U.S. Nuclear Regulatory Commission
Site-Specific
Written Examination

Applicant Information

Name:	Region: I
Date: 12/21/2015	Facility: Salem 1 & 2
License Level: RO	Reactor Type: W
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected SIX hours after the examination starts.

Applicant Certification

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

____
Applicant's Signature

Results

Examination Value	__________ Points
Applicant's Score	__________ Points
Applicant's Grade	__________ Percent

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 1

Unit 2 is operating at 60% power with rod control in auto when Turbine Steamline Inlet Pressure transmitter 2-PT-505 fails high over 10 seconds.

Which of the following describes the effect on the rod control system from this failure?

Control rods will move in the ______ direction, and the Power Mismatch signal will initially cause rods to move_____ rapidly than if the circuit was not part of rod control.

a. inward, less.

b. inward, more.

c. outward, less.

d. outward, more.

Answer	d	**Exam Level**	R	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2	**ExamDate:**	12/21/2015

KA:	000001K105	AK1.05	**RO Value:**	3.5	**SRO Value:**	3.8	**Section:**	EPE	**RO Group:**	2	**SRO Group:**	2	55.43

System/Evolution Title Continuous Rod Withdrawal 001

KA Statement: Knowledge of the operational implications of the following concepts as they apply to Continuous Rod Withdrawal:
Effects of turbine-reactor power mismatch on rod control

Explanation of Answers: 55.41.b(6) The power mismatch section of the Reactor Control Unit compares the difference in the rate of change of turbine power and rx power, and adds a signal to the temperature error circuit. With turbine power (PT-505) rising rapidly over 10 seconds and rx power not changing at all, the power mismatch signal will cause control rods to move out at a higher rate than what would be expeected from the Terr signal alone, in an attempt to raise Rx power at a rate similar to what turbine power was doing.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Rod Control Lesson Plan	NOS05RODS00		28	12

L.O. Number | Objectives

RODS00E006

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 2

Which of the following describes the reason for the sequence of diagnostic steps in EOP-TRIP-1 Reactor Trip or Safety Injection?

a. SGTR diagnosis has the higher priority because of the highest probability of radioactive release.

b. SGTR diagnosis has the higher priority to minimize the potential for component failure due to water in the Main Steam lines.

c. Main Steam Line break diagnosis has the higher priority because a high energy steam break could potentially mask other failures.

d. Main Steam Line break diagnosis has the higher priority because AFW must be isolated to remain within accident analysis assumptions for containment pressure.

Answer c **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000007K301 EK3.01 **RO Value:** 4.0 **SRO Value:** 4.6 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Reactor Trip 007

KA Statement: Knowledge of the reasons for the following responses as they apply to Reactor Trip:
Actions contained in EOP for reactor trip

Explanation of Answers: 55.41.b(10) SG pressure is checked prior to tube rupture criteria in TRIP-1 to see if any SG is faulted, as that can mask other accidents.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Rx Trip or Safety Injection	EOP-TRIP-1			28
TRIP-1 Lesson Plan	NOS05TRP001		59	7

L.O. Number
TRP001E017

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program**

Question Source Comments 44816

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 3

Which of the following is the basis for establishing / maintaining SG Narrow Range level between 9-33% (non-adverse containment) for small or intermediate LOCA's IAW 2-EOP-LOCA-1, Loss of Reactor Coolant?

a. Ensures SG available if a RCP has to be started later in the event.

b. Maintains a static head of water to reduce any existing SG tube leakage.

c. Ensures adequate feed flow or SG inventory to ensure a secondary heat sink.

d. Maintain the water level above the top of the U-tubes to prevent depressurizing SG.

