, MOV's 2-SI-659 and 2-SI-660
- B. Stop both Containment Spray Pumps
- C. Secure one of the operating HPSI Pumps
- D. Further throttle HPSI flow while maintaining pump minimum flow

Answer: B

Answer Explanation:

- A. Incorrect – Shutting these valves will reduce flow thru the HPSI Pumps, however, The Mini Flow Returns to the RWT, MOV's 2-SI-659 and 2-SI-660, are shut by the RAS signal. No information is given to indicate the valves did not perform as designed.
- B. Correct - Given that HPSI flow is already throttled per Attachment (10), EOP-5, Step IV.S.1.j.2 directs stopping both Containment Spray Pumps
- C. Incorrect - Given that HPSI flow is already throttled per Attachment (10), EOP-5, Step IV.S.1.j.2 directs stopping both Containment Spray Pumps
- D. Incorrect - This method is described in EOP-5, Step IV.S.1.o and is solely a verification that HPSI Pumps are meeting minimum flow requirements

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 35 Info			
Topic:	Response to HPSI Cavitation		
Tier/Group:	1/1		
K/A Info:	011 - Large Break LOCA <ul style="list-style-type: none">• EK2- Knowledge of the interrelations between the and the following Large Break LOCA:<ul style="list-style-type: none">• EK2.02 - Pumps (2.6, 2.7)		
RO Importance:	2.6		
Proposed references to be provided to applicant:	None		
Learning Objective:			
10 CFR Part 55 Content:	55.41(b)(7)		
Question source:	<input type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	N/A		
Exam Bank History:	None		
Technical references:	EOP-5, Loss of Coolant Accident		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

36

ID: Q92772

Points: 1.00

When RCS pressure is less than 50 PSIA, Quench Tank Pressure is required to be maintained less than 1.5 PSIG.

Which **ONE** of the following is the reason for this limit?

- A. Prevents Pressurizer Vent SVs from leaking by.
- B. Prevents Pressurizer Safety Valves from unseating.
- C. Prevents Reactor Vessel Vent SVs from leaking by.
- D. Prevents PORVs from unseating.

Answer: D

Answer Explanation:

- A. Incorrect - Per OI-1B (Quench Tank Operations), Section 6.11 (Quench Tank Lineup for Plant Startup at Low RCS Pressure), Quench Tank pressure is maintained less than 1.5 PSIG to help prevent the PORVs from leaking.
- B. Incorrect - Per OI-1B (Quench Tank Operations), Section 6.11 (Quench Tank Lineup for Plant Startup at Low RCS Pressure), Quench Tank pressure is maintained less than 1.5 PSIG to help prevent the PORVs from leaking.
- C. Incorrect - Per OI-1B (Quench Tank Operations), Section 6.11 (Quench Tank Lineup for Plant Startup at Low RCS Pressure), Quench Tank pressure is maintained less than 1.5 PSIG to help prevent the PORVs from leaking.
- D. Correct - Per OI-1B (Quench Tank Operations), Section 6.11 (Quench Tank Lineup for Plant Startup at Low RCS Pressure), Quench Tank pressure is maintained less than 1.5 PSIG to help prevent the PORVs from leaking.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 36 Info	
Topic:	Quench Tank parameters for drawing a bubble.
Tier/Group:	2/1
K/A Info:	<p>007 Pressurizer Relief Tank/Quench Tank System (PRTS)</p> <ul style="list-style-type: none"> • K5 Knowledge of the operational implications of the following concepts as they apply to PRTS: <ul style="list-style-type: none"> • K5.02 Method of forming a steam bubble in the PZR
RO Importance:	3.1
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(5)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	OP-7, Shutdown Operations; OI-1B, Quench Tank operations
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

37

ID: Q92190

Points: 1.00

With the Unit in Mode 3, 11A and 12B RCPs running, an Instrument Air header rupture occurred in the Unit-1 27' East Piping Penetration Room.

Which **ONE** of the following actions should be taken after the affected portion of the header has been isolated?

- A. Have the ABO manually override ADVs shut.
- B. Trip all RCPs then implement EOP-0.
- C. Take actions for the 1B DG being out of service, due to loss of cooling.
- D. Trip the RCPs and establish decay heat removal via natural circulation.

Answer: D

Answer Explanation:

- A. Incorrect - ADVs fail shut and the manual override is only to open them (cannot be overridden shut)
- B. Incorrect - EOP-0 is Post Trip Immediate Actions, it is not required to be implemented when in Mode 3.
- C. Incorrect - 1B DG cooling is from SRW, which does not go through the East Pent. Room.
- D. Correct - AOP-7D, Loss of Instrument Air specifies: **IF EITHER** of the CC CNTMT SUPPLY and RETURN valves begin to shut **AND** the "CCW FLOW LO" alarms are received on the RCPs, **THEN** Stop **ALL** RCPs **THEN** verify Natural Circulation in at least one loop.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 37 Info	
Topic:	Mode 3 I/A Header Rupture
Tier/Group:	2/1
K/A Info:	<p>008 Component Cooling Water System (CCWS)</p> <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> A2.05 - Effect of loss of instrument and control air on the position of the CCW valves that are air operated
RO Importance:	3.3
Proposed references to be provided to applicant:	None
Learning Objective:	LOR-020400303-002
10 CFR Part 55 Content:	55.41(b)(5)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	AOP-7D, Loss of Instrument Air
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

38

ID: Q19364

Points: 1.00

Unit 2 is at 100% power with all 10 trip units bypassed on Channel D RPS for IM Shop wiring modifications, IAW an approved maintenance order. IM determines that the RPS channel must be de-energized to complete the modifications.

What statement best describes the RPS trip logic before and after Channel D RPS is de-energized?

- A. 2 of 3 when energized;
Stays 2 of 3 when de-energized.
- B. 2 of 4 when energized;
Goes to 2 of 3 when de-energized.
- C. 2 of 3 when energized;
Goes to 1 of 3 when de-energized.
- D. 2 of 4 when energized;
Goes to 1 of 3 when de-energized.

Answer: C

Answer Explanation:

- A. Incorrect - Trip logic is 2 of 3 with the Trip Units bypassed while the channel is still energized. De-energizing a channel removes the bypass function, resulting in that channel being tripped. As a result 1 of 3 remaining Trip Units tripping will cause a reactor trip.
- B. Incorrect - Trip logic is 2 of 3 with the Trip Units bypassed while the channel is still energized.
- C. Correct - Trip logic is 2 of 3 with the Trip Units bypassed while the channel is still energized. De-energizing a channel removes the bypass function, resulting in that channel being tripped. As a result 1 of 3 remaining Trip Units tripping will cause a reactor trip.
- D. Incorrect – Trip logic is 2 of 3 with the Trip Units bypassed while the channel is still energized.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 38 Info	
Topic:	RPS Trip Logic
Tier/Group:	2/1
K/A Info:	012 Reactor Protection System (RPS) <ul style="list-style-type: none"> • Ability to monitor automatic operation of the RPS, including: <ul style="list-style-type: none"> • A3.01- Individual channel
RO Importance:	3.8
Proposed references to be provided to applicant:	None
Learning Objective:	LOR-058-1-01
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	No history of previous use
Technical references:	System Description 058, Reactor Protective System
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

39

ID: Q92210

Points: 1.00

Which radiation monitor must be used to verify the Containment Environment safety function during EOP-0 under all plant conditions (LOCA, Loss of offsite power, etc.) and what is the basis for use of this instrument?

- A. Wide Range Noble Gas Monitor RIC-5415;
Monitors releases to the environment as a result of Containment leakage.
- B. Containment Area Monitors RE-5316A - D;
Powered from vital AC and will be available in all circumstances.
- C. Containment High Range Monitors RI-5317A & B;
Availability during any combination of events.
- D. Containment Atmosphere Monitors (RI-5280);
Provides ability to promptly assess fuel failure.

Answer: C

Answer Explanation:

- A. Incorrect - Monitoring releases is not part of assessing Containment Environment
- B. Incorrect - RE-5316 A-D are deenergized during power operation.
- C. Correct - Any containment radiation monitor can be used to indicate the off normal event. However, as a minimum the Containment High Range Monitors should be checked, based on their availability during any combination of events, including SIAS actuations and LOOP events.
- D. Incorrect - RI-5280 is isolated on an SIAS

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 39 Info	
Topic:	Which rad monitor should be used to verify Containment Environment safety function during EOP 0?
Tier/Group:	1/2
K/A Info:	061 Area Radiation Monitoring (ARM) System Alarms <ul style="list-style-type: none">• Knowledge of the operational implications of the following concepts as they apply to Area Radiation Monitoring (ARM) System Alarms:<ul style="list-style-type: none">• AK1.01- Detector limitations
RO Importance:	2.5
Proposed references to be provided to applicant:	None
Learning Objective:	CRO-122-1-3-37
10 CFR Part 55 Content:	55.41(b)(10)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	EOP-0 Technical Basis Document
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

40 ID: Q19477 Points: 1.00

The OC DG was slow started from the control room. What action is required to obtain speed control for synchronizing?

- A. Depress the Emergency Start PB
- B. Insert the sync stick in Bkr 152-0704 (07 4KV Bus Feeder from SMECO)
- C. Place the Unit Parallel switch to Parallel
- D. Insert the sync stick in Bkr 152-0703 (OC DG Output Bkr) and go to raise or lower on the speed control handswitch

Answer: D

Answer Explanation:

- A. Incorrect - Pushing Emergency Start PB will put OC DG in Reset Mode
- B. Incorrect - Bkr 152-0704 is not used in the control scheme for the OC DG
- C. Incorrect - There is no Unit Parallel Switch on the OC DG
- D. Correct - IF OC DG will be paralleled with 07 4KV BUS FDR, 152-0704, from the Control Room, THEN INSERT the Sync Stick for OC DG OUT BKR, 0-CS-152-0703, to put the governor in the parallel mode. MOMENTARILY PLACE OC DG SPEED CONTR, 0-CS-0705, to RAISE OR LOWER.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 40 Info	
Topic:	OC DG speed control
Tier/Group:	2/1
K/A Info:	<p>064 Emergency Diesel Generators (ED/G)</p> <ul style="list-style-type: none"> • Ability to manually operate and/or monitor in the control room: <ul style="list-style-type: none"> • A4.06 - Manual start, loading, and stopping of the ED/G
RO Importance:	3.9
Proposed references to be provided to applicant:	None
Learning Objective:	DIESELS-22
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	No history of previous use
Technical references:	OI-21C OC Diesel Generator
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

41

ID: Q14533

Points: 1.00

During a Unit-1 reactor startup, a 6% power rise was induced on the plant. This transient caused a rapid rise in RCS T_{AVG} . RCS temperature has been returned to normal with the following conditions existing:

- Sharp rise in Pressurizer level followed by a steady rise
- Letdown flow indicates 0 GPM
- Letdown stop valves 1-CVC-515-CV & 516 are open
- HIC-110 has a 100% output
- Letdown control valve position per HIC-110 output
- Backpressure regulating valves are shut
- Backpressure controller indicates 260 PSIG
- Window F-09, L/D PRESS, is in alarm
- Window F-17, RAD MON FLOW LO, is in alarm
- Waste processing RMS monitor is reading normal levels
- Charging Header Regenerative Heat Exchanger outlet temperature is lowering

1) Which **ONE** of the following has occurred and;

2) What actions must be taken?

- A. 1) A Safety Injection Actuation Signal has occurred;
2) Verify SIAS per the appropriate EOP Attachment
- B. 1) The Excess flow check valve has shut;
2) Restore Letdown per the appropriate Operating Instruction.
- C. 1) The in-service Backpressure Regulator has failed shut;
2) Shift Backpressure regulators per the appropriate Operating Instruction.
- D. 1) The Letdown HX relief has failed open;
2) Secure Charging and Letdown per the appropriate Operating Instruction.

Answer: B

Answer Explanation:

- A. Incorrect - CVC-515 & 516 are open indicating SIAS has not occurred.
- B. Correct - L/D Stop Valves open with a L/D flow of "0" GPM is indicative of the Excess Flow Check valve closing
- C. Incorrect - Backpressure Regulator is shut due to no L/D flow
- D. Incorrect - Letdown flow would indicate some value greater than "0" GPM but less than 200 GPM

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 41 Info	
Topic:	Excessive Letdown Flow
Tier/Group:	2/2
K/A Info:	<p>011 Pressurizer Level Control System (PZR LCS)</p> <ul style="list-style-type: none"> • A2 Ability to (a) predict the impacts of the following malfunctions or operations on the PZR LCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: <ul style="list-style-type: none"> • A2.07 Isolation of letdown
RO Importance:	3.0
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(5)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use – LOI 2008 1C07, AFW & AFAS Exam (April, 2009)
Technical references:	1C07-ALM
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

42

ID: Q92230

Points: 1.00

Given the following:

- Unit-1 & Unit-2 are operating at 100% power when a Station Blackout occurs.
- 125 VDC Bus voltages are approaching 105 VDC

Which, if any, DG combinations, when restored, will ultimately restore at least 1 Battery Charger each to 11, 12, 21 and 22 125 VDC Busses?

- A. 1A; 2A
- B. 1B; 2B
- C. 2A; 2B
- D. None of the listed combinations will restore a Battery Charger to each 125 VDC Bus.

Answer: C

Answer Explanation:

- A. Incorrect - The 1A & 2A DGs power only the Battery Chargers associated with 11 and 22 125 VDC Busses
- B. Incorrect - The 1B & 2B DGs power only the Battery Chargers associated with 12 and 21 125 VDC Busses
- C. Correct - The 2A & 2B DGs power one Battery Charger associated with each of the four 125 VDC Busses
- D. Incorrect - The 2A & 2B DGs power one Battery Charger associated with each of the four 125 VDC Busses

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 42 Info	
Topic:	Relationship of DGs and 125 VDC
Tier/Group:	1/1
K/A Info:	<p>058 Loss of DC Power</p> <ul style="list-style-type: none"> • AK1. Knowledge of the operational implications of the following concepts as they apply to Loss of DC Power: <ul style="list-style-type: none"> • AK1.01 Battery charger equipment and instrumentation
RO Importance:	2.8
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(8)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	AOP-7J, Loss of 120 Volt Vital AC or 125 Volt Vital DC Power; EOP-7, Station Blackout
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

43

ID: Q92250

Points: 1.00

Given the following conditions:

- Unit 2 was at 100% power with 21 & 22 SRW pumps running
- 23 SRW pump was aligned per normal operation (electrical & mechanical)
- 22 SRW pump tripped on overcurrent
- A LOOP occurred and 2A & 2B EDG started and energized 21 & 24 4 KV buses

One minute later, which SRW pumps, if any, would be operating? (Assume no operator action)

- A. None
- B. 21 and 23 SRW Pumps
- C. 21 SRW pump only
- D. 23 SRW pump only

Answer: B

Answer Explanation:

- A. Incorrect - SRW Pumps are started by the Shutdown Sequencer (SDS), on a LOOP.
- B. Correct - 23 SRW Pump is normally aligned to 24 4KV Bus and that, with a LOOP, it will start 1 second after sensing the failure of 22 SRW Pump to start.
- C. Incorrect - 23 SRW Pump is normally aligned to 24 4KV Bus and that, with a LOOP, it will start 1 second after sensing the failure of 22 SRW Pump to start.
- D. Incorrect - 21 SRW will start on the SDS, after 21A DG closes in on 21 4KV bus

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 43 Info	
Topic:	SRW Pp response to a LOOP
Tier/Group:	2/1
K/A Info:	076 Service Water System (SWS) <ul style="list-style-type: none">• Knowledge of SWS design feature(s) and/or interlock(s) which provide for the following:<ul style="list-style-type: none">• K4.02 Automatic start features associated with SWS pump controls
RO Importance:	2.9
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input type="checkbox"/> Bank <input checked="" type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	SD-011 SRW System Description
Comments:	Modified version of Q20568

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

44

ID: Q92273

Points: 1.00

Given the following:

- The 1A2-11 Starting Air Receiver is tagged out to repair an air leak
- The 1A1 Starting Air Compressor fails
- 1A1-11 and 1A1-12 Starting Air Receiver pressures are 500 PSIG and slowly lowering

Which **ONE** of the following actions, if any, can be taken to maintain 1A DG operability?

- A. Cross-connect the 1A DG Starting Air and 1B DG Starting Air Systems.
- B. Cross-connect the 1A DG Starting Air and OC DG Starting Air Systems.
- C. No actions can be taken; declare the 1A DG inoperable when the 1A1-11 and 1A1-12 Starting Air Receiver pressures fall below 290 PSIG.
- D. Crosstie the 1A1 and 1A2 Starting Air Systems.

Answer: D

Answer Explanation:

- A. Incorrect – There is no physical means to cross-connect the 1A and 1B DG Starting Air Systems.
- B. Incorrect - There is no physical means to cross-connect the 1A and OC DG Starting Air Systems.
- C. Incorrect - While this action could be considered at some point, the immediate response would be to crosstie the starting air systems.
- D. Correct – The 1A1 and 1A2 Starting Air Systems can be cross tied with either compressor supplying all receivers.