Answer c **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000009K203 EK2.03 **RO Value:** 3.0 **SRO Value:** 3.3 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Small Break LOCA 009

KA Statement: Knowledge of the interrelations between Small Break LOCA and the following:
S/Gs

Explanation of Answers: 55.41.b(10) Distractor B is incorrect because it is the basis for S/G level / feed flow for a LARGE break LOCA. Distractors A and D are incorrect because the Basis document states that the reason for maintaining adequate feed flow / S/G level is to ensure a secondary heat sink. C is correct because EOP-LOCA-1 Basis Document states the purpose of establishing 9% level is.."To ensure adequate feed flow or S/G inventory to ensure a secondary heat sink for small or intermediate size LOCAs and secondary break accidents." 33% is the S/G narrow range upper control band limit.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of Reactor Coolant	2-EOP-LOCA-1	Bases Doc	12	28

L.O. Number
LOCA01E009

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program**

Question Source Comments Q80803

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 4

Given the following conditions:

- Unit 2 is in Mode 3 following a shutdown after a 200 day run.
- Core burnup is 18,000 MWD/MTU.
- All RCP's are in operation.
- Main steam dumps are in MS PRESSURE CONTROL-AUTO @ 1005 psig.
- A transformer fault results in the total loss of off-site power.

15 minutes after the transformer fault, with NO operator action, the following indications are present:
- All RCS WR Thot's are 559°F and rising slowly.
- All RCS WR Tcold's are 547°F and stable.
- All SG pressures are 1015 psig and stable.
- All SG NR levels are 39% and stable.
- PZR level is 23% and rising slowly.

Which of the following identifies:
1) The status of natural circulation
2) The action(s) that will be performed by the control room IAW S2.OP-AB.RC-0004 Natural Circulation based on that determination of natural circulation status

a. 1) Natural circulation NOT established
2) Raise the steam dumping rate.

b. 1) Natural circulation NOT established
2) Raise the feeding rate to all steam generators.

c. 1) Natural circulation IS established
2) Start AFW pumps to maintain steam generator narrow range level in the normal band.

d. 1) Natural circulation IS established
2) Feed steam generators to maintain steam generator narrow range level in the normal band and adjust MS-10's to enhance heat removal.

Answer a **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000015K101 AK1.01 **RO Value:** 4.4 **SRO Value:** 4.6 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Reactor Coolant Pump Malfunctions 015

KA Statement: Knowledge of the operational implications of the following concepts as they apply to Reactor Coolant Pump Malfunctions:
Natural circulation in a nuclear reactor power plant

Explanation of Answers: 55.41.b(5) The question meets the K/A based on the Loss of RC Flow portion of the K/A. AB.RC-0004 step 3.6 identifies ALL the conditions that must be met for natural circulation to be occurring. With RCS Thots still rising, it is NOT occurring. Step 3.7 directs the operator to feed the SGs to maintain them within +/- 5% of programmed band. Programmed band plus 5% = 38%, so feeding in this situation is not directed. Steam dumping is directed to maintain or lower CET temps.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Natural Circulation	S2.OP-AB.RC-0004		1	8

L.O. Number
ABRC04E001

Objectives

Material Required for Examination	RO 4 Steam Tables

Question Source:	Facility Exam Bank	**Question Modification Method:**	Editorially Modified	**Used During Training Program**	☐

Question Source Comments	80355, removed some window dressing in stem. Modified format to two part answer

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 5

Given the following conditions:

- Unit 2 is operating at 100% power.
- 21 charging pump is in service.
- 22 charging pump is C/T.

- Subsequently, 21 charging pump trips.
- 23 charging pump is placed in service after its suction is aligned to the RWST.

Which of the following identifies a subsequent action which will be directed by S2.OP-AB.CVC-0001, Loss of Charging, and why?

a. Shutdown Unit 2 due to boration of the RCS from the RWST.

b. Restore normal letdown to establish adequate VCT level for normal 23 charging pump operation.

c. Place Excess Letdown in service to establish adequate VCT level for normal 23 charging pump operation.

d. Open 2CV464 Charging Cross-Tie Isolation valve to prevent requiring a Unit 2 shutdown due to boration of the RCS from the RWST.