EXAMINATION ANSWER KEY

LOI 2010.NRC RO Exam

Question 44 Info	
Topic:	1A DG Starting Air Receiver Pressure impact on DG operability
Tier/Group:	2/1
K/A Info:	064 Emergency Diesel Generators (ED/G) <ul style="list-style-type: none"> • Knowledge of the effect of a loss or malfunction of the following will have on the ED/G system: <ul style="list-style-type: none"> • K6.07 - Air receivers
RO Importance:	2.7
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	1C188-ALM, 1A DG Local Control Panel Alarm Manual
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

45

ID: Q92270

Points: 1.00

Given the following:

- Unit-1 is operating at 100% power
- Pressurizer Level Control channel 1-LIC-110X is selected
- PZR Heater Low Level Cutout Switch is in the X + Y position
- A leak occurs on the variable leg for 1-LT-110X.

Which **ONE** of the following describes:

- (1) The effect on the plant this condition would cause and;
 - (2) Plant stabilizing actions required to mitigate this event?
- (1) All Back-up Charging Pumps stop, Letdown flow goes to maximum, Pressurizer Heaters energize if in "auto";
(2) Shift to 1-LIC-110Y in service.
 - (1) All Back-up Charging Pumps start, Letdown flow goes to minimum, Pressurizer Heaters deenergize if in "auto" or "on";
(2) Shift to 1-LIC-110Y in service.
 - (1) All Back-up Charging Pumps start, Letdown flow goes to minimum, Pressurizer Heaters energize if in "auto";
(2) Shift to 1-LIC-110X to manual and establish Pzr level control.
 - (1) All Back-up Charging Pumps start, Letdown flow goes to maximum, Pressurizer Heaters deenergize if in "auto" or "on";
(2) Shift to 1-LIC-110Y in service.

Answer: B

Answer Explanation:

- Incorrect - These responses are all opposite of expected response.
- Correct - A leak on the variable leg of a transmitter would cause the indicated level to be lower than the actual level. A lower Pzr level would cause Chg Pumps to start and L/D flow to go to minimum. If indicated level were below 101 inches then the Low Level cutout would deenergize all Pzr heaters.
- Incorrect - Pzr heaters would deenergize.
- Incorrect - L/D flow would go to minimum

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 45 Info			
Topic:	Predict the response to a Pzr Lvl Control channel failure.		
Tier/Group:	1/2		
K/A Info:	028 Pressurizer (PZR) Level Control Malfunction <ul style="list-style-type: none">• 2.4.6 Knowledge of EOP mitigation strategies.		
RO Importance:	3.7		
Proposed references to be provided to applicant:	None		
Learning Objective:	LOI-064A2-1		
10 CFR Part 55 Content:	55.41(b)(10)		
Question source:	<input type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	N/A		
Exam Bank History:	None		
Technical references:	1C06-ALM, RCS Control Alarm Manual		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

46

ID: Q18935

Points: 1.00

During an excess steam demand event, why must unaffected S/G temperature be maintained within 25°F of CET temperature, using its ADV, while blowdown of the affected S/G is in progress?

- A. This minimizes the potential for pressurized thermal shock if a heatup of the RCS occurs following an excessive cooldown of the RCS
- B. This prevents the formation of tube voids, in the affected S/G, after blowdown is complete
- C. This minimizes the RCS cooldown that takes place during blowdown of the affected S/G.
- D. This minimizes differential pressure between the S/Gs thereby preventing an AFAS block on the unaffected S/G.

Answer: A

Answer Explanation:

- A. Correct - See EOP-4 Technical Basis Document, Step IV.H.2 (page 27)
- B. Incorrect - S/G tube voiding is determined by RCS pressure being less than saturation pressure for that S/G, and once B/D is complete S/G pressure will be zero.
- C. Incorrect - RCS cooldown during the blowdown phase is determined by the size of the leak.
- D. Incorrect - AFAS Block will occur, isolating Auxiliary Feedwater flow to the S/G with the lower pressure which is the **affected** S/G.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 46 Info	
Topic:	ESDE unaffected S/G temperature limits
Tier/Group:	2/1
K/A Info:	039 Main and Reheat Steam System (MRSS) <ul style="list-style-type: none"> • K5 Knowledge of the operational implications of the following concepts as they apply to the MRSS: <ul style="list-style-type: none"> • K5.05 Bases for RCS cooldown limits
RO Importance:	2.7
Proposed references to be provided to applicant:	None
Learning Objective:	LOR-020170410-002
10 CFR Part 55 Content:	55.41(b)(5)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	No history of previous use
Technical references:	EOP -4 Technical Basis Document
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

47

ID: Q92290

Points: 1.00

Given the following:

- It is 0230 on a Saturday morning
- 21 125V DC Bus has an existing positive ground.

Which **ONE** of the following statements best describes:

- (1) What could occur if a negative ground develops on 21 125V DC Bus and;
(2) What actions, if any, are required?

- A. (1) Low voltage on system causing an undervoltage trip of 125V DC Bus feeder breakers;
(2) Initiate maintenance to troubleshoot and correct issue
- B. (1) Nothing will be detected, ungrounded systems can withstand multiple grounds with no adverse effects;
(2) No actions are required.
- C. (1) Loss of a 125V DC Battery Charger;
(2) Place the Reserve Battery Charger in service.
- D. (1) High current flow, caused by the second ground, can cause fuses to blow or protective devices to actuate;
(2) Initiate maintenance to troubleshoot and correct issue

Answer: D

Answer Explanation:

- A. Incorrect - DC loads are protected by fused disconnects with fuse ratings that would protect against a battery drain of sufficient magnitude to lower DC Bus voltage.
- B. Incorrect - Ungrounded systems can withstand multiple grounds on the same phase with no affect, the question stem gives a positive and a negative ground. Maintenance is required to eliminate the grounds.
- C. Incorrect - Depending on the location of the grounds it would be possible to cause a battery charger to trip off, however, the reserve battery charger would not/could not be placed in-service to replace the tripped one.
- D. Correct - A second ground on the opposite phase creates phase-to-phase fault. Uncertainty of operation if second ground occurs (component actuation)

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 47 Info	
Topic:	Effect of a ground on an ungrounded system
Tier/Group:	2/1
K/A Info:	<p>063 DC Electrical Distribution System</p> <ul style="list-style-type: none"> A2 Ability to (a) predict the impacts of the following malfunctions or operations on the DC electrical systems; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: A2.01 Grounds
RO Importance:	2.5
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(5)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	Ground Training PPT
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

48

ID: Q92310

Points: 1.00

You are the Unit-1 CRO. With Unit-1 operating at 100% power, a containment entry is scheduled to obtain Safety Injection Tank Boron samples.

Which **ONE** of the following is your responsibility upon receipt of the "U-1 CNTMT AIRLOCK" alarm?

- A. Ensure lighting panel breakers are shut as needed.
- B. Ensure only one charging pump is in operation.
- C. Ensure the containment entry is logged.
- D. Notify the Work Week Manager of specific time the containment airlock is breached and of the need for the door seal pressure test.

Answer: C

Answer Explanation:

- A. Incorrect - Per NO-1-104, CONTAINMENT ACCESS, Attachment 2, this is the responsibility of Radiation Protection
- B. Incorrect - Per NO-1-104, CONTAINMENT ACCESS, Attachment 2, this is the responsibility of Radiation Protection
- C. Correct - Per 1C33-ALM, WASTE PROCESSING SYSTEM ALARM MANUAL, Window T-09, this is the correct response
- D. Incorrect - Per NO-1-104, CONTAINMENT ACCESS, Attachment 1, this is the responsibility of the OWC/CRS

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 48 Info	
Topic:	Personnel Airlock Monitoring
Tier/Group:	2/1
K/A Info:	103 Containment System <ul style="list-style-type: none"> • A4 Ability to manually operate and/or monitor in the control room: • A4.06 Operation of the containment personnel airlock door
RO Importance:	2.7
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	1C33-ALM, Waste Processing Alarm Manual; NO-1-104, Containment Access
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

49

ID: Q26551

Points: 1.00

Given the following:

- RCS Tcold is 530 °F and constant
- RCS Pressure is 1550 PSIA and lowering slowly
- Pressurizer Level is 75 inches and lowering slowly
- Containment Rad Monitors are Clear
- Condenser Off-Gas Alarm has actuated

Which **ONE** of these indications is the best confirmation of a S/G tube leak?

- A. Containment Rad Monitors alarms being clear
- B. RCS T_{COLD} is normal and not lowering
- C. RCS subcooling is slowly lowering
- D. Receipt of the condenser off-gas alarm

Answer: D

Answer Explanation:

- A. Incorrect - absence of Containment Radiation monitor alarms does nothing to confirm a S/G tube leak
- B. Incorrect - normal Tcold does not confirm a S/G tube leak
- C. Incorrect - loss of subcooling can be indicative of a LOCA and is not unique to S/G tube leaks
- D. Correct - EOP-6 Technical Basis document step IV.J

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 49 Info			
Topic:	Indication of a SGTR vice LOCA		
Tier/Group:	2/1		
K/A Info:	073 Process Radiation Monitoring (PRM) System <ul style="list-style-type: none">• 2.4.18 Knowledge of the specific bases for EOPs.		
RO Importance:	3.3		
Proposed references to be provided to applicant:	Steam Tables		
Learning Objective:	SRO-201-6-1-01		
10 CFR Part 55 Content:	55.41(b)(10)		
Question source:	<input checked="" type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	No record of use on an NRC exam		
Exam Bank History:	Last used – LOI 2008 AOP / EOP Exam (April, 2010)		
Technical references:	EOP-6 Technical Basis document step IV.J		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

50

ID: Q92631

Points: 1.00

Unit-2 is operating at 100% power when an emergent issue requires ESFAS Logic cabinet "BL" be deenergized.

What effect, if any, will this condition have on the Reactor Protective System and/or Main Turbine Trips?

- A. A Reactor trip will not cause a Turbine trip.
- B. The RPS / Turbine trip interface will function normally.
- C. Turbine trip logic is reduced to 2 / 2 Reactor Trip Bus U/V relay actuations.
- D. 2/4 RPS trips on Loss of Load will cause a Turbine trip.

Answer: A

Answer Explanation:

- A. Correct - Per OI-34, Engineered Safety Features Actuation System, Appendix "A": De-energization of the BL Actuation Logic Cabinet renders the Reactor Trip Bus UV turbine trips inoperable.
- B. Incorrect - Per OI-34, Engineered Safety Features Actuation System, Appendix "A": De-energization of the BL Actuation Logic Cabinet renders the Reactor Trip Bus UV turbine trips inoperable.
- C. Incorrect - Per OI-34, Engineered Safety Features Actuation System, Appendix "A": De-energization of the BL Actuation Logic Cabinet renders the Reactor Trip Bus UV turbine trips inoperable.
- D. Incorrect - The reactor will trip on a 2/4 logic caused by a turbine trip.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 50 Info			
Topic:	RPS / TG		
Tier/Group:	2/1		
K/A Info:	012 - System 012 Reactor Protection System <ul style="list-style-type: none">• K3 - Knowledge of the effect that a loss or malfunction of the RPS will have on the following:<ul style="list-style-type: none">• K3.02 - T/G		
RO Importance:	3.2		
Proposed references to be provided to applicant:	None		
Learning Objective:			
10 CFR Part 55 Content:	55.41(b)(7)		
Question source:	<input type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	N/A		
Exam Bank History:	None		
Technical references:	OI-34, Engineered Safety Features Actuation System		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

51

ID: Q92630

Points: 1.00

The RCS is in a solid water condition, in preparation for drawing a Pressurizer bubble per OP-7, when an RCS overpressure condition occurs. The dedicated overpressurization watch should:

- A. Deenergize the Pressurizer heaters
- B. Open the PORV Block Valves
- C. Lower the Pressurizer pressure controller setpoint.
- D. Stop the operating LPSI pumps

Answer: A

Answer Explanation:

- A. Correct - Pressurizer heaters are energized to heatup the Pressurizer in preparation for drawing a Pressurizer bubble. Securing the Pressurizer heaters terminates the Pressurizer heatup and associated pressure increase.
- B. Incorrect - The Block valves are open. Opening the Block valves, in and of itself, does nothing to terminate the pressure increase.
- C. Incorrect - Minimum setpoint on the Pzr Pressure Controller is 1500 PSIA, Pzr pressure when drawing a bubble is approx 150 PSIA.. therefore adjusting the setpoint lower would have no effect.
- D. Incorrect – Stopping both LPSI Pumps would initiate a Loss of SDC..

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 51 Info			
Topic:	Actions for an overpressure condition when drawing a bubble in the Pressurizer		
Tier/Group:	2/1		
K/A Info:	010 Pressurizer Pressure Control System <ul style="list-style-type: none">2.2.2 - Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.		
RO Importance:	4.6		
Proposed references to be provided to applicant:	None		
Learning Objective:	OP-7-1		
10 CFR Part 55 Content:	55.41(b)(7)		
Question source:	<input type="checkbox"/> Bank	<input checked="" type="checkbox"/> Modified	<input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	N/A		
Exam Bank History:	None		
Technical references:	OP-7, Shutdown Operations		
Comments:	Modified version of Q25954		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

52

ID: Q92312

Points: 1.00

Given the following:

- A dual Unit SBO occurred 15 minutes ago
- No DGs are running/loaded
- Offsite power has yet to be restored

Which ONE of the following statements correctly describes power availability to instrumentation and controls?

- A. Only 120V Vital AC Bus loads remain energized
- B. Only 125V Vital DC Bus loads remain energized
- C. All 120V Vital AC and 125V Vital DC Bus loads remain energized
- D. Select 120V Vital AC and 125V Vital DC loads remain energized

Answer: C

Answer Explanation:

- A. Incorrect – 125V Vital DC loads will remain energized as well
- B. Incorrect - 120V Vital AC loads will remain energized as well
- C. Correct - The 120V Vital AC busses are supplied by the 125V DC batteries via their respective inverters. All 120V Vital AC and 125V Vital DC loads will remain energized until the batteries die. Batteries are rated for a nominal 4 hours
- D. Incorrect - All 120V Vital AC and 125V Vital DC loads will remain energized until the batteries die.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 52 Info	
Topic:	DC powered loads available during a SBO
Tier/Group:	1/1
K/A Info:	<p>055 Loss of Offsite and Onsite Power (Station Blackout)</p> <ul style="list-style-type: none"> EA2 Ability to determine or interpret the following as they apply to a Station Blackout: EA2.04 Instruments and controls operable with only dc battery power available
RO Importance:	3.7
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(10)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	EOP-7, Station Blackout
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

53

ID: Q20053

Points: 1.00

RPS Channel "A" experiences a loss of power causing Wide Range Nuclear Instrumentation (WRNI) flux trip relays 1 & 2 to fail to greater than 10^{-4} % power.

Which **ONE** of the following describes the impact to RPS Channel "A"?

- A. SUR trip is enabled.
- B. Zero Power Mode Bypass is enabled.
- C. CEAPDS PDIL is inhibited.
- D. TM/LP signal to CWP is inhibited.

Answer: A

Answer Explanation:

- A. Correct – The Flux Trip 2 relay fails to $>E-4\%$ on a loss of power, enabling SUR trip.
- B. Incorrect – The Flux Trip 1 relay t fails to $>E-4\%$ on a loss of power, removing the Zero Power Mode Bypass.
- C. Incorrect - The Flux Trip 1 relay t fails to $>E-4\%$ on a loss of power, inhibiting the CEAPDS PDIL.
- D. Incorrect – The Flux Trip 1 relay fails to $>E-4\%$ on a loss of power, enabling the TM/LP signal to CWP.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 53 Info	
Topic:	Effects on loss of power to the W.R. flux trip relays 1 & 2
Tier/Group:	1/2
K/A Info:	032 Loss of Source Range Nuclear Instrumentation <ul style="list-style-type: none">AK2. Knowledge of the interrelations between the Loss of Source Range Nuclear Instrumentation and the following:AK2.01 Power supplies, including proper switch positions
RO Importance:	2.7
Proposed references to be provided to applicant:	None
Learning Objective:	CRO-57-1-5-09
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use – LOI 2008 Nuclear Instrumentation Exam (May, 2009)
Technical references:	SD-078A, Nuclear Instrumentation
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

54

ID: Q19395

Points: 1.00

If, during a feed system auto transfer from low to high power, Reactor power reaches 19% before the FBV signal reaches 40% which of the following will occur?

- A. FRV position freezes with FBV controlling
- B. FBV position freezes, FRV controls, and the FBV must be manually driven shut.
- C. Transfer is completed with feed system in High power mode
- D. Transfer is completed with feed system in low power mode.