Answer a **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000022K302 AK3.02 **RO Value:** 3.5 **SRO Value:** 3.8 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Loss of Reactor Coolant Makeup 022

KA Statement: Knowledge of the reasons for the following responses as they apply to Loss of Reactor Coolant Makeup:
Actions contained in SOPs and EOPs for RCPs, loss of makeup, loss of charging, and abnormal charging

Explanation of Answers: 55.41.b(10) When the inservice charging pump tripped, letdown automatically isolated with all charging pump breakers open. If 23 charging pump is placed in service from the RWST, it means it was not able to be placed in service with VCT as suction source at step 3.7. The note prior to placing 23 charging pump in service from Unit 2 RWST states that a unit S/D will be required because of borating the RCS from the RWST.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of Charging	S2.OP-AB.CVC-0001	Bases Doc	3	9

L.O. Number | Objectives

ABCVC1E003

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 6

Given the following conditions:

- Unit 2 is in MODE 4.
- 21 RHR loop is in service providing SDC.
- 22 RHR loop is aligned for ECCS.

- Subsequently, 21 RHR pump trips on overcurrent.

Which of the following describes how SDC flow will be established IAW S2.OP-AB.RHR-0001, Loss of RHR?

22 RHR pump supplying flow.....

a. through 21 RHR HX and ONLY 21SJ49 RHR Disch to Cold Legs.

b. through 22 RHR HX and ONLY 22SJ49 RHR Disch to Cold Legs.

c. through 21 RHR HX and BOTH 21SJ49 and 22SJ49 RHR Disch to Cold Legs.

d. through 22 RHR HX and BOTH 21SJ49 and 22SJ49 RHR Disch to Cold Legs.

Answer d **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000025K201 AK2.01 **RO Value:** 2.9 **SRO Value:** 2.9 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Loss of Residual Heat Removal System 025

KA Statement: Knowledge of the interrelations between Loss of Residual Heat Removal System and the following:
RHR heat exchangers

Explanation of Answers: 55.41.b(10,8) With a single loop of RHR in service for SDC, the loop cross-tie valves 21/22RH19 are open. They would only have been shut if BOTH loops were in SDC mode, to split out the RHR loops to verify minimum flow requirements are being maintained (S2.OP-SO.RHR-0001, page 36). There is no direction to close either cross tie valve in Attachment 2 of AB.RHR when swapping the ECCS loop to SDC mode. There is also no direction to shut either SJ49 RHR to RCS valves, since cooling flow to all 4 RCS loops is desired. The 21 loop RHR HX outlet valve 21RH18 will be closed (Att. 2 step 2.0 D) to terminate flow through 21 RHR HX

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of RHR	S2.OP-AB.RHR-0001			18
Initiating RHR	S2.OP-SO.RHR-0001			28
RHR Simplified drawing	205332-SIMP			2

L.O. Number
ABRHR1E004

Objectives

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic: RO 7

Given the following conditions:

- Unit 2 is operating normally at 100% power steady state.
- Console alarm RC PRESS DEVIATION HI, annunciates.

- Subsequently, the board operator then observes the following indications:
  - PZR pressure master controller output dropping slowly
  - Both PZR spray valves closed
  - All PZR heaters energized
  - PZR pressure channel I (selected for control) dropping slowly
  - PZR pressure channels II, III, & IV rising slowly

Which of the following procedures should be used for these conditions?

a. S2.OP-AB.STM-0001, Excessive Steam Flow.

b. S2.OP-AB.ROD-0003, Continuous Rod Motion.

c. S2.OP-AB.RC-0001, Reactor Coolant System Leak.

d. S2.OP-AB.PZR-0001, Pressurizer Pressure Malfunction.

Answer: d **Exam Level:** R **Cognitive Level:** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000027G107 2.1.7 **RO Value:** 4.4 **SRO Value:** 4.7 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title: Pressurizer Pressure Control Malfunction 027

KA Statement:
Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.