Answer: C

Answer Explanation:

- A. Incorrect - FRV would only "freeze" if there were a Transfer Inhibit Signal present. Also, in the High Power Mode the FRV is controlling S/G Level.
- B. Incorrect - FRV Bypass would only "freeze" if there were a Transfer Inhibit Signal present. Also, in the High Power Mode the FRV is controlling S/G Level. FRV Bypass is only manually driven shut when performing a Manual Transfer.
- C. Correct - System shifts to High Power Mode between 17 & 19%
- D. Incorrect - System will be in High Power Mode at 19%, shifts to Low Power between 15 & 13% (Transfer is forced to completion at 13%)

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 54 Info	
Topic:	DFWCS transfer from low to high power
Tier/Group:	2/2
K/A Info:	035 Steam Generator System (SGS) <ul style="list-style-type: none"> • A3 Ability to monitor automatic operation of the S/G including: • A3.01 S/G water level control
RO Importance:	4.0
Proposed references to be provided to applicant:	None
Learning Objective:	LOR-32-1-96-06
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use – 2004 LOR Quiz
Technical references:	SD-045A, Main Feedwater System Description
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

55

ID: Q92830

Points: 1.00

Given the following conditions:

- Unit-2 is operating at 100% power
- A Loss of Offsite Power occurs coincident with a LOCA
- The 2B DG fails to start

Which ONE of the following groups of components will operate in response to the stated conditions?

- A. 21 Containment Air Cooler;
22 Charging Pump;
21 Component Cooling Water Pump
- B. 21 Charging Pump;
22 Containment Filter;
23 Component Cooling Water Pump
- C. 23 Containment Filter;
23 Containment Air Cooler;
21 Component Cooling Water Pump
- D. 23 Charging Pump;
21 Containment Filter;
22 Containment Air Cooler;

Answer: D

Answer Explanation:

- A. Incorrect – 22 Charging Pump is aligned to 480V Bus 24
- B. Incorrect - 22 IRU is aligned to 480V Bus 24
- C. Incorrect - 23 CAC is aligned to 480V Bus 24
- D. Correct – These loads are normally aligned to 21 480V bus and would receive start signals as the LOCI Sequencer went through its progression

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 55 Info	
Topic:	U-2 IRU Power Supplies
Tier/Group:	2/2
K/A Info:	027 - Containment Iodine Removal System (CIRS) <ul style="list-style-type: none">• K2 Knowledge of bus power supplies to the following:<ul style="list-style-type: none">• K2.01 Fans
RO Importance:	3.1
Proposed references to be provided to applicant:	None
Learning Objective:	CRO-7-1-5-85
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	OI-27D-2 Station Power 480 Volt System Breaker Lineup
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

56

ID: Q14531

Points: 1.00

Unit-2 is operating normally at 80% reactor power when a Letdown line leak occurs immediately upstream of the Containment penetration.

Which set of the following automatic features could actuate to promptly terminate this event?

1. High Regenerative HX outlet temperature
 2. Chemical Volume Control Isolation Signal (CVCIS)
 3. Containment Isolation Signal (CIS)
 4. Excess Flow Check Valve shuts
-
- A. 1, 2
 - B. 3, 4
 - C. 1, 4
 - D. 2, 3

Answer: C

Answer Explanation:

- A. Incorrect - CVCIS would not actuate on a Letdown line break in the Containment.
- B. Incorrect - CIS does not promptly provide a shut signal to the Letdown Stops to terminate the event.
- C. Correct - Per 2C07-ALM, 2-CVC-515-CV will automatically close on a High Regenerative Heat Exchanger outlet temperature of 470 °F and the Excess Flow Check valve will shut at ~ 200 GPM to isolate a break..
- D. Incorrect - CIS does not promptly provide a shut signal to the Letdown Stops to terminate the event.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 56 Info			
Topic:	Plant response to a L/D line break in the West Pen Rm		
Tier/Group:	1/2		
K/A Info:	Combustion Engineering A16 Excess RCS Leakage <ul style="list-style-type: none"> • AK2. Knowledge of the interrelations between the (Excess RCS Leakage) and the following: •AK2.1 Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features. 		
RO Importance:	3.2		
Proposed references to be provided to applicant:	None		
Learning Objective:			
10 CFR Part 55 Content:	55.41(b)(7)		
Question source:	<input checked="" type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	No record of use on an NRC exam		
Exam Bank History:	Last use – LOI 2006 Panel Exam		
Technical references:	AOP-2A, Excessive Reactor Coolant Leakage; 1C08-ALM, ESFAS 11 Alarm Manual (Windows G-17 & G-18) ; 1C07-ALM, Chemical and Volume Control Alarm Manual (Window F-01)		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

57

ID: Q92350

Points: 1.00

Unit-2 is at 100% power MOC when a load rejection occurs causing RCS pressure to rise to 2420 PSIA, resulting in a reactor trip. RCS pressure has since lowered to 2185 PSIA with a lowering trend. The PORVs indicate open and the Acoustic Monitors indicate flow.

Which **ONE** of the following lists **ALL** the actions directed by EOP-0 for responding to the open PORVs?

- A. Place the PORV Override handswitches in the "Override To Close" position. Verify the Pressurizer Spray valves closed and Pressurizer Heaters energized.
- B. Close the PORV block MOVs once the high pressure condition clears. Verify the Pressurizer Spray valves closed and Pressurizer Heaters energized.
- C. Isolate Letdown due to PORV leakage. Verify the Pressurizer Spray valves closed and Pressurizer Heaters energized. Place the PORV Override handswitches in the "Override To Close" position.
- D. Shut the PORV Block valves and place the PORV Override handswitches in the "Override To Close" position. Verify the Pressurizer Spray valves closed and Pressurizer Heaters energized.

Answer: D

Answer Explanation:

- A. Incorrect – With pressure lowering due to PORV leakage, the PZR spray valves must be verified closed, the heaters must be verified energized, the PORV block MOV must be verified closed, and the PORV Override HS must be placed in "Override to Close". Not all of the required actions are included in this answer.
- B. Incorrect - With pressure lowering due to PORV leakage, the PZR spray valves must be verified closed, the heaters must be verified energized, the PORV block MOV must be verified closed, and the PORV Override HS must be placed in "Override to Close". Not all of the required actions are included in this answer.
- C. Incorrect - With pressure lowering due to PORV leakage, the PZR spray valves must be verified closed, the heaters must be verified energized, the PORV block MOV must be verified closed, and the PORV Override HS must be placed in "Override to Close". Not all of the required actions are included in this answer. In addition, PZR level would be recovering as a result of the trip and the fact that the PORVs are leaking would also allow PZR level to rise which would not require letdown to be isolated.
- D. Correct - With pressure lowering due to PORV leakage, the PZR spray valves must be verified closed, the heaters must be verified energized, the PORV block MOV must be verified closed, and the PORV Override HS must be placed in "Override to Close".

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 57 Info	
Topic:	Controlling PORV Leakage
Tier/Group:	1/1
K/A Info:	<p>008 Pressurizer (PZR) Vapor Space Accident (Relief Valve Stuck Open)</p> <ul style="list-style-type: none"> • AA1. Ability to operate and / or monitor the following as they apply to the Pressurizer Vapor Space Accident: • AA1.06 Control of PZR level
RO Importance:	3.6
Proposed references to be provided to applicant:	None
Learning Objective:	LOR-058-1-01
10 CFR Part 55 Content:	
Question source:	<input type="checkbox"/> Bank <input checked="" type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	EOP-0, Post Trip Immediate Actions
Comments:	Modified version of Q19362

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

58

ID: Q92351

Points: 1.00

With the Unit operating at 100%, which of the following conditions would cause **ONLY** Trip Units 7 and 10 to trip on RPS Channel "A"?

- A. Loss of a Channel "A" Linear Range Nuclear Instrumentation subchannel (fails to zero)
- B. Loss of the Channel "A" Wide Range Nuclear Instrumentation channel HV power supply
- C. Loss of a single Channel "A" T_{COLD} input (fails low)
- D. Loss of a single Channel "A" T_{HOT} input (fails high)

Answer: A

Answer Explanation:

- A. Correct - Loss of a Channel "A" LRNI sub channel (upper or lower) would cause indicated NI power to go to approximately 50% resulting in trips on Trip Units 7 (TM/LP) and 10 (APD) (because the calculated ASI is extremely high).
- B. Incorrect - Loss of the WRNI HV power supply, while causing alarms and abnormal indications, would not cause actuation of any trip units
- C. Incorrect - The T_{COLD} inputs to the RPS channel are auctioneered high. Loss of a single Tcold measurement channel would not cause actuation of any trip units
- D. Incorrect - The T_{HOT} inputs to the RPS channel are averaged. A single Thot measurement channel, failing high, will result in an indicated DeltaT power of approximately 180%. This will cause Trip Units 1 (Hi Pwr), 7 (TM/LP), & 10 (APD) to trip in addition to causing multiple alarms.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 58 Info	
Topic:	LRNI Subchannel failure
Tier/Group:	2/2
K/A Info:	015 - Nuclear Instrumentation System <ul style="list-style-type: none">• K6 - Knowledge of the effect of a loss or malfunction on the following will have on the NIS:<ul style="list-style-type: none">• K6.01 - Sensors, detectors, and indicators
RO Importance:	2.9
Proposed references to be provided to applicant:	None
Learning Objective:	LOI-78A-1-2
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	1C05-ALM, Reactivity Control Alarm Manual; 1C06-ALM, RCS Control Alarm Manual
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

59

ID: Q92371

Points: 1.00

A reactor startup is in progress on Unit-2. Shutdown CEAs are ARO and Group 3 CEAs are at 60" withdrawn. The ECC was calculated for going critical at 90" withdrawn on Group 4. The lower bound is Group 4 at 28".

While recommencing the withdrawal of Group 3, Chemistry reports that the most recent RCS boron sample indicates boron has unexpectedly decreased by 30 ppm. This was validated by analyzing a second sample with the same results.

The appropriate Abnormal Operating Procedure has been implemented. Boration of the RCS is desired.

Which **ONE** of the following methods is **MOST** preferred for accomplishing this task?

- A. Borate from the RWT
- B. Borate from the BASTs using a Boric Acid Pump directly to the Charging Pump suction.
- C. Borate from the BASTs using the Gravity Feed valve(s)
- D. Borate from the BASTs using the Borate Makeup Mode (CVCS) to the VCT.

Answer: B

Answer Explanation:

- A. Incorrect - AOP-1A list eight methods of boration arranged in order of preference specifying the method used should be based on equipment availability. Boration from the RWT is third on the list.
- B. Correct - AOP-1A list eight methods of boration arranged in order of preference specifying the method used should be based on equipment availability. Boration from the BASTs using Boric Acid Pump(s) is first on the list.
- C. Incorrect - AOP-1A list eight methods of boration arranged in order of preference specifying the method used should be based on equipment availability. Boration from the BASTs using the Gravity Feed valve(s) is second on the list.
- D. Incorrect - AOP-1A list eight methods of boration arranged in order of preference specifying the method used should be based on equipment availability. Boration via normal makeup to the VCT is not listed

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 59 Info	
Topic:	AOP-1A, preferred boration methodology
Tier/Group:	2/1
K/A Info:	004 Chemical and Volume Control System (CVCS) <ul style="list-style-type: none">• A4 Ability to manually operate and/or monitor in the control room:• A4.10 Boric acid pumps
RO Importance:	3.6
Proposed references to be provided to applicant:	None
Learning Objective:	LOR 202-1A1B-S-07
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input type="checkbox"/> Bank <input checked="" type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	AOP-1A, Inadvertent Boron Dilution (Att 1)
Comments:	Modified version of Q44930

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

60

ID: Q92372

Points: 1.00

Unit-1 was operating at 100% power when a LOCA occurred. The following conditions exist:

- RCS pressure is 1400 PSIA and slowly lowering
- Containment Pressure is 1.8 PSIG and slowly rising
- EAST ECCS PP RM LVL HI alarm has annunciated on 1C10.
- The ABO reports water level in the East ECCS Pp Room is approximately 10 inches and rising and the source appears to be in the area of the LPSI pump.
- 11 RWT LVL / TEMP Alarm has annunciated on 1C09

(1) What actions must be taken to address these conditions and;
(2) What impact will these actions have on the performance of the Emergency Core Cooling System?

- A. (1) Place 12 LPSI pump, 13 HPSI pump and 12 Containment Spray Pump handswitches in PTL and shut the associated RWT Outlet;
(2) ECCS flow is reduced to approximately one-half, heat removal capability remains sufficient.
- B. (1) Place 11 LPSI pump, 11 HPSI pump, 12 HPSI pump and 11 Containment Spray Pump handswitches in PTL and shut the associated RWT Outlet;
(2) ECCS flow is reduced to approximately one-half, heat removal capability is inadequate.
- C. (1) Place 11 LPSI pump, 11 HPSI pump, 12 HPSI pump and 11 Containment Spray Pump handswitches in PTL and isolate Component Cooling to ECCS Pump Room components;
(2) ECCS flow is reduced to approximately one-half, heat removal capability remains sufficient.
- D. (1) Place 11 LPSI pump, 11 HPSI pump, 12 HPSI pump and 11 Containment Spray Pump handswitches in PTL and shut the associated RWT Outlet;
(2) ECCS flow is reduced to approximately one-half, heat removal capability remains sufficient.

Answer: D

Answer Explanation:

- A. Incorrect - These pumps are located in the West ECCS Pump Room
- B. Incorrect - Heat removal capability of one SI train meets design criteria.
- C. Incorrect - With given indications the leak is from the RWT (low level alarm with RCS pressure still above pump shutoff head and Containment pressure below CSAS actuation) not from CC (no head tank level alarm, or low pressure).
- D. Correct - With given indications the leak is from the RWT (low level alarm with RCS pressure still above pump shutoff head and Containment pressure below CSAS actuation). Pumps taking a suction from the RWT need to be secured to prevent damage. RWT outlet needs to be shut, to isolate the leak.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 60 Info	
Topic:	Loss of ECCS flowpath
Tier/Group:	2/1
K/A Info:	006 Emergency Core Cooling System (ECCS) <ul style="list-style-type: none">• A2 Ability to (a) predict the impacts of the following malfunctions or operations on the ECCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:• A2.02 Loss of flow path
RO Importance:	3.9
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(5)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	1C10-ALM
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

61

ID: Q92390

Points: 1.00

You are the Unit-1 CRO. 12 RCWMT is being discharged. Upon receiving a "LIQUID WASTE DISCH" (O-RIC-2201) high radiation monitor alarm:

- (1) What automatic action occurs and;
 - (2) What immediate follow-up action is needed?
- A. (1) Liquid Waste Discharge valves, 0-MWS-2201 and 0-MWS-2202 five minute automatic shut timer initiates;
(2) Verify the 0-MWS-2201 and 0-MWS-2202 shut if high alarm not cleared within five minutes.
 - B. (1) Liquid Waste Discharge valves, 0-MWS-2201 and 0-MWS-2202 automatically shut;
(2) Verify 0-MWS-2201 and 0-MWS-2202 shut and place the Liquid Waste Discharge CV handswitches to shut.
 - C. (1) Liquid Waste Discharge valve 0-MWS-2202 automatically shuts and 0-MWS-2201 remains open;
(2) Flush the Discharge Radiation Monitor (O-RE-2201) with DI Water.
 - D. (1) Liquid Waste Discharge valve 0-MWS-2201 automatically shuts and 0-MWS-2202 remains open;
(2) Stop the pump that was being used for the discharge.

Answer: B

Answer Explanation:

- A. Incorrect - No such thing as five minute timer; valves shut immediately.
- B. Correct - Per 1C22 AM, WINDOW D-3.2: IF the Liquid Waste Discharge RMS Monitor alarms during a release, THEN SECURE the Liquid Waste Discharge.
(1) IF the Liquid Waste Discharge RMS Monitor alarms HIGH, THEN VERIFY LQD WASTE DISCH valves, 0-MSW-2201-CV and 0-MWS-2202-CV, SHUT.
(2) PLACE the LIQ WASTE DISCH valves handswitches to SHUT:
- C. Incorrect - Both Liquid Waste Discharge valves shut. 0-MSW-2201-CV is opened when the Liquid Waste Discharge RMS Monitor is flushed per the OI.
- D. Incorrect - Both Liquid Waste Discharge valves shut.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 61 Info	
Topic:	Automatic and follow-up actions on Liquid Waste Discharge (O-RE-2201) High Alarm
Tier/Group:	2/2
K/A Info:	068 Liquid Radwaste System (LRS) <ul style="list-style-type: none">• A4 Ability to manually operate and/or monitor in the control room:• A4.04 Automatic isolation
RO Importance:	3.8
Proposed references to be provided to applicant:	None
Learning Objective:	CRO-122-1-3-24
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input type="checkbox"/> Bank <input checked="" type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	1C22-ALM
Comments:	Modified version of Q24720

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

62

ID: Q28783

Points: 1.00

What action is taken, by the Unit 2 CRO, to prevent an uncontrolled cooldown, in the event of an uncomplicated reactor and turbine trip?

- A. Depress the "Reset" button on the MSR control panel.
- B. Ensure both 2nd stage steam source MOVs shut.
- C. Shut upstream drain MOVs.
- D. Shut the Main Steam Isolation Valves.

Answer: A

Answer Explanation:

- A. Correct - Per U-2 EOP-0 step D.3 basis
- B. Incorrect - This would be the proper action for U-1
- C. Incorrect - There is no direction to shut Upstream drain valves in EOP-0 and leaking drain valves will have a small effect on RCS temperature immediately after a trip,
- D. Incorrect - This is a mitigating action taken if there is an excessive cooldown in progress such that S/G pressure falls below 800#

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 62 Info			
Topic:	Preventing an uncontrolled cooldown on a U-2 Rx trip		
Tier/Group:	2/2		
K/A Info:	045 Main Turbine Generator (MT/G) System <ul style="list-style-type: none">A1 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MT/G system controls including:A1.06 Expected response of secondary plant parameters following T/G trip		
RO Importance:	3.3		
Proposed references to be provided to applicant:	None		
Learning Objective:	SRO-201-0/10.0		
10 CFR Part 55 Content:	55.41(b)(5)		
Question source:	<input checked="" type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	No record of use on an NRC exam		
Exam Bank History:	Last use – LOI 2008 OP, AOP-3B, EOP-0 & EOP-1 Exam (Nov, 2009)		
Technical references:	EOP-0 Technical Basis Document		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

63

ID: Q92410

Points: 1.00

A sustained loss of Spent Fuel Pool Cooling has occurred. The appropriate procedure has been implemented.

Which **ONE** of the following is an action taken to mitigate the potential effects of a fission product release?

- A. Place a second Spent Fuel Pool Exhaust fan in operation.
- B. Secure the Control Room Heating and Ventilation system.
- C. Place a second Main Exhaust fan in operation on each unit.
- D. Verify a Main Exhaust Fan and Aux Bldg & WP Exh Fan running on each unit.

Answer: D

Answer Explanation:

- A. Incorrect - Per AOP - 6F, A.7.d. Maintain a negative pressure in the Fuel Handling Area by checking that **ONE** of the SFP EXH FANS is running:
- B. Incorrect - Per AOP - 6F, 8. Place the Control Room Ventilation System in the recirculation mode.
- C. Incorrect - Per AOP - 6F, A.7. Maintain a negative pressure in the Auxiliary Building.
a. Check that **ONE** of the MAIN EXH FANS on each unit is running:
- D. Correct - A.7. Maintain a negative pressure in the Auxiliary Building.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 63 Info	
Topic:	Sustained loss of SFP Clg impact on ventilation systems
Tier/Group:	2/2
K/A Info:	033 Spent Fuel Pool Cooling System (SFPCS) <ul style="list-style-type: none">• K3 Knowledge of the effect that a loss or malfunction of the Spent Fuel Pool Cooling System will have on the following:<ul style="list-style-type: none">• K3.01 Area ventilation systems
RO Importance:	2.6
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	AOP-6F, Spent Fuel Pool Cooling System Malfunctions
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

64

ID: Q17576

Points: 1.00

Which one of the following is the basis for maintaining the specified Pressurizer level band in EOP-0?

- A. Adequate inventory is maintained as required by tech specs.
- B. The Pressurizer Heaters remain covered and solid water operations are avoided.
- C. The Core and RCS Heat Removal Safety Function will not be challenged.
- D. Ensures the steam bubble is of sufficient volume to avoid large pressure swings during small in or out surges and the bubble is maintained in the Pzr.

Answer: B

Answer Explanation:

- A. Incorrect – The EOP-0 Pressurizer Level band, of 80 - 180 inches, is significantly different from the T. S. Level band of 133 - 225 inches.
- B. Correct - Per EOP-0 Technical Basis; this will ensure that Pressurizer heaters remain covered and solid water operations are avoided.
- C. Incorrect - While this is a true statement, Pzr level being outside this band does by not by itself mean HR will be challenged.
- D. Incorrect - This is a benefit of maintaining the band, however major concern is solid water operations and insurges causing pressure spikes above Safety Limits.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 64 Info	
Topic:	EOP-0 Pzr lvl band basis
Tier/Group:	2/2
K/A Info:	002 Reactor Coolant System (RCS) <ul style="list-style-type: none">• K4 Knowledge of RCS design feature(s) and/or interlock(s) which provide for the following:<ul style="list-style-type: none">• K4.07 Contraction and expansion during heatup and cooldown.
RO Importance:	3.1
Proposed references to be provided to applicant:	None
Learning Objective:	SRO-201-0-3-09
10 CFR Part 55 Content:	55.41(b)(7)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	No history of previous use
Technical references:	EOP-0 Technical Basis Document
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

65

ID: Q25808

Points: 1.00

Unit-2 is stable at 70% power when #22 MFRV starts to open in automatic causing #22 S/G level to rise. The RO reports that SGFP speed is rising as the MFRV opens.

What is the **initial** operator response to restore #22 S/G level to normal?

- A. Place #22 SGFP speed controller in manual and attempt to restore normal S/G level.
- B. Pin #22 MFRV and control position locally to restore normal S/G level.
- C. Shift the SGFPs to the OCS Direct Governor Valve mode of control and lower governor valve position 5%.
- D. Place #22 MFRV controller to manual and attempt to restore S/G level to normal.

Answer: D

Answer Explanation:

- A. Incorrect - SGFP speed signal is a function of the FRV controller output, thus taking manual control of #22 SGFP speed would not stop #22 FRV from opening further, nor #21 SGFP speed from rising.
- B. Incorrect - PER AOP - 3G; IF the FRV can NOT be controlled using the S/G FW REG CONTROL MAIN AND the FRV must be pinned to allow repairs to safely operated the Unit OR allow a safe shutdown of the Unit, THEN... Thus other actions to gain control must be taken first.
- C. Incorrect - This action would not stop #22 FRV from opening further,
- D. Correct - Per 2C03-ALM, IF Feedwater Regulating System malfunctions, THEN TAKE manual control as appropriate AND IMPLEMENT AOP-3G, MALFUNCTION OF MAIN FEEDWATER SYSTEM. Per OP-3; the following control systems are in AUTOMATIC or in MANUAL if the automatic functions normally performed by the control system are performed by an operator: Steam Generator level is being maintained by automatic control of the Main Feedwater Regulating System at approximately zero inches. Per AOP-3G; 1. IF a S/G level can NOT be maintained less than (+) 30 inches, THEN minimize feedwater flow: a. Lower SGFP SPEED with the HIC or Operator Control Station (OCS). b. Place the affected S/G FW REG CONTROL MAIN in MANUAL, and shut the FRV.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 65 Info			
Topic:	#12 MFRV fails open in automatic		
Tier/Group:	Generic K & A		
K/A Info:	2.4 Emergency Procedures / Plan <ul style="list-style-type: none">2.4.4 Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.		
RO Importance:	4.5		
Proposed references to be provided to applicant:	None		
Learning Objective:	AOP-3G-01		
10 CFR Part 55 Content:	55.41(b)(10)		
Question source:	<input checked="" type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	No record of use on an NRC exam		
Exam Bank History:	Last use – LOI 2006 Panel Exam		
Technical references:	2C03-ALM; AOP-3G, Malfunction of Main Feedwater System		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

66

ID: Q55020

Points: 1.00

Given the following conditions:

A reactor trip has occurred. Upon completion of EOP-0, the CRS determines that entry to EOP-8, Functional Recovery Procedure, is required. Safety Function "A" was not met in EOP-0. An additional Safety Function, Safety Function "B", is not met in EOP-8.

Which **ONE** of the following describes the requirements for implementation of EOP-8 in accordance with NO-1-201, Conduct of Operations?

- A. Actions to restore Safety Functions "not met" are initiated **ONLY** after all Success Paths have been determined.
- B. Actions to restore Safety Functions are initiated immediately upon identification that a Success Path acceptance criteria is not met. Safety Function "A" has priority over Safety Function "B".
- C. Actions to restore Safety Functions are initiated immediately upon identification that a Success Path acceptance criteria is not met. Safety Function "B" has priority over Safety Function "A".
- D. Actions to address all Safety Functions are initiated **ONLY** after all Success Paths have been determined.

Answer: C

Answer Explanation:

- A. Incorrect - "If the Safety Function Acceptance Criteria are determined to be not met for a given Success Path, the CRS shall ensure that the Recovery Actions for that Success Path are **immediately** implemented by the corresponding panel operator."
- B. Incorrect – EOP-8, Step IV.F.3. States priority for implementing Recovery Actions is: (1) Those Safety Functions not meeting EOP-8 acceptance criteria; (2) Those Safety Functions not meeting EOP-0 and Optimal Recovery Procedure acceptance criteria; and (3) All remaining Safety Functions.
- C. Correct - EOP-8, Step IV.F.3. States priority for implementing Recovery Actions is: (1) Those Safety Functions not meeting EOP-8 acceptance criteria; (2) Those Safety Functions not meeting EOP-0 and Optimal Recovery Procedure acceptance criteria; and (3) All remaining Safety Functions.
- D. Incorrect - "If the Safety Function Acceptance Criteria are determined to be not met for a given Success Path, the CRS shall ensure that the Recovery Actions for that Success Path are **immediately** implemented by the corresponding panel operator."

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 66 Info			
Topic:	NO-1-201 Guidelines for implementation of EOP-8		
Tier/Group:	Generic K & A		
K/A Info:	2.4 Emergency Procedures / Plan <ul style="list-style-type: none"> • 2.4.14 Knowledge of general guidelines for EOP usage. 		
RO Importance:	3.8		
Proposed references to be provided to applicant:	None		
Learning Objective:	LOI-201-8-8		
10 CFR Part 55 Content:	55.41(b)(10)		
Question source:	<input checked="" type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	No record of use on an NRC exam		
Exam Bank History:	Last use - LOI 2006 Audit Exam		
Technical references:	NO-1-201, Calvert Cliffs Operating Manual; EOP-8, Functional Recovery Procedure		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

67

ID: Q25441

Points: 1.00

What is the basis for Reactivity Control being the first Safety Function addressed in EOP-0?

- A. Subsequent safety functions assume adequate shutdown margin, verified by completion of the Reactivity safety function.
- B. An inability to control reactivity has the potential of degrading control of all other safety functions.
- C. Core and RCS Heat Removal actions assume a negative SUR established and CEA positions are verified.
- D. Conditions established in Reactivity Control are used to verify Pressure and Inventory Control safety function.

Answer: B

Answer Explanation:

- A. Incorrect - No other Safety Function makes any assumption about SDM.
- B. Correct - Per EOP Basis Document; An inability to control reactivity has the potential of degrading control of all other safety functions.
- C. Incorrect - These conditions are not assumptions for HR.
- D. Incorrect - There are no conditions established in RC that are required to verify PIC

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 67 Info			
Topic:	Basis for Reactivity Control being the first Safety Function addressed in EOP-0		
Tier/Group:	Generic K & A		
K/A Info:	2.4 - Emergency procedures / Plan <ul style="list-style-type: none">• 2.4.23 - Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations.		
RO Importance:	3.4		
Proposed references to be provided to applicant:	None		
Learning Objective:	SRO-201-0-8		
10 CFR Part 55 Content:	55.41(b)(10)		
Question source:	<input checked="" type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	No record of use on an NRC exam		
Exam Bank History:	Last use – LOI 2008 OP, AOP-3B, EOP-0 & EOP-1 Exam (Nov, 2009)		
Technical references:	EOP-0 Rev. 16 Basis Document.		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

68

ID: Q19306

Points: 1.00

Unit Two is in Mode-1 and the latest leakage reports are:

- 0.6 GPM - Pressurizer safety valve leakage
- 1.8 GPM - leakage past check valves from the RCS to the SI system,
- 0.1 GPM - 21 Steam Generator primary-to-secondary leakage
- 3.6 GPM - total leakage

Which of the following Technical Specification leakage limits are exceeded?

- A. Pressure Boundary leakage and Identified leakage
- B. Primary to Secondary leakage and Pressure Boundary leakage
- C. Primary to Secondary leakage and Unidentified leakage
- D. Identified leakage and Unidentified leakage

Answer: C

Answer Explanation:

- A. Incorrect - Tech Specs define Pressure Boundary leakage as "LEAKAGE (except primary to secondary LEAKAGE) through a nonisolable fault in an RCS component body, pipe wall, or vessel wall". No Pressure Boundary leakage exists. Identified leakage of 2.5 GPM is well within the T.S. limit of 10 GPM.
- B. Incorrect - 21 S/G Primary to secondary leakage ($0.1 \text{ GPM} \times 60 \times 24 = 144 \text{ GPD}$) exceeds the T.S. limit of 100 GPD; however no pressure boundary leakage exists. Tech Specs define Pressure Boundary leakage as "LEAKAGE (except primary to secondary LEAKAGE) through a nonisolable fault in an RCS component body, pipe wall, or vessel wall".
- C. Correct - 21 S/G Primary to secondary leakage ($0.1 \text{ GPM} \times 60 \times 24 = 144 \text{ GPD}$) exceeds the T.S. limit of 100 GPD. Total leakage of 3.6 GPM minus Identified leakage of 2.5 GPM = 1.1 GPM which exceeds the T.S. limit of 1 GPM unidentified leakage.
- D. Incorrect - Total leakage of 3.6 GPM minus Identified leakage of 2.5 GPM = 1.1 GPM which exceeds the T.S. limit of 1 GPM unidentified leakage, however, identified leakage of 2.5 GPM is well within the T.S. limit of 10 GPM.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 68 Info			
Topic:	T.S. RCS Leakage - S/G Tube leak & unidentified		
Tier/Group:	1/2		
K/A Info:	037 Steam Generator (S/G) Tube Leak <ul style="list-style-type: none">• 2.2.40 Ability to apply Technical Specifications for a system.		
RO Importance:	3.4		
Proposed references to be provided to applicant:	None		
Learning Objective:			
10 CFR Part 55 Content:	55.41(b)(10)		
Question source:	<input checked="" type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	No record of use on an NRC exam		
Exam Bank History:	No history of previous use		
Technical references:	T.S. 3.4.13, RCS Operational Leakage; T.S. 1.1, Definitions		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

69

ID: Q50731

Points: 1.00

A Fire Protection System actuation occurs as evidenced by Control Room annunciation and reports from the field. The appropriate response procedure is implemented and the response team is fully manned.

Which **ONE** of the following is an Operations Technical Advisor (OTA) responsibility at the scene of the fire?

- A. Ensures there are a minimum of 5 Plant Fire Brigade members.
- B. Evaluate the affects of the fire and how it could affect the safety of the plant.
- C. Provides recommendations to Shift Manager on potential EAL declarations.
- D. Provides technical fire fighting assistance, such as recommending application of fire fighting agent

Answer: B

Answer Explanation:

- A. Incorrect - This is a responsibility of the Fire Brigade Leader as defined in SA-1-101, FIRE FIGHTING
- B. Correct - This is a responsibility of the Operations Technical Advisor as defined in SA-1-101, FIRE FIGHTING
- C. Incorrect - This is a not a specific responsibility of the OTA. The OTA may or may not be an SRO. This is generally the responsibility of the Control Room Supervisor and /or Shift Technical Advisor (STA) with the STA providing a peer-check for any EAL declarations the SM might make.
- D. Incorrect - This is a responsibility of the Fire Marshal, if present, as defined in SA-1-101, FIRE FIGHTING

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 69 Info			
Topic:	Operations Technical Advisor responsibilities		
Tier/Group:	2/2		
K/A Info:	086 Fire Protection System (FPS) <ul style="list-style-type: none">• 2.4.31 Knowledge of annunciator alarms, indications, or response procedures.		
RO Importance:	4.2		
Proposed references to be provided to applicant:	None		
Learning Objective:			
10 CFR Part 55 Content:	55.41 (b)(10)		
Question source:	<input checked="" type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	No record of use on an NRC exam		
Exam Bank History:	Last use – LOI 2008 ESFAS Exam (August, 2009)		
Technical references:	SA-1-101, Fire Fighting		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

70

ID: Q28787

Points: 1.00

An RCS crud burst has caused abnormally high dose rates in portions of the Auxiliary Building. No Chemistry Action Levels have been exceeded. The Aux Bldg has been evacuated except for RP Techs, taking surveys, and the Auxiliary Building Operator. The Control Room has implemented the proper Abnormal Operating Procedure.

Which **ONE** of the following describes the appropriate response to this event?

- A. Letdown flow is adjusted to minimum, with Purification in service, to reduce RCS activity and lower radiation levels in the Auxiliary Building.
- B. Letdown flow is secured to limit radiation levels in the Auxiliary Building.
- C. Letdown flow is maximized with Purification in service to reduce RCS activity.
- D. Letdown flow is adjusted to minimum and diverted to the in-service RCWRT where it can be processed with the RC Waste Ion Exchangers.

Answer: C

Answer Explanation:

- A. Incorrect – These actions will not maximize RCS cleanup.
- B. Incorrect – These actions, while lowering dose in the Auxiliary Building, will not maximize RCS cleanup.
- C. Correct - AOP-6A directs "Adjust the Letdown and Purification lineup to obtain the maximum purification flow allowed by plant conditions". These actions will lower RCS activity resulting in lower dose rates in the Auxiliary building.
- D. Incorrect – This is a possible response but is not directed by any procedure and is not a normal method for lowering dose rates or cleaning up the RCS.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 70 Info	
Topic:	Identify operator actions for High RCS activity
Tier/Group:	1/2
K/A Info:	076 High Reactor Coolant Activity <ul style="list-style-type: none"> • AA2. Ability to determine and interpret the following as they apply to the High Reactor Coolant Activity: • AA2.02 Corrective actions required for high fission product activity in RCS
RO Importance:	2.8
Proposed references to be provided to applicant:	None
Learning Objective:	AOP-6A-03
10 CFR Part 55 Content:	55.41(b)(10)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use – LOI 2004 Audit Remediation Exam
Technical references:	AOP-6A, Abnormal Reactor Coolant Chemistry/Activity
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

71

ID: Q15947

Points: 1.00

In which **ONE** of the following sets of conditions will **ALL** of the listed conditions make a Fairbanks-Morse DG inoperable? All conditions need not occur simultaneously.