Explanation of Answers:
55.41.b(5,10) The three distracters would cause all the bulleted items except the last one to occur. The 3 unaffected channels rising would discount the 3 items (steam leak, RCS leak, or rod insertion) that could be causing the event.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Pressurizer Pressure Malfunction	S2.OP-AB.PZR-0001			18

L.O. Number

L.O. Number
ABPZR1E001

Objectives

Material Required for Examination:

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program:** ☐

Question Source Comments: 42682

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 8

Which of the following describes the effect if a PZR level instrument reference leg were to develop a leak with the Master Flow Controller in auto?

Indicated PZR level would initially.....

a. rise, then actual PZR level would rise.

b. rise, then actual PZR level would lower.

c. lower, then actual PZR level would rise.

d. lower, then actual PZR level would lower.

Answer b **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000028K101 AK1.01 **RO Value:** 2.8* **SRO Value:** 3.1 **Section:** EPE **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title Pressurizer Level Control Malfunction 028

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

Explanation of Answers: 55.41.b(7) As level in the reference leg lowers, the pressure of the actual wight of water in the PZR would appear to be greater than it was, as it is pushing against a lower reference pressure from the reference leg. This would result in indicated PZR level rising. The rising level would cause an automatic response of the Master Flow Controller to lower charging flow, which would cause actual PZR level to lower.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
General Physics Lesson Plan Components	PC07lr4 Sensors			4

L.O. Number

PZRP&LE015

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Concept Used **Used During Training Program**

Question Source Comments 59797

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 9

Which of the following describes the difference in effect of a rapid boration performed during an ATWS at BOL or EOL?

At 1)_____ , the rapid boration will insert more reactivity due to the 2)_____ differential boron worth.

a. 1) EOL
2) HIGHER

b. 1) EOL
2) LOWER

c. 1) BOL
2) HIGHER

d. 1) BOL
2) LOWER

Answer a **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000029K103 AK1.03 **RO Value:** 3.6 **SRO Value:** 3.8 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Anticipated Transient Without Scram 029

KA Statement: Knowledge of the operational implications of the following concepts as they apply to Anticipated Transient Without Scram:
Effects of boron on reactivity

Explanation of Answers: 55.41.b(5) Differential boron worth rises over core life, and will insert more reactivity during an ATWT at EOL.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Curvebook	S2.RE-RA.ZZ-0016			7

L.O. Number
FRSM00E004

Objectives

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 10

Given the following conditions:

- Unit 2 experiences a Rx trip from 100% power when a Main Generator trip causes a Main Turbine trip.
- Upon transition to TRIP-2, Reactor Trip Response, the PO reports OHA A-6 RMS HI RAD has annunciated, and Radiation Monitor 2R19C - 23SG Blowdown, is in alarm with rising counts.

Which of the following describes how the crew should proceed?

a. Initiate SI and go to TRIP-1, Reactor Trip or Safety Injection.

b. Enter S2.OP-AB.SG-0001, Steam Generator Tube Leak, while continuing in TRIP-2.

c. Do NOT initiate any procedures based solely on a 2R19 alarm immediately following a Rx trip.

d. Enter S2.OP-AB.RAD-0001, Abnormal Radiation, to verify validity of alarm while continuing in TRIP-2.

Answer d **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000037A201 AA2.01 **RO Value:** 3.0 **SRO Value:** 3.4 **Section:** EPE **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title Steam Generator Tube Leak 037

KA Statement: Ability to determine and interpret the following as they apply to Steam Generator Tube Leak:
Unusual readings of the monitors; steps needed to verify readings

Explanation of Answers: 55.41.b(10) AB.SG says in note under entry conditions that R19s are not accurate immediately following a unit trip and should not be used as the sole basis for entering it. However, AB.RAD should be entered and the alarm verified as directed at step 3.2. The SI is not warranted without corroborating indications

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Steam Generator Tube Leak	S2.OP-AB.SG-0001		2	29
Abnormal Radiation	S2.OP-AB.RAD-0001		1	30

L.O. Number
ABSG01E003

Objectives

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 11

Given the following conditions:

- Unit 2 is performing a controlled shutdown and cooldown from 100% power due to a 5 gpm tube leak on 22 SG IAW S2.OP-AB.SG-0001, Steam Generator Tube Leak.
- After completing the Immediate Actions of EOP-TRIP-1, Reactor Trip or Safety Injection, following the Rx trip from 20% power, the RO reports that control rod 2D2 is stuck in the fully withdrawn position.