- A. Starting air pressure is 220 PSIG, jacket coolant temperature is 85 °F, the SRW CV manual hand wheel is engaged, and the voltage regulator is selected to MANUAL.
- B. The 120VAC vital bus 11 inverter is aligned to INV 2 position, the voltage regulator is selected to MANUAL, and the LOCAL-REMOTE keyswitch is placed in LOCAL.
- C. The ESFAS test handswitch is selected to the NORMAL position, starting air pressure is 215 PSIG, and the room ventilation fan handswitch on diesel MCC is in auto.
- D. The Fuel Oil Transfer pump in stop, the SRW PDIC is in MANUAL, and the DG Jacket Cooling Water Temperature is 80 °F.

Answer: D

Answer Explanation:

- A. Incorrect - Starting Air Receiver pressure is in the normal range and well above the alarm setpoint of 125 PSIG
- B. Incorrect - Having the Inverter selector switch in INV 2 does not inop the DG
- C. Incorrect - None of the conditions presented will inop the DG
- D. Correct - Per OI-21A, Fairbanks Morse DG shall be considered inoperable for any of the following:
 - 1B DG Voltage Regulator is selected to MANUAL.
 - The 1B DG Room Ventilation Fan is inoperable.
 - 1-SRW-1588-PDIC is **NOT** in AUTOMATIC or 1-SRW-1588-CV Manual Hand wheel is engaged.
 - 1B DG Fuel Oil Transfer Pump is inoperable.
 - 1B DG Jacket Water System temperature is less than 90°F.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 71 Info			
Topic:	Conditions that result in the DG being declared OOS		
Tier/Group:	Generic K & A		
K/A Info:	2.2 - Equipment Control <ul style="list-style-type: none">• 2.2.37 Ability to determine operability and/or availability of safety related equipment.		
RO Importance:	3.6		
Proposed references to be provided to applicant:	None		
Learning Objective:	CRO-48-1-2-12		
10 CFR Part 55 Content:	55.41(b)(7)		
Question source:	<input checked="" type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	No record of use on an NRC exam		
Exam Bank History:	Last use – LOI 2008 Diesel Generators Exam (May, 2009)		
Technical references:	OI-21B, 1B Diesel Generator		
Comments:	Improved version of Bank question Q24997 (not modified)		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

72

ID: Q92451

Points: 1.00

Unit 1 was operating at 100% power when a Loss of Offsite Power (LOOP) and Steam Generator Tube Rupture (SGTR) occurred. Given the following events and conditions:

- The operators implemented the appropriate Optimal Recovery procedure
- The affected S/G has been identified
- T_{HOT} is 516 °F (slowly lowering)

Which **ONE** of the following statements correctly describes the reason for cooldown below 515°F That prior to isolation of the affected S/G?

- A. Minimizes the differential pressure across the break thereby reducing the leakrate
- B. Establishes natural circulation cooling as soon as possible during the event
- C. Minimizes radiation release to the environment via the affected S/G Main Steam Safety valves
- D. Prevents dilution of the RCS by maintaining S/G pressure lower than RCS pressure.

Answer: C

Answer Explanation:

- A. Incorrect - DP across the break would increase as a result of the cooldown unless RCS pressure was lowered simultaneously.
- B. Incorrect - A cooldown to 515 °F is not necessary to establish natural circulation conditions
- C. Correct - Per the EOP-6 Technical Basis document: The initial cooldown is done prior to isolating the affected S/G. This action reduces the risk of challenging the steam generator safety valves of the affected S/G after it is isolated.
- D. Incorrect - Flow from the S/G to the RCS is not a concern. In fact, backflow from the S/G to the RCS is an available method for controlling affected S/G level.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 72 Info			
Topic:	Basis for cooldown to < 515 °F prior to isolating affected S/G		
Tier/Group:	Generic K & A		
K/A Info:	2.3 Radiation Control <ul style="list-style-type: none">• 2.3.11 Ability to control radiation releases.		
RO Importance:	3.8		
Proposed references to be provided to applicant:	None		
Learning Objective:			
10 CFR Part 55 Content:	55.41(b)(11)		
Question source:	<input type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	N/A		
Exam Bank History:	None		
Technical references:	EOP-6, Steam Generator Tube Rupture Technical Basis Document		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

73

ID: Q20392

Points: 1.00

Unit 1 has tripped and EOP-0 is implemented. The Condenser Off-Gas (1-RE-1752) and S/G Blowdown Recovery (1-RE-4014) radiation monitor meter indications are pegged LOW and all lights on their panels are out/dark.

What action should be performed to support the Radiation Levels External to Containment safety function?

- A. Shut the Steam Generator Blowdown Control Valves
- B. Report "Radiation Levels External to Containment is complete" to the CRS
- C. Restart the sample pumps and re-evaluate the indications
- D. Attempt to clear all RMS alarms and re-evaluate the indications

Answer: A

Answer Explanation:

- A. Correct - Rad Levels External to the Containment cannot be properly assessed due to LOPE requiring the alternate action of shutting the Steam Generator Blowdown Control Valves.
- B. Incorrect - The safety function should be reported as "cannot be met, due to loss of power effects".
- C. Incorrect - Restart the sample pumps and re-evaluate the indications is incorrect, pumps cannot be restarted with power unavailable, as indicated by no lights on the panels energized.
- D. Incorrect - Attempt to clear all RMS alarms and re-evaluate the indications is incorrect, alarms and indications cannot be restored with power unavailable, as indicated by no lights on the panels energized.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 73 Info	
Topic:	Identify actions to support RLEC Safety Function
Tier/Group:	Generic K & A
K/A Info:	2.3 Radiation Control <ul style="list-style-type: none">2.3.13 - Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.
RO Importance:	3.4
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.41(b)(12)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No record of use on an NRC exam
Exam Bank History:	Last use – LOI 2008 1C22/34 Panel Exam (September, 2009)
Technical references:	EOP-0 and Technical bases; NO-1-201, Calvert Cliffs Operating Manual
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

74

ID: Q92570

Points: 1.00

Which one of the following is a requirement for verifying a Working Copy of a technical procedure in use for an evolution lasting greater than one shift?

- A. Working Copies are verified to still be the approved revision by the Procedure User prior to use on subsequent shifts.
- B. Working Copies must be discarded at the end of each shift.
- C. Working Copies are not allowed to be used for evolutions lasting longer than one shift.
- D. Working Copies are verified by PDU personnel each morning, prior to use.

Answer: A

Answer Explanation:

- A. Correct - Per No-1-201 Section 5.1.D.2.E.2 (Working Copies) specifies; Evolutions lasting greater than one shift do not require an Attach 7 as long as the procedure user verifies the current Working Copy is still the current approved revision prior to using the procedure at the beginning of the next shift. Otherwise, the procedure user shall complete an Attach 7 for the Working Copy generated.
- B. Incorrect - Per No-1-201 Section 5.1.D.2.E.2 (Working Copies); Working Copies are discarded at the end of the evolution.
- C. Incorrect - Per No-1-201 Section 5.1.D.2.E.2 (Working Copies); Working copies may be used for evolutions lasting longer than one shift.
- D. Incorrect - Per No-1-201 Section 5.1.D.2.E.2 (Working Copies); Procedure Users are responsible for verifying current revision of procedures, if an Attach 7 is not used.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 74 Info			
Topic:	Use of NO-1-201 Working Copy Attachment		
Tier/Group:	Generic K & A		
K/A Info:	2.1.21 Ability to verify the controlled procedure copy.		
RO Importance:	3.5		
Proposed references to be provided to applicant:	None		
Learning Objective:			
10 CFR Part 55 Content:	55.41(b)(10)		
Question source:	<input type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	N/A		
Exam Bank History:	None		
Technical references:	NO-1-201, Calvert Cliffs Operating Manual		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

75

ID: Q92612

Points: 1.00

Given the following plant conditions:

- Unit-1 in Mode 5
- RCS temperature is 180°F
- RCS pressure is 50 PSIA.
- 11 LPSI PP is OOS for emergent work on its supply breaker
- ABO reported smoke coming from 12 LPSI PP motor and 12 LPSI PP was secured
- AOP-3B, Abnormal Shutdown Cooling Conditions, has been implemented

Which **ONE** of the following actions is the **MOST** preferred method of maintaining/restoring decay heat removal?

- A. Feeding bleeding the RCS using the charging pumps and Pressurizer PORVs.
- B. Isolating shutdown cooling and bleed steam from the steam generators.
- C. Aligning a containment spray pump to provide flow through the shutdown cooling heat exchanger.
- D. Aligning maximum CVCS letdown flow and lowering temperature on the letdown heat exchanger.

Answer: C

Answer Explanation:

- A. Incorrect - Per AOP-3B, Abnormal Shutdown Cooling Conditions, OTCC is the least preferred method for restoring heat removal.
- B. Incorrect - Since this method would involve an uncontrolled mode change, it would only be used if SDC flow could not be restored.
- C. Correct - Per AOP-3B, Abnormal Shutdown Cooling Conditions, restoration of heat removal via a Containment Spray Pump, lined up to SDC, is the most preferred option
- D. Incorrect - This is not an approved method.

EXAMINATION ANSWER KEY

LOI 2010 NRC RO Exam

Question 75 Info			
Topic:	Loss of both LPSI pumps, while in mode 5, RCS capable of being pressurized		
Tier/Group:	Generic K & A		
K/A Info:	2.1.20 Ability to interpret and execute procedure steps.		
RO Importance:	4.6		
Proposed references to be provided to applicant:	None		
Learning Objective:			
10 CFR Part 55 Content:	55.41(b)(10)		
Question source:	<input checked="" type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	No record of use on an NRC exam		
Exam Bank History:	Last use – 2005 LOR Session Quiz		
Technical references:	AOP-3B-1, Abnormal Shutdown Cooling Conditions		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

76

ID: Q92771

Points: 1.00

Resin transfer of 21 CVCS IX has been commenced when U-2 Waste Processing Ventilation RMS (2-RI-5410) begins to rise. The RMS is in alarm at 700 CPM and rising.

Similar trends are noted on U-2 WRNGM (2-RIC-5415), now reading 4700 $\mu\text{ci}/\text{sec}$ and U-2 Main Vent Gaseous (2-RI-5415), reading 20,000 CPM. Neither 2-RIC-5415 nor 2-RI-5415 have reached their alarm setpoints yet, but both are continuing to increase.

Based on these conditions, which of the following describes the required actions in accordance with the appropriate controlling procedure?

- A. Declare an Unusual Event.
- B. Implement a Radiological Event
- C. Initiate a reportability notification.
- D. No further action required as long as Radiation Safety continues to provide continuous coverage of transfer.

Answer: B

Answer Explanation:

- A. Incorrect – The criteria for an Unusual Event per the EAL Chart are not met. All of the values given for the RMS are below the limits in Table A-3-1 of ERPIP 3.0 Attachment (1). The closest reading is Main Vent, at 20000 cpm.
- B. Correct – AOP-6C, Accidental Gaseous Waste Release, would be implemented for the elevated RMS readings. Included in the AOP is the direction to declare a Radiological Event, as a minimum. Additionally, the criteria for declaring a Radiological Event in ERPIP 3.0 Attachment (19) would be met for an unplanned RMS in alarm indicating significantly different conditions from normal resin transfers.
- C. Incorrect- A radioactive release is not reportable based on CNG-NL-101-1004. Only releases that exceed Part 20, Table 2, Column 1 limits would need to be submitted as a 60-day LER. Both the WRNGM and the Main Vent RMS are not in alarm, indicating a regulatory limit has not yet been exceeded.
- D. Incorrect - AOP-6C, Accidental Gaseous Waste Release, would be implemented for the elevated RMS readings. Included in the AOP is the direction to declare a Radiological Event, as a minimum.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 76 Info			
Topic:	Determine the appropriate actions for a Waste Gas leak		
Tier/Group:	Generic K & A		
K/A Info:	2.3 – Radiation Control <ul style="list-style-type: none">• 2.3.14 - Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.		
SRO Importance:	3.8		
Proposed references to be provided to applicant:	None		
Learning Objective:			
10 CFR Part 55 Content:	55.43(b)(4)		
Question source:	<input type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	N/A		
Exam Bank History:	None		
Technical references:	AOP-6C, Accidental Gaseous Waste Release		
Comments:	Modified version of Q74607		

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

77

ID: Q50857

Points: 1.00

A Reactor trip has just occurred, on low RCS flow, due to 11A RCP experiencing a locked rotor. The following conditions also exist during EOP-0:

- TBVs are maintaining RCS temperature in normal range
- 11SG level is -80 inches and slowly rising
- 12 SG level is -120 inches and slowly rising.
- 11B RCP Bentley Nevada indicates 0 mils, the OK light is out and the Danger light is lit.
- RCS pressure is 2000 PSIG and rising.
- PZR level is 107 inches and rising

What Optimal Recovery procedure should be implemented next?

- A. EOP-1, Reactor Trip
- B. EOP-2, Loss of Offsite Power/Loss of Forced Circulation
- C. EOP-6, Steam Generator Tube Rupture
- D. EOP-8, Functional Recovery Procedure

Answer: A

Answer Explanation:

- A. Correct - Based on the information given, a reactor trip has occurred due to low RCS flow. The pump configuration of one RCP in Loop 11 and two RCPs in Loop 12 has created a level mismatch in the S/Gs. The vibration information given for the 11B RCP exceeds trip criteria for the RCP stated in OI-1A. The operator would be expected to trip 11B RCP during EOP-0, yielding a final pump configuration of no pumps in Loop 11 and two pumps in Loop 12. Per the EOP-0 Technical Basis Document the CHR safety function is met when "at least one RCP is checked to be operating in a loop with an S/G available for heat removal". EOP-1 would be implemented since all safety functions are met.
- B. Incorrect - EOP-2 is implemented during a loss of all forced circulation. Since both Loop 12 RCPs are still operating, natural circulation does not exist and EOP-2 is not desired.
- C. Incorrect - The S/G level mismatch is due to RCP configuration and not a tube leak. 'C' could be picked if the diagnostic flowchart was improperly evaluated as CHR not met with feed flow and RCPs tripped.
- D. Incorrect - Two events are not taking place, let alone one event, for the same reasons above.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 77 Info	
Topic:	EOP Transition with both 11A/11B RCP secured
Tier/Group:	1/1
K/A Info:	CE/E02 - Reactor Trip Recovery <ul style="list-style-type: none"> • EA2 - Ability to determine and interpret the following as they apply to the (Reactor Trip Recovery) <ul style="list-style-type: none"> • EA2.1 - Facility conditions and selection of appropriate procedures during abnormal and emergency operations.
SRO Importance:	3.7
Proposed references to be provided to applicant:	None
Learning Objective:	LESSON PLAN 202-2AS-08
10 CFR Part 55 Content:	55.43(b)(5)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No history of use on previous NRC exams
Exam Bank History:	Used by LOR during 2008, Session III (average score – 97% for 36 student encounters)
Technical references:	EOP-0, Post Trip Immediate Actions
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

78

ID: Q26669

Points: 1.00

Given the following plant conditions:

- A reactor trip has occurred
- All CEAs are inserted with reactor power lowering
- RCS pressure is 1900 PSIA and lowering
- Pzr Level is 140 inches and lowering
- RCS T_{COLD} is 512°F and lowering
- RCS Subcooling is 118 °F and rising slowly
- 11 S/G Pressure is 700 PSIA and lowering
- 12 S/G Pressure is 830 PSIA and steady
- 11 S/G Level is -180 inches and lowering
- 12 S/G Level is -70 inches and rising with AFW feeding 12 S/G
- 11 4KV bus is energized
- 14 4KV bus is deenergized

Based on the information provided, which **ONE** of the following is the correct Optimal Recovery Procedure for this event?

- A. EOP-1, Reactor Trip
- B. EOP-2, Loss of Offsite Power/Loss of Forced Circulation
- C. EOP-4, Excess Steam Demand Event
- D. EOP-5, Loss of Coolant Accident

Answer: C

Answer Explanation:

- A. Incorrect - Information provided (Core and RCS Heat Removal Safety Function not met) makes it clear something more than an uncomplicated trip has occurred.
- B. Incorrect - Information provided does not support a LOOP or Natural Circulation condition.
- C. Correct - An Excess Steam Demand Event is indicated by the S/G differential pressure and the high subcooled margin value.
- D. Incorrect - Subcooled Margin is well in excess of the values expected for a LOCA condition.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 78 Info	
Topic:	Given conditions determine the optimal recovery procedure
Tier/Group:	1/1
K/A Info:	CE/E05 - Excess Steam Demand <ul style="list-style-type: none"> • EA2 - Ability to determine and interpret the following as they apply to the (Excess Steam Demand) <ul style="list-style-type: none"> • EA2.1 - Facility conditions and selection of appropriate procedures during abnormal and emergency operations.
SRO Importance:	4.0
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.43(b)(5)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No history of use on previous NRC exams
Exam Bank History:	No history of previous use
Technical references:	EOP-0, Post Trip Immediate Actions
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

79

ID: Q92473

Points: 1.00

Both units are operating at 100% power. Due to voltage regulator concerns on U-1, the generator is operating with a 1.0 Power Factor. Additionally, STP O-8A-1 is in progress with the 1A DG paralleled to its respective 4KV bus and has been at full load for 30 minutes.

A system event occurs resulting in a "11 SRW HDR PRESS LO" and "U-1 4KV ESF MOTOR OVERLOAD" alarms. 11 SRW header pressure indicates 30 PSIG and steady. The appropriate procedure has been implemented.

The following conditions exist:

- Main Turbine Thrust Bearing Metal is currently 193°F and slowly rising
- Main Turbine Journal Bearing Metal is currently 225°F and slowly rising
- Generator Hydrogen temperature which is currently 50°C and slowly rising.

What action(s) should you, as the CRS, direct be taken for the event?

- A. Shutdown the 1A DG.
- B. Trip the reactor and implement EOP-0, Post-Trip Immediate Actions
- C. Reduce MVAR load to "0" to reduce Main Transformer heat loads.
- D. Reduce MVAR load, as necessary, to maintain generator temperature.

Answer: B

Answer Explanation:

- A. Incorrect - The 1A DG is cooled by a self-contained cooling system, so is unaffected.
- B. Correct - Per AOP-7B Section V.A.1 exceeding the Main Turbine Thrust Bearing metal temperature limit of 190F is criteria for tripping the reactor and implementing EOP-0. AOP-7B specifies "with the approval of the SM/CRS" for tripping the reactor and implementation of EOP-0.
- C. Incorrect - MVARs are required to be reduced zero to "reduce Main Generator Heating". With the generator operating with a 1.0 Power Factor, there is no reactive load being carried by the machine. There is no need to lower MVARs since they are already zero.
- D. Incorrect - MVARs are required to be reduced zero to "reduce Main Generator Heating" with power reduced as required to maintain Main Generator temperatures. With the generator operating with a 1.0 Power Factor, there is no reactive load being carried by the machine. There is no need to lower MVARs since they are already zero.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 79 Info	
Topic:	Actions necessary on a loss of 11 SRW header
Tier/Group:	1/1
K/A Info:	<p>062 - Loss of Nuclear Service Water</p> <ul style="list-style-type: none"> • AA2 - Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water: <ul style="list-style-type: none"> • AA2.04 - The normal values and upper limits for the temperatures of the components cooled by SWS
SRO Importance:	2.9
Proposed references to be provided to applicant:	None
Learning Objective:	202-7-S-05
10 CFR Part 55 Content:	55.43(b)(5)
Question source:	<input type="checkbox"/> Bank <input checked="" type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	AOP-7B, LOSS OF SERVICE WATER
Comments:	Modified version of Q39867

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

80

ID: Q92790

Points: 1.00

Unit-1 has just been shutdown to begin an outage and is currently in Mode 3 at NOP/NOT.
Unit- 2 is operating at 100% power.

A P-13000-2 fault occurs isolating the transformer.

Which **ONE** of the following describes a correct procedure selection and strategy?

- A. On Unit-1, implement AOP-3E, Loss of All RCP Flow, Modes 3, 4, or 5;
Use TBVs to maintain T_{COLD} between 525 °F and 535 °F.
- B. On Unit-1, implement AOP-7I, Loss of 4KV, 480 Volt or 208/120 Volt Instrument
Bus Power;
Tie 1Y09 to 1Y10
- C. On Unit-2, implement EOP-2, Loss of Offsite Power/Loss of Forced Circulation;
Manually control ADVs to establish heat removal
- D. On Unit-2, implement EOP-1, Reactor Trip;
Use TBVs or ADVs to maintain T_{COLD} between 525 °F and 535 °F

Answer: C

Answer Explanation:

- A. Incorrect – RCP will remain running and AOP-7I, Loss of 4KV, 480 Volt or 208/120
Volt Instrument Bus Power will be implemented for the loss of 14 4KV Bus.
- B. Incorrect – Tying 1Y09 to 1Y10 is an action for loss of 11 4KV Bus. 11 4KV Bus
remains energized.
- C. Correct – EOP-2 is implemented due to the loss of forced circulation. TBVs will not
be available, only ADVs will be available for heat removal.
- D. Incorrect - EOP-2 is implemented due to the loss of forced circulation. TBVs will not
be available, only ADVs will be available for heat removal. EOP-1 Safety Functions
were not all met.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 80 Info			
Topic:	RCS Heat Removal status		
Tier/Group:	1/2		
K/A Info:	CE/A13 - Natural Circulation Operations <ul style="list-style-type: none">• AA2 - Ability to determine and interpret the following as they apply to the (Natural Circulation Operations)• AA2.1 Facility conditions and selection of appropriate procedures during abnormal and emergency operations.		
SRO Importance:	3.7		
Proposed references to be provided to applicant:	None		
Learning Objective:			
10 CFR Part 55 Content:	55.43(b)(5)		
Question source:	<input type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	N/A		
Exam Bank History:	None		
Technical references:	EOP-2, LOSS OF OFFSITE POWER / LOSS OF FORCED CIRCULATION		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

81

ID: Q92474

Points: 1.00

Which **ONE** of the following conditions results in the shortest duration Technical Specification Limiting Condition for Operation Completion Time?

- A. Unit-2 ESFAS Logic Cabinet "B" is removed from service due to suspected faulty fuses in the power supply from 2Y02.
- B. Review of logs during shift turnover indicates 11A Safety Injection Tank level is below the T.S limit. A check of panel indications verifies the condition.
- C. Reactor Coolant system leakrate determination, performed during steady state operation in Mode 1, yields a value of 1.25 GPM Unidentified leakage.
- D. Calibration of the Containment Dome and Reactor Cavity temperature instruments results in an actual Containment average temperature of 121.5 °F.

Answer: B

Answer Explanation:

- A. Incorrect - The ESFAS System Logic Cabinet is governed by T.S. 3.5.5. Action "C" requires "Restore affected Manual Actuation channel and Actuation Logic channel to OPERABLE status." with a completion time of 48 hours.
- B. Correct - The Safety Injection Tanks are covered by T.S. 3.5.1. Action "B" requires "Restore SIT to OPERABLE status" with a completion time of 1 hour.
- C. Incorrect - RCS Operational Leakage is governed by T.S. 3.4.13. Action "A" requires "Reduce RCS Leakage to within limits" with a completion time of 4 hours.
- D. Incorrect - Containment Air Temperature is governed by T.S. 3.6.5. Action "A" requires restoration of Containment average air temperature to within limits with a completion time of 8 hours.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 81 Info	
Topic:	Loss of Contmt Integrity / 1 Hour Tech Specs
Tier/Group:	1/2
K/A Info:	069 - Loss of Containment Integrity <ul style="list-style-type: none">2.2.39 - Knowledge of less than or equal to one hour Technical Specification action statements for systems.
SRO Importance:	4.5
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.43(b)(2)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	Tech Spec Sections: 3.4, RCS; 3.5, ECCS & 3.6, Containment Systems
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

82

ID: Q51174

Points: 1.00

Given the following:

- The plant tripped due to a 300 GPM Loss of Coolant Accident (LOCA)
- EOP-5, Loss of Coolant Accident, has been entered.
- RCS pressure is 1550 PSIA and lowering slowly
- RCS temperature is 515 °F and stable

Five minutes later, the following conditions are observed:

- SG 11 pressure is 450 PSIA and lowering
- RCS temperature is 440 °F and lowering
- RCS pressure is 1350 PSIA and lowering

Which **ONE** of the following describes the correct strategy for the current plant conditions?

- A. Remain in EOP-5, Loss of Coolant Accident. Refer to EOP-4, Excess Steam Demand Event, for actions required to isolate 11 S/G and terminate the RCS cooldown.
- B. Transition to EOP-4, Excess Steam Demand Event, to isolate the SG 11 and stabilize RCS temperature.
- C. Implement EOP-8, Functional Recovery Procedure, and isolate 11 S/G by use of the appropriate Core and RCS Heat Removal Success Path.
- D. Implement EOP-8, Functional Recovery Procedure, and isolate 11 S/G by use of the appropriate RCS Pressure and Inventory Control Success Path.

Answer: C

Answer Explanation:

- A. Incorrect - Conditions stated (multiple events in progress) are entry criteria for the Functional Recovery Procedure which will correctly assess and prioritize actions to address jeopardized safety functions. EOP-8 will provide the actions required to address both the LOCA and the ESDE.
- B. Incorrect - Conditions stated (multiple events in progress) are entry criteria for the Functional Recovery Procedure which will correctly assess and prioritize actions to address jeopardized safety functions. Transitioning to EOP-4 will not address the in-progress LOCA.
- C. Correct - Conditions stated (multiple events in progress) are entry criteria for the Functional Recovery Procedure which will correctly assess and prioritize actions to address jeopardized safety functions. The appropriate Core & RCS Heat Removal success path will provide direction for this event.
- D. Incorrect - Conditions stated (multiple events in progress) are entry criteria for the Functional Recovery Procedure which will correctly assess and prioritize actions to address jeopardized safety functions. The appropriate Core & RCS Heat Removal success path will provide direction for this event.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 82 Info	
Topic:	Given plant conditions recognize the success paths and order of their priority.
Tier/Group:	1/2
K/A Info:	CE/E09 - Functional Recovery <ul style="list-style-type: none"> • EA2 - Ability to determine and interpret the following as they apply to the (Functional Recovery) <ul style="list-style-type: none"> • EA2.2 - Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.
SRO Importance:	4.0
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.43(b)(5)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No history of use on previous NRC exams
Exam Bank History:	No history of previous use
Technical references:	NO-1-201, CALVERT CLIFFS OPERATING MANUAL; EOP-8, Functional Recovery Procedure
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

83

ID: Q92490

Points: 1.00

An event occurred on Unit-2. The following conditions exist 10 minutes into the event:

- RCS pressure is 37 PSIA
- Pressurizer level is 0 inches
- CETs indicate 235 °F
- S/G levels are -40" and rising slowly
- S/G pressures are 900 PSIA and steady
- Containment pressure is 12 PSIG and slowly rising
- RWT level is 28 feet and lowering

45 minutes into the event, you are giving another Transient Brief for the EOP in use. Which **ONE** of the following will you align the crew to as the primary heat removal method strategy?

- A. Steam Generators with AFW and ADVs
- B. LPSI flow, from the RWT
- C. Containment Spray flow, through the Shutdown Cooling Heat Exchanger
- D. HPSI flow, from the Containment Sump

Answer: D

Answer Explanation:

- A. Incorrect – Given plant conditions, a LOCA is in progress. EOP, Loss of Coolant Accident; directs that the SGs be cooled to below RCS pressure, but this is not the primary heat removal method.
- B. Incorrect - Given plant conditions, a LOCA is in progress. Based on RWT trend, the RWT is lowering at ~1'/min (Initial level of 38' and level at 28' in 10 mins). With low RCS pressure, SI flow will not significantly vary as time continues. At 45 mins, the RWT should be empty and RAS actuated. This will trip the LPSI pumps and they will not be available for heat removal.
- C. Incorrect - Given plant conditions, a LOCA is in progress. EOP, Loss of Coolant Accident; does not direct the alignment of CS pumps through the SDC HX. CS pumps are verified in operation, but their function is not to provide the primary heat removal method, but rather to minimize containment pressure.
- D. Correct - Given plant conditions, a LOCA is in progress. EOP, Loss of Coolant Accident; directs that the HPSI pumps be aligned to the containment sump once RAS has actuated. Based on RWT trend, the RWT is lowering at ~1'/min (Initial level of 38' and level at 28' in 10 mins). With low RCS pressure, SI flow will not significantly vary as time continues. At 45 mins, the RWT should be empty and RAS actuated.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 83 Info	
Topic:	HPSI Pump cavitation question for SRO
Tier/Group:	1/1
K/A Info:	011 - Large Break LOCA <ul style="list-style-type: none">▪ 2.2.44 - Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.
SRO Importance:	4.4
Proposed references to be provided to applicant:	None
Learning Objective:	LOR-033480602-002
10 CFR Part 55 Content:	55.43(b)(5)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	EOP-5, Loss of Coolant Accident
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

84

ID: Q92510

Points: 1.00

Unit-1 was operating at 100% power when Instrument Air (IA) header pressure began lowering due to a rupture of the IA header in the turbine building. IA header pressure continued to lower and has stabilized at 35 PSIG as read on 1C13. All systems operated as designed and Operator actions, if needed, were taken.

Which **ONE** of the following describes the appropriate controlling procedure and necessary actions to mitigate the event?

- A. OP-3, Normal Power Operation, and isolate the Turbine Bypass Valves to prevent an excessive cooldown.
- B. AOP-3G, Malfunction of Main Feedwater System, and pin the Feedwater Regulating Valve to maintain SG levels.
- C. AOP-7D, Loss of Instrument Air, and ensure the SWACs have been started to restore Safety Related IA loads.
- D. EOP-0, Post Trip Immediate Actions, and initiate AFW and manually control ADVs

Answer: D

Answer Explanation:

- A. Incorrect - The TBVs are not isolated during a loss of IA as the valves due to fail open.
- B. Incorrect – The FRVs are not pinned when IA pressure lowers to 35 PSIG as the unit is tripped. SG levels are maintained by taking EOP-0 actions to isolate MFW and initiate AFW.
- C. Incorrect – AOP-7D is the correct procedure that is implemented immediately as IA pressure is lowering. However, once IA pressure reaches 50 PSIG, AOP-7D directs that the unit be tripped and EOP-0 be implemented.
- D. Correct - AOP-7D is the correct procedure that is implemented immediately as IA pressure is lowering. However, once IA pressure reaches 50 PSIG, AOP-7D directs that the unit be tripped and EOP-0 be implemented. In EOP-0, alternate actions are required for Core and RCS Heat Removal since MFW is excessive due to FRV valves failing as is or lost as IA impacts various high level dumps, requiring initiation of AFW. ADVs are available since the stem indicates that actions were taken as IA pressure lowered, which includes starting the SWACs. This would provide IA supply to the ADVs.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 84 Info	
Topic:	ADVs supplied by SWACs
Tier/Group:	2/2
K/A Info:	041 - Steam Dump System (SDS)/Turbine Bypass Control <ul style="list-style-type: none"> • A2 - Ability to (a) predict the impacts of the following malfunctions or operations on the SDS; and (b) based on those predictions or mitigate the consequences of those malfunctions or operations: <ul style="list-style-type: none"> • A2.03 - Loss of IAS
SRO Importance:	3.1
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.43(b)(5)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	AOP-7D, Loss of Instrument Air
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

85

ID: 19137

Points: 1.00

Using references provided:

Unit 2 is at 100% power, MOL, ARO (per the NEOP). A week ago (168 hours) while performing STP-O-29, Shutdown Group A CEA #39 slipped to 128 inches. Maintenance has just fixed the problem. No Shutdown CEAs had been misaligned in the previous 365 days.

What is the time allowed to realign the CEA?

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

Answer: B

Answer Explanation:

- A. Incorrect - There are no 1 hour requirements associated with T.S. 3.1.5. This is the realignment time associated with the minor misalignment (misaligned from its group by greater than 7.5 inches and \leq 15 inches) of a CEA per T.S. 3.1.4
- B. Correct - Per T.S. 3.1.5 Condition B, if one shutdown CEA is withdrawn greater than 121.5 inches and less than 129 inches for greater than 7 days per occurrence or greater than 14 days per 365 days the out-of-limit CEA must be restored to within limits within 2 hours. The Completion Time of 2 hours reflects that the power distribution limits may be outside required limits and that the core may be approaching the acceptable limits placed on operation within flux patterns outside those assumed in the long-term burnup assumptions.
- C. Incorrect - This is the frequency, per T.S. 3.1.5 Condition A, in which verification of the accumulated times the shutdown CEAs have been withdrawn greater than or equal to 121.5 inches and less than 129 inches must occur.
- D. Incorrect - This value is associated with the completion time for entry into Mode 3 should the required action and associated completion times associated with Conditions "A" or "B" of T.S. 3.1.5 not be met.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 85 Info			
Topic:	S/D CEA Alignment		
Tier/Group:	1/2		
K/A Info:	003 - Dropped Control Rod <ul style="list-style-type: none">• 2.2.23 - Ability to track Technical Specification limiting conditions for operations.		
SRO Importance:	4.6		
Proposed references to be provided to applicant:	Tech Specs 3.1.4 & 3.1.5		
Learning Objective:			
10 CFR Part 55 Content:	55.43(b)(2)		
Question source:	<input checked="" type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	No history of use on previous NRC exams		
Exam Bank History:	No history of previous use		
Technical references:	T.S. 3.1.4, Control Element Assembly Alignment; T.S. 3.1.5, Shutdown Control Element Assembly (CEA) Insertion Limits		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

86

ID: Q92530

Points: 1.00

A Loss of Offsite Power event that began with the 1A DG already out of service is further complicated by the loss of the 1B DG. The Shift Manager is in the process of upgrading from an Alert to a Site Area Emergency.