Which of the following identifies the action, if any, the crew will perform in response to the stuck rod?

a. Initiate a rapid boration for 35 minutes during performance of EOP-TRIP-2.

b. Initiate a rapid boration for 35 minutes in S2.OP-AB.SG-0001 after exiting the TRIP series procedures.

c. No actions are required for a single stuck rod because SDM for the cooldown to 503 degrees is adequate.

d. No actions are required for a single stuck rod until the Auto SI Block is performed during RCS depressurization to 1900 psig.

Answer b **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000038G416 2.4.16 **RO Value:** 3.5 **SRO Value:** 4.4 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Steam Generator Tube Rupture 038

KA Statement:

Knowledge of EOP implementation hierarchy and coordination with other support procedures or guidelines such as, operating procedures, abnormal operating procedures, and severe accident management guidelines.

Explanation of Answers:

55.41.b(10) Question meets K/A because knowledge is required of the relationship between AB performance in the initial response to the tube rupture and EOP performance which addresses stuck rods. Boration for a single stuck rod is not performed in the EOP series, but IS performed in the AB for tube rupture to meet SDM requirements for the initial cooldown to 500°F. Step 3.26.H in AB.SG states to trip the turbine, then trip the Rx at 20% power during the shutdown. The 5 gpm size of the leak will allow for a controlled shutdown, and will also allow the crew to transition to TRIP-2. There are no SGTR diagnostic steps in TRIP-2 that would cause a transition to SGTR-1. AB.SG would be re-entered at step 3.27 following exit of TRIP-2, and 3.28 directs rapid boration for each stuck rod for 35 minutes. The rapid boration will be initiated before any depressurization starts in 3.29, so the distracter regarding depressurization is incorrect.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Steam Generator Tube Leak	S2.OP-AB.SG-0001			29
Reactor Trip Response	2-EOP-TRIP-2			

L.O. Number

ABSG01E005

Objectives

Material Required for Examination	

Question Source:	Previous 2 NRC Exams	**Question Modification Method:**	Direct From Source	**Used During Training Program**	☐

Question Source Comments	11-01 (12/2012 exam) RO Q9

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 12

How does the INITIAL Tavg response for a large steam line break (SLB) compare to the Tavg response for a large feed line break (FLB)?

(Initial Tavg response is before automatic protective actions occur)

a. Rises for a SLB and lowers for a FLB.

b. Lowers for a SLB and rises for a FLB.

c. Rises for both a SLB and a FLB, rises more for a SLB.

d. Lowers for both a SLB and a FLB, lowers more for a FLB.

Answer b **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000054K101 AK1.01 **RO Value:** 4.1 **SRO Value:** 4.3 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Loss of Main Feedwater 054

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

Explanation of Answers: 55.41.b(5) A steam line break will cause MORE steam to be drawn from the SG, causing Tc to go down, causing Tavg to go down. A Feedline break will send LESS cold water into the SG so it's Tc will rise, and Tavg will rise. K/A match because the operational implication of the SG depressurization (similar to a steam line break) is that an operator would have to use diverse and alternate indication to discern what is acrually happening to the SG.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision

L.O. Number CN&FDWE016

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program**

Question Source Comments 80789

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 13

Given the following conditions:

- Salem Unit 1 is operating at 100% power.
- Salem Unit 2 is in Mode 4 with 21 loop of RHR in SDC mode.

- Subsequently, a loss of all off site power occurs.
  - ALL Unit 2 EDGs fail to start or trip shortly after starting, and ALL Unit 2 4KV vital buses are de-energized.
  - The RO reports 21RH18 RHR HX FLOW CONT VALVE indicates 6% open and 2RH20 RHR HX BYP VALVE indicates 15% open, and questions their actual position.