Which **ONE** of the following should occur **PRIOR** to the Shift Manager making the declaration and beginning the notification process?

- A. The Tech Support Center Director should provide a peer check of the EAL classification and an SRO a peer check of the Initial Notification form, completed by the Shift Manager, prior to the Shift Manager making the declaration.
- B. The STA (or other available SRO) should provide a peer check of the EAL classification and Initial Notification form, completed by the Shift Manager, prior to the Shift Manager making the declaration.
- C. The Operational Support Center Director should provide a peer check of the EAL classification and an SRO a peer check of the Initial Notification form, completed by the Shift Manager, prior to the Shift Manager making the declaration.
- D. The Emergency Director / Recovery Manager should provide a peer check of the EAL classification and an SRO a peer check of the Initial Notification form, completed by the Shift Manager, prior to the Shift Manager making the declaration.

Answer: B

Answer Explanation:

- A. Incorrect - The Tech Support Center Director may or may not be qualified to perform a peer check of an EAL declaration. Additionally, the Tech Support Center is not fully staffed or the Tech Support Center Manager would have already relieved the Shift Manager of IED responsibilities.
- B. Correct - NPOSSO 09-08, "Emergency Action Level (EAL) Classification Improvement Protocol" specifies The STA (or other available SRO) should provide a peer check of the EAL classification and Initial Notification form completed by the Shift Manager prior to the Shift Manager making the declaration.
- C. Incorrect - NPOSSO 09-08, "Emergency Action Level (EAL) Classification Improvement Protocol" specifies The STA (or other available SRO) should provide a peer check of the EAL classification and Initial Notification form completed by the Shift Manager prior to the Shift Manager making the declaration. The Operational Support Center may not be fully staffed.
- D. Incorrect - Neither the EOF nor the Tech Support Center is fully staffed or the Emergency Director/Recovery Manager or the Tech Support Center Manager would have already relieved the Shift Manager of IED responsibilities.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 86 Info	
Topic:	EAL call peer check
Tier/Group:	1/1
K/A Info:	055 - Loss of Offsite and Onsite Power (Station Blackout) <ul style="list-style-type: none">• 2.4.40 - Knowledge of SRO responsibilities in emergency plan implementation.
SRO Importance:	4.5
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.43(b)(5)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	Nuclear Plant Operations Section Standing Order 09-08, Rev. 1 "Emergency Action Level (EAL) Classification Improvement Protocol"
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

87

ID: Q92730

Points: 1.00

To comply with Tech Specs, OI-22D, Fuel Handling Area Ventilation System, Ventilation Walkdown Checklist is required to be performed prior to movement of recently irradiated fuel assemblies in the Auxiliary Building.

Recently irradiated fuel is defined as "Fuel that has occupied part of a critical reactor core" for which **ONE** of the following?

- A. Within the previous 32 days
- B. Within the previous 92 days
- C. Within the previous 184 days
- D. Within the previous operating cycle

Answer: A

Answer Explanation:

- A. Correct - As defined in the **Tech Spec Bases** for T.S. 3.7.11, Spent Fuel Pool Exhaust Ventilation System (SFPEVS). *"The SFPEVS is designed to mitigate the consequences of a fuel handling accident involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 32 days)"*.
- B. Incorrect - A candidate, unsure of the correct duration, may be familiar with 92 days (quarterly surveillance interval from the Tech Specs) and consider this a reasonable choice as an answer.
- C. Incorrect - A candidate, unsure of the correct duration, may be familiar with 184 days (semi-annual surveillance interval from the Tech Specs) and consider this a reasonable choice as an answer.
- D. Incorrect - A candidate, unsure of the correct duration, may consider this a reasonable choice as an answer.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 87 Info			
Topic:	Definition of Recently Irradiated Fuel		
Tier/Group:	Generic K & A		
K/A Info:	2.1 - Conduct of Operations <ul style="list-style-type: none">2.1.42 - Knowledge of new and spent fuel movement procedures.		
SRO Importance:	3.4		
Proposed references to be provided to applicant:	None		
Learning Objective:			
10 CFR Part 55 Content:	55.43(b)(7)		
Question source:	<input type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	N/A		
Exam Bank History:	None		
Technical references:	Tech Spec Bases 3.7.11		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

88

ID: Q92591

Points: 1.00

Using references provided:

A total loss of feed flow has occurred on Unit-2. The reactor tripped on low S/G level and Auxiliary Feed failed to initiate automatically or manually. RCS cooldown to 460°F has been initiated.

Which **ONE** of the following Emergency Action Level classifications is warranted?

- A. No EALs apply to these plant conditions.
- B. UNUSUAL EVENT - Emergency Director Judgment for loss of all normal and auxiliary feedwater.
- C. ALERT - Potential loss of RCS Barrier due to loss of heat removal.
- D. SITE AREA EMERGENCY - Potential loss of Fuel Clad Barrier and RCS Barrier due to a loss of heat removal

Answer: B

Answer Explanation:

- A. Incorrect - Per the EAL Technical Bases; Emergency Director Judgment A.U.7.1.1 UNUSUAL EVENT is applicable.
- B. Correct - Per the EAL Technical Bases for Emergency Director Judgment A.U.7.1.1 UNUSUAL EVENT. Site Specific examples are: Loss of normal and auxiliary feed such that a cooldown to allow main feed booster pump injection is initiated.
- C. Incorrect - Potential loss of RCS Barrier criteria includes "RCS heat removal cannot be established AND EITHER RCS pressure greater than PORV setpoint OR RCS subcooling less than 25 °F". Neither of the conditional steps is given in the question.
- D. Incorrect - Potential loss of Fuel Clad Barrier or RCS Barrier criteria includes "RCS heat removal cannot be established AND EITHER RCS pressure greater than PORV setpoint OR RCS subcooling less than 25 °F". Neither of the conditional steps is given in the question.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 88 Info			
Topic:	EAL for LOAF (References required)		
Tier/Group:	1/1		
K/A Info:	2.2 – Equipment Control <ul style="list-style-type: none">• 2.2.38 - Knowledge of conditions and limitations in the facility license.		
SRO Importance:	4.5		
Proposed references to be provided to applicant:	ERPIP 3.0 & ERPIP 3.0 Technical Basis Doc		
Learning Objective:			
10 CFR Part 55 Content:	55.43(b)(1)		
Question source:	<input type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	N/A		
Exam Bank History:	None		
Technical references:	ERPIP 3.0, ERPIP 3.0 Technical Basis Doc		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

89

ID: Q92614

Points: 1.00

Resources available, in the Control Room, for the CRS to assist the Fire Brigade in firefighting efforts include:

- A. Fire Brigade Leader Handbook,
AOP-9 Series,
Plant Area Fire Strategy Templates
- B. Fire Strategies Manual,
AOP-11 Series,
Guidelines for Fighting Industrial Fires
- C. Fire Strategies Manual,
AOP-9 Series,
Interactive Cable Analysis
- D. Fire Strategies Manual,
AOP-11 Series,
Interactive Piping Analysis

Answer: C

Answer Explanation:

- A. Incorrect - Fire Brigade Leader Handbook does not exist
- B. Incorrect - AOP-11 is not a series and it is for Control Room Evacuation for non-fires. Guidelines for fighting Industrial Fires do not exist.
- C. Correct - All listed resources are listed in ERPIP 3.0 Attachment 16 and are available in the Control Room.
- D. Incorrect - AOP-11 is not a series and it is for Control Room Evacuation for non-fires. Interactive Piping Analysis does not exist.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 89 Info	
Topic:	Resources to assist the CR in firefighting efforts
Tier/Group:	Generic K & A
K/A Info:	2.4 - Emergency Procedures / Plan <ul style="list-style-type: none">2.4.26 - Knowledge of facility protection requirements, including fire brigade and portable firefighting equipment usage.
SRO Importance:	3.6
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.43(b)(5)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	SA-1-101, FIRE FIGHTING
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

90

ID: Q92650

Points: 1.00

Using provided references:

During a Waste Gas Decay Tank (WGDT) release, an inadvertent radiation spike occurs and CV-2191 and CV-2192 close. Before corrective action can be taken, RV-2191 (the Waste Gas Discharge Header RV) opens and then RV-2182 (the Waste Gas Surge Tank (WGST) Relief) opens to begin an uncontrolled release to the Main Plant Vent. RI 5415, Main Vent monitor, has been reading 2.8 E5 CPM for 18 minutes. Mechanical Maintenance expects the safety to be closed within 15 minutes.

- (1) Which tanks contribute to the uncontrolled release and
(2) What event should be declared per the ERPIP?
- A. (1) The WGST and the in-service WGDT
(2) Declare an Alert per A.A.3.1.2
 - B. (1) The WGST and the WGDT lined up for discharge;
(2) Declare an Unusual Event per A.U.3.1.1
 - C. (1) All WGDTs;
(2) Declare a Radiological Event per ERPIP 3.0
 - D. (1) The WGST and the WGDT lined up for discharge;
(2) Declare a Radiological Event per ERPIP 3.0

Answer: D

Answer Explanation:

- A. Incorrect - The WGST and the WGDT lined up for discharge contribute to the uncontrolled release. There is no ALERT classification associated with the specified RMS.
- B. Incorrect - The WGST and the WGDT lined up for discharge contribute to the uncontrolled release. The RMS values associated with the release do not meet the criteria for an Unusual Event for another 42 minutes.
- C. Incorrect - The WGST and the WGDT lined up for discharge contribute to the uncontrolled release. The RMS values associated with the release do not meet the criteria for an Alert.
- D. Correct - The WGST and the WGDT lined up for discharge contribute to the uncontrolled release. A Radiological Event would be declared based on the unplanned gaseous release of material or the unplanned radiation monitor alarm (RI-5415) that indicates a significant deviation from normal conditions.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 90 Info	
Topic:	Waste gas release
Tier/Group:	2/2
K/A Info:	<p>071 - Waste Gas Disposal System (WGDS)</p> <ul style="list-style-type: none"> • A2 - 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: <ul style="list-style-type: none"> • A2.09 - Stuck-open relief valve
SRO Importance:	3.5
Proposed references to be provided to applicant:	ERPIP 3.0
Learning Objective:	
10 CFR Part 55 Content:	55.43(b)(5)
Question source:	<input type="checkbox"/> Bank <input checked="" type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	AOP-6C, Accidental Gaseous Waste Release; ERPIP 3.0, Immediate Actions; SD-69 - Waste Gas System Description
Comments:	Modified version of Q28701

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

91

ID: Q92651

Points: 1.00

Unit-1 is operating at 100% power with Group 5 CEAs at 131 inches when the pulse counting position indication system is lost due to a power supply malfunction. It has become apparent the TRM restoration time will not be met.

Which **ONE** of the following actions is required?

- A. Initiate a Condition Report for a Reactivity Management event.
- B. Request a Functionality Assessment from the Systems Engineering Section
- C. Initiate the Event Notification Worksheet for a Licensee Event Report
- D. Inform the Generation Dispatcher - Constellation Power Source

Answer: B

Answer Explanation:

- A. Incorrect – Loss of the pulse counting position indication system does not classify as a Reactivity Management event per CNG-OP-3.01-1000, Reactivity Management.
- B. Correct - For SSCs that are not expressly subject to Tech Specs and that are determined to be degraded, assess the reasonable expectation of functionality.
- C. Incorrect - There are no criteria stated that meet the threshold for notification of a LER
- D. Incorrect - There is not enough information given to ascertain whether a power reduction is imminent.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 91 Info	
Topic:	TRM requirements for OOS CEA Position Indication
Tier/Group:	2/2
K/A Info:	014 - Rod Position Indication System (RPIS) <ul style="list-style-type: none">• 2.4.30 - Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.
SRO Importance:	4.1
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.43(b)(5)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	Technical Requirements Manual; CNG-OP-1.01-1002, Conduct of Operability Determination/Functionality Assessments
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

92

ID: Q92670

Points: 1.00

During a Reactor startup, with power at $1 \times 10^{-4}\%$, a Turbine Bypass valve fails partially open. T_{COLD} approaches the Technical Specification Minimum Temperature for Criticality of 515 °F.

Which **ONE** of the following:

- (1) Is a basis for the Tech Spec Minimum Temperature for Criticality and;
 - (2) Describes the correct procedure to address this event?
- A. (1) Ensures operation within the bounds of the existing accident analyses;
(2) EOP-4, Excess Steam Demand Event
 - B. (1) Minimizes the possibility of violating DNB limits;
(2) AOP-7K, Overcooling Event in Mode One or Two
 - C. (1) Ensures operation within the existing instrumentation ranges and accuracies;
(2) AOP-7E, Main Turbine Malfunction
 - D. (1) Ensures operation within the bounds of the existing accident analyses;
(2) AOP-7K, Overcooling Event in Mode One or Two

Answer: D

Answer Explanation:

- A. Incorrect - The basis for the minimum temperature for criticality is correct T.S. Bases 3.4.2, however, the correct procedure to implement would be AOP-7K which would ultimately direct tripping the reactor and implementing EOP-0
- B. Incorrect - The basis for the minimum temperature for criticality is incorrect, however, the correct procedure to implement **would be** AOP-7K which would ultimately direct tripping the reactor and implementing EOP-0
- C. Incorrect - The basis for the minimum temperature for criticality is incorrect. Additionally, the correct procedure to implement would be AOP-7K which would ultimately direct tripping the reactor and implementing EOP-0
- D. Correct - The basis for the minimum temperature for criticality is correct per T.S. Bases 3.4.2 **and** the correct procedure to implement would be AOP-7K which would ultimately direct tripping the reactor and implementing EOP-0

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 92 Info			
Topic:	Minimum temperature for criticality		
Tier/Group:	Generic K & A		
K/A Info:	2.1 - Conduct of Operations <ul style="list-style-type: none"> • 2.1.32 - Ability to explain and apply system limits and precautions. 		
SRO Importance:	4.0		
Proposed references to be provided to applicant:	None		
Learning Objective:			
10 CFR Part 55 Content:	55.43(b)(2)		
Question source:	<input type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	N/A		
Exam Bank History:	None		
Technical references:	T.S. 3.4.2, T.S. Bases 3.4.2		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

93

ID: Q15858

Points: 1.00

Using references provided:

Unit-1 is in Mode 1. System Engineering has determined that 4KV Bus 14 Normal and Alternate Feeder breakers may not trip on an undervoltage when required. What action is required?

- A. Enter TS 3.8.1, Action B, for 1B DG out of service.
- B. Enter TS 3.8.9, Action A, for both breakers out of service.
- C. Enter TS 3.8.9, Action B, for both breakers out of service.
- D. Enter TS 3.8.1, Action E, for 1B DG being out of service.

Answer: A

Answer Explanation:

- A. Correct - The 1B DG would be inoperable to 4KV Bus 14. Normal and Alternate Feeder Breakers being open are part of the logic circuit that must be completed for the 1B DG to close in on and power up 4KV Bus 14.
- B. Incorrect - T.S. 3.8.9 requires OPERABLE AC electrical power distribution subsystems. From the Basis doc: "OPERABLE AC electrical power distribution subsystems require the associated buses, load centers, motor control centers, and distribution panels to be energized to their proper voltages". By this definition 4KV Bus 14 is operable.
- C. Incorrect - T.S. 3.8.9, Condition B represents one or more 120V AC vital buses without power.
- D. Incorrect - LCO 3.8.1.E is not applicable to 4KV Bus 14. CREVS and CRETS components are powered from 4 KV Busses 11 & 24.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 93 Info	
Topic:	Evaluate T.S. for 4kv feeder breaker problem (References required)
Tier/Group:	Generic K & A
K/A Info:	2.2 - Equipment Control <ul style="list-style-type: none"> 2.2.36 - Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.
SRO Importance:	4.2
Proposed references to be provided to applicant:	T.S.3.8.1 & 3.8.9 & associated Bases
Learning Objective:	
10 CFR Part 55 Content:	55.43(b)(2)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/>
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No history of use on previous NRC exams
Exam Bank History:	Last used for May, 2009 panel comp (average score – 71% over 38 student encounters since 2002)
Technical references:	Tech Specs 3.8.1, AC Sources-Operating & 3.8.9 Distribution Systems-Operating
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

94

ID: Q92690

Points: 1.00

Unit -1 was operating at 100% power when the following events and conditions occurred:

- 1-RE-1752A/B/C/D (11/12/13/14 CAR Suction RAD MONs) is in alarm and indicating a leakrate of 28 GPD and stable
- 1-RIC-5421A (N16 RAD MONITOR) indicates a leakrate of 31 GPD and stable
- 1-RI-4014 (Unit 1 S/G B/D RMS) is elevated
- 1-RIC-4095 (Unit 1 S/G B/D Recovery RMS) is elevated

As Control Room Supervisor, which **ONE** of the following actions would you direct?

- A. Implement AOP-2A, Excessive RCS Leakage
- B. Secure S/G Blowdown per OI-8A, Blowdown System
- C. Implement AOP-10, Abnormal Secondary Chemistry Conditions
- D. Trip the reactor, perform EOP-0, Reactor Trip and implement EOP-6, Steam Generator Tube Rupture

Answer: C

Answer Explanation:

- A. Incorrect - An RCS leak of 31 GPD (.02 GPM) is below the threshold for implementation of AOP-2A, Excessive RCS Leakage. AOP-10, Abnormal Secondary Chemistry Conditions, specifies implementation of AOP-2A **IF** the SG tube leakage reaches the operational limit of 50 GPD through any one SG.
- B. Incorrect - The S/G Blowdown System RMSs, while elevated, have yet to reach a value where manual or automatic action is required per plant procedure. The decision to secure Blowdown under these circumstances would be based on recommendations from the Chemistry folks.
- C. Correct - AOP-10, Abnormal Secondary Chemistry Conditions, Attachment 1 (UNIT 1 ACTIONS FOR SG TUBE LEAKAGE GREATER THAN 5 GPD) is written to address SG tube leakage of between 5 GPD and 50 GPD.
- D. Incorrect - An RCS leak of 31 GPD (.02 GPM) is below the threshold for implementation of AOP-2A, Excessive RCS Leakage. AOP-2A, Excessive RCS Leakage is the procedure that would direct shutdown and/or a reactor trip for S/G tube leakage reaching the appropriate threshold.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 94 Info	
Topic:	Use RMS indications to evaluate RCS leakage
Tier/Group:	Generic K & A
K/A Info:	2.3 - Radiation Control <ul style="list-style-type: none"> 2.3.5 - Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.
SRO Importance:	2.9
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.43(b)(4)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	1C22-ALM, RMS Alarm Manual; AOP-10, Abnormal Secondary Chemistry Conditions; AOP-2A, Excessive RCS Leakage
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

95

ID: Q92810

Points: 1.00

U-1 is operating at 100% power when a plant trip occurs. All safety functions of EOP-0 have been reported. The following conditions exist:

- All CEAs are fully inserted.
- All electrical busses are energized from their normal power supplies.
- Pressurizer level is 88 inches and lowering slowly
- Pressurizer pressure is 1875 PSIA and lowering slowly
- T_{AVG} is 530 °F and lowering slowly
- ADVs and TBVs are shut
- RCS subcooling is 100 °F and rising slowly
- Main feedwater is being supplied to both steam generators
- 11 S/G level is -90 inches and lowering slowly
- 12 S/G level is -50 inches and rising
- Containment pressure is 1.5 PSIG and rising slowly
- 11 Main Steam Line Radiation Monitor reads 4.6 E-6 R/hr
- 12 Main Steam Line Radiation Monitor reads 2.2 E-4 R/hr

Which EOP will you recommend, to the Shift Manager, for implementation?

- A. EOP-4, Excess Steam Demand Event
- B. EOP-5, Loss of Coolant Accident
- C. EOP-6, Steam Generator Tube Rupture
- D. EOP-8, Functional Recovery Procedure

Answer D

Answer Explanation:

- A. Incorrect - Plant conditions indicate a steam leak or an RCS leak is removing decay heat. Containment parameters indicate the location of this leak. A SG tube leak also exists on 12 SG based on MSLRM indications. Based on a tube leak occurring with either an RCS leak or a steam leak in containment, EOP-8 would be implemented..
- B. Incorrect - Plant conditions indicate a steam leak or an RCS leak is removing decay heat. Containment parameters indicate the location of this leak. A SG tube leak also exists on 12 SG based on MSLRM indications. Based on a tube leak occurring with either an RCS leak or a steam leak in containment, EOP-8 would be implemented..
- C. Incorrect - Plant conditions indicate a steam leak or an RCS leak is removing decay heat. Containment parameters indicate the location of this leak. A SG tube leak also exists on 12 SG based on MSLRM indications. Based on a tube leak occurring with either an RCS leak or a steam leak in containment, EOP-8 would be implemented..

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

- D. Correct - Plant conditions indicate a steam leak or an RCS leak is removing decay heat. Containment parameters indicate the location of this leak. A SG tube leak also exists on 12 SG based on MSLRM indications. Based on a tube leak occurring with either an RCS leak or a steam leak in containment, EOP-8 would be implemented..

Question 95 Info			
Topic:	SRO responsibilities for AOPs during C/D		
Tier/Group:	2/1		
K/A Info:	2.1 - Conduct of Operations <ul style="list-style-type: none"> • 2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation. 		
SRO Importance:	4.4		
Proposed references to be provided to applicant:	None		
Learning Objective:			
10 CFR Part 55 Content:	55.43(b)(5)		
Question source:	<input type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	N/A		
Exam Bank History:	None		
Technical references:	NO-1-200, Control of Shift Activities; NO-1-201, Calvert Cliffs Operating Manual		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

96

ID: Q20870

Points: 1.00

Unit-2 is operating at 100% power. 23 HPSI pump has been declared inoperable in due to a ground on phases A & C of the motor.

What action, if any, is required?

- A. Align 22 HPSI pump to the Main HPSI header, within 1 hour, and declare the ECCS subsystem operable.
- B. Align 22 HPSI pump to the Aux HPSI header, within 1 hour, and declare the ECCS subsystem operable
- C. Enter the applicable T.S. Limiting Condition for Operation and restore 23 HPSI pump to service within 72 hours.
- D. No action is required as at least 100% of each train is available to meet its design purpose as stated in the bases.

Answer: C

Answer Explanation:

- A. Incorrect - 22 HPSI is not an acceptable substitute for 23 HPSI because it shares a common suction header with 21 HPSI. Redundancy would remain compromised.
- B. Incorrect - 22 HPSI is not an acceptable substitute for 23 HPSI because it shares a common suction header with 21 HPSI. Redundancy would remain compromised.
- C. Correct - Tech Spec 3.5.2, Action A, allows an out of service time of 72 hours assuming 21 HPSI remains operable.
- D. Incorrect - Tech Specs require the redundancy of two 100% capable trains with an allowed out of service time, for one train, of 72 hours.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 96 Info			
Topic:	Determine actions for 23 HPSI OOS		
Tier/Group:	2/1		
K/A Info:	006 - Emergency Core Cooling System (ECCS) <ul style="list-style-type: none">• 2.2.22 - Knowledge of limiting conditions for operations and safety limits.		
SRO Importance:	4.7		
Proposed references to be provided to applicant:	None		
Learning Objective:	CRO-7-1-5-94		
10 CFR Part 55 Content:	55.43(b)(2)		
Question source:	<input checked="" type="checkbox"/> Bank	<input type="checkbox"/> Modified	<input type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis		
Last NRC Exam used on:	No history of use on previous NRC exams		
Exam Bank History:	September, 2005 Panel comp (average score – 86% for 7 student encounters)		
Technical references:	Tech Spec 3.5.2		
Comments:	None		

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

97

ID: Q92692

Points: 1.00

- (1) What affect does a large break LOCA have on the Main Steam system and;
(2) What strategy does the EOP use to address this affect?
- A. (1) CSAS actuation will cause the MSIVs to shut;
(2) If S/G pressure is greater than RCS pressure, the S/Gs are cooled via the ADVs
 - B. (1) CSAS actuation will cause the MSIVs to shut;
(2) If S/G pressure is greater than RCS pressure, the S/Gs are cooled via the TBVs
 - C. (1) CIS actuation will cause the MSIVs to shut;
(2) If S/G pressure is greater than RCS pressure, the S/Gs are cooled via the ADVs
 - D. (1) SGIS actuation will cause the MSIVs to shut;
(2) If S/G pressure is greater than RCS pressure, the S/Gs are cooled via the MSIV Bypass Valves

Answer: A

Answer Explanation:

- A. Correct - CSAS will actuate on a Large Break LOCA and provides an automatic closure signal to the MSIVs. EOP-5 specifies: IF S/G pressure is greater than RCS pressure, THEN commence S/G cooldown using TURB BYP valves OR ADVs.
- B. Incorrect - EOP-5 specifies IF S/G pressure is **greater** than RCS pressure, THEN commence S/G cooldown using TURB BYP valves OR ADVs.
- C. Incorrect - CIS does not provide a signal to automatically close the Main Steam Isolation Valves (MSIVs).
- D. Incorrect - EOP-5 specifies IF S/G pressure is greater than RCS pressure, THEN commence S/G cooldown using **TURB BYP** valves OR **ADV**s.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 97 Info	
Topic:	Affect of LOCA on Main Steam
Tier/Group:	2/1
K/A Info:	<p>039 - Main and Reheat Steam System (MRSS)</p> <ul style="list-style-type: none"> • A2 - Ability to (a) predict the impacts of the following malfunctions or operations on the MRSS; and (b) based on predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations <ul style="list-style-type: none"> • A2.01 - Flow paths of steam during a LOCA
SRO Importance:	3.2
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.43(b)(5)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	EOP-5, Loss of Coolant Accident
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

98

ID: Q92693

Points: 1.00

Unit 1 is in MODE 3. The following conditions exist:

- RCS Pressure is 2250 PSIA
- T_{COLD} is 530 °F
- S/G pressure is 880 PSIG
- 13 AFW Pump out of service
- A loss of Instrument Air is in progress

(1) What effect will there be on the AFW system?

(2) What action would you direct to address this condition?

- A. (1) There would be no remote speed control of 11 or 12 AFW Pp.
(2) Station an Operator locally to control the steam driven AFW pump speed, to maintain AFW Pp speed at a constant 4500 rpm.
- B. (1) All AFW components are supplied by the Salt Water Air system, thus there is no impact on the AFW system
(2) Direct AFW be operated normally, from 1C04, to maintain S/G level.
- C. (1) There would be no remote speed control of 11 or 12 AFW Pp.
(2) Station an Operator locally to control the steam driven AFW pump speed, to maintain AFW discharge pressure at approximately 980 PSIG.
- D. (1) There would be no control of the AFW Flow Control Valves from 1C04
(2) Station an Operator at 1C43 to operate the AFW Flow Control Valves to maintain S/G level

Answer: C

Answer Explanation:

- A. Incorrect - 11 & 12 AFW Pump speed cannot be controlled from the Control Room, due to the loss of Instrument Air, requiring an operator be stationed to manually control AFW Pump speed to maintain **AFW Pump discharge pressure 100 PSI greater than S/G pressure** per AOP-7D.
- B. Incorrect - The Salt Water Air Compressors due not provide a backup supply of air to 11 & 12 AFW Pumps. 11 & 12 AFW Pump speed cannot be controlled from the Control Room, due to the loss of Instrument Air, requiring an operator be stationed to manually control AFW Pump speed to maintain AFW Pump discharge pressure 100 PSI greater than S/G pressure per AOP-7D.
- C. Correct - 11 & 12 AFW Pump speed cannot be controlled from the Control Room, due to the loss of Instrument Air, requiring an operator be stationed to manually control AFW Pump speed to maintain AFW Pump discharge pressure 100 PSI greater than S/G pressure per AOP-7D.
- D. Incorrect - AOP-7D, Loss of Instrument Air specifies: Control the AFW Pump speed with the Local Speed Adjust Knob, to maintain AFW Pump discharge approximately 100 PSIG greater than SG pressure. Adjust the SG FLOW CONTRs (IA supplied by the Sal Water Air Compressors) to maintain SG level between (-) 24 and (+) 30 inches and trending to zero inches.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 98 Info	
Topic:	AFW Pp speed controlled w/o instrument air
Tier/Group:	2/1
K/A Info:	<p>061 - Auxiliary / Emergency Feedwater (AFW) System</p> <ul style="list-style-type: none"> • A2 - Ability to (a) predict the impacts of the following malfunctions or operations on the AFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: <ul style="list-style-type: none"> • A2.07 - Air or MOV failure
SRO Importance:	3.5
Proposed references to be provided to applicant:	None
Learning Objective:	
10 CFR Part 55 Content:	55.43(b)(5)
Question source:	<input type="checkbox"/> Bank <input type="checkbox"/> Modified <input checked="" type="checkbox"/> New
Cognitive level:	<input type="checkbox"/> Memory or Fundamental <input checked="" type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	N/A
Exam Bank History:	None
Technical references:	AOP-7D, Loss of Instrument Air
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

99

ID: Q92710

Points: 1.00

Unit 1 is operating at 60% power when a loss of 4KV Bus 13 occurs.

- (1) What effect, if any, does this condition have on plant operation?
(2) What plant stabilizing actions, if any, would you direct?

- A. (1) Loss of 13 Condensate Pp and 13 Condensate Booster Pp;
(2) Bypass the Condensate Precoat Filters and Condensate Demineralizers and Verify 11 or 12 Condensate Pp and 11 or 12 Condensate Booster Pps running.
- B. (1) Loss of 12 and 13 Condensate Pps;
(2) Commence a Rapid Power Reduction, to lower Condensate Header flow to less than 8000 GPM.
- C. (1) Loss of lube oil to both SGFPs;
(2) Immediately trip the Reactor and implement EOP-0; after the completion of the Reactivity Safety Function, trip both SGFPs.
- D. (1) Loss of 12 Heater Drain Pump, 13 Condensate Booster Pump and 13 & 14 CAR Pumps;
(2) No Stabilizing actions are necessary

Answer: B

Answer Explanation:

- A. Incorrect - While 13 Condensate Pp and 13 Condensate Booster Pump are lost, 12 Condensate Pp is also lost; necessitating a power reduction to get Condensate Header flow to less than the capacity of a single Condensate Pp.
- B. Correct - 12 and 13 Condensate Pps are lost necessitating a power reduction to get Condensate Header flow to less than the capacity of a single Condensate Pp.
- C. Incorrect - Each SGFP has an Oil Pp powered from MCC-106 and one powered from MCC-116; therefore lube oil will not be lost with a loss of MCC-116 (13 4KV bus).
- D. Incorrect - While the listed loads are in fact lost, the loss of two Condensate Pumps necessitates reducing power to get Condensate Header flow to less than the capacity of a single Condensate Pump.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 99 Info	
Topic:	Loss of a non-vital 4KV Bus 13 at 60% power
Tier/Group:	2/1
K/A Info:	<p>062 - AC Electrical Distribution System</p> <ul style="list-style-type: none"> • A2 - Ability to (a) predict the impacts of the following malfunctions or operations on the ac distribution system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: <ul style="list-style-type: none"> • A2.01 - Types of loads that, if de-energized, would degrade or hinder plant operation
SRO Importance:	3.9
Proposed references to be provided to applicant:	None
Learning Objective:	AOP-7I-03
10 CFR Part 55 Content:	55.43(b)(5)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No history of use on previous NRC exams
Exam Bank History:	
Technical references:	AOP-7I, Loss of 4KV, 480 Volt or 208/120 Volt Instrument Bus Power; Unit-1 Immediate Actions From 100% Power (Stabilizing Actions Plaque) Operator Aid
Comments:	None

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

100

ID: Q37531

Points: 1.00

At 0800, EOP-8 was entered and a Site Area Emergency was declared. Because no Optimal Recovery Procedure was appropriate, the Technical Support Center staff was asked to provide a new procedure for this situation. It is now 1452.

When may you:

- (1) Exit the current procedure and;
- (2) Implement the new procedure developed by the Technical Support Center?
 - A. (1) When the new procedure's Intermediate Safety Function Acceptance Criteria are met and the new procedure has been approved;
(2) At the Shift Manager's direction.
 - B. (1) When the EOP-8 Safety Function Acceptance Criteria are met;
(2) Upon direction by the Technical Support Center-Director.
 - C. (1) The new procedure has been approved;
(2) Upon direction by the Technical Support Center-Director
 - D. (1) When the EOP-8 Safety Function Acceptance Criteria are met and the new procedure has been approved;
(2) At the Shift Manager's direction.

Answer: D

Answer Explanation:

- A. Incorrect - When the EOP-8 Safety Function Acceptance Criteria are met is correct per EOP-8 Rev 29, step V.G.1.
- B. Incorrect – Part (1) is partially correct. An approved procedure is required along with direction from the SM or TSC Director to implement it.
- C. Incorrect - Part (1) is partially correct EOP-8 Safety Function Acceptance Criteria must be met as well. Part (2) is correct.
- D. Correct - Per EOP-8 Rev 29, step V.G.1.

EXAMINATION ANSWER KEY

LOI 2010 NRC SRO Exam

Question 100 Info	
Topic:	Tech Supported generated procedures
Tier/Group:	Generic K & A
K/A Info:	2.2 - Equipment Control <ul style="list-style-type: none">• 2.2.5 - Knowledge of the process for making design or operating changes to the facility.
SRO Importance:	3.2
Proposed references to be provided to applicant:	None
Learning Objective:	LOR-042040404-001
10 CFR Part 55 Content:	55.43(b)(3)
Question source:	<input checked="" type="checkbox"/> Bank <input type="checkbox"/> Modified <input type="checkbox"/> New
Cognitive level:	<input checked="" type="checkbox"/> Memory or Fundamental <input type="checkbox"/> Comprehension or Analysis
Last NRC Exam used on:	No history of use on previous NRC exams
Exam Bank History:	No record of previous use
Technical references:	EOP-8, Functional Recovery Procedure
Comments:	None