Which of the following describes the operation of the 21RH18 and 2RH20?

a. BOTH the 21RH18 and 2RH20 fail AS IS on a loss of air and the indication is correct.

b. The 21RH18 fails open and the 2RH20 fails shut, and the board indication shows last known position before the loss of power.

c. BOTH the 21RH18 and 2RH20 fail SHUT on a loss of air, and the board indication shows how far they shut before losing all air pressure for operation.

d. BOTH the 21RH18 and 2RH20 fail OPEN on a loss of air, and the board indication shows how far they opened before losing all air pressure for operation.

Answer	a	**Exam Level**	R	**Cognitive Level**	Memory	**Facility:**	Salem 1 & 2
ExamDate:	12/21/2015						

KA:	000055A201	EA2.01	**RO Value:**	3.4	**SRO Value:**	3.7	**Section:**	EPE	**RO Group:**	1	**SRO Group:**	1	55.43

System/Evolution Title Station Blackout | 055

KA Statement: Ability to determine and interpret the following as they apply to Station Blackout:
Existing valve positioning on a loss of instrument air system

Explanation of Answers: 55.41.b(7) The 21RH18 and the 2RH20 fail AS IS on a loss of control air, and both are supplied air exclusively from the "A" header. Unit 2 ECAC supplies the "A" air header. With the Unit 2 ECAC also failing to start, control air pressure will bleed away fairly rapidly. The console indication will indicate actual valve position since 115VIB power should be available from the inverters for at least 2 hours following a LOPA. The valve positions given in the stem are what would be expected with a loop of RHR in SDC mode.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of Control Air	S2.OP-AB.CA-0001		36	18

L.O. Number | Objectives

LOPA00E010

Material Required for Examination

Question Source: New | **Question Modification Method:** | **Used During Training Program**

Question Source Comments

Comment

Question Topic RO 14

Given the following conditions:

- The 2B Vital Instrument Bus (VIB) Uninterruptible Power Supply (UPS) Static Switch has been placed in the Bypass to Alternate position IAW 2B VITAL INSTRUMENT BUS UPS SYSTEM OPERATION.
- ALL power supplies to the 2B VIB UPS are available.
- Subsequently, the breaker from 2B 230VAC bus to the 2B VIB AC Line Regulator fails and opens.

What will be the effect on 2B VIB?

The 2B VIB will...

a. NOT deenergize because the Static Switch will automatically swap to the Preferred Source.

b. NOT deenergize because the inverter will automatically power the 2B VIB through the inverter auctioneering circuit from its DC source.

c. deenergize until manual operator action is taken to re-energize the 2B VIB by placing the Static Switch in Normal and placing the Test Transfer switch to N (Normal).

d. deenergize until manual operator action is taken to re-energize the 2B VIB by placing the Static Switch in Isolate (Alternate) and placing the Test Transfer Switch to N (Normal).

Answer c **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000057A101 AA1.01 **RO Value:** 3.7* **SRO Value:** 3.7 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Loss of Vital AC Instrument Bus 057

KA Statement: Ability to operate and / or monitor the following as they apply to Loss of Vital AC Instrument Bus:
Manual inverter swapping

Explanation of Answers: 55.41.b(7) The VIB UPS static switch is transferred from norm to alt by placing the test transfer switch to ALT IAW Section 5.4 of SO.115-0012. Then the Manual Bypass Switch is placed in Bypass to Alternate to physically position contacts B1, B2, and B4 (closed) and B3, B5 open. The VIB will deenrgize when power is lost to the AC line regulator, which is the Alternate source. Placing the static switch in Normal and test transfer switch to N (from alternate) is directed by SO-115-0012, Section 5.7.3 and 5.7.4. Distracter D is plausible if it is thought the switch would be used to isolate the alternate source from the static switch so it could be powered from another source. A is incorrect because automatic transfer is unavailable with the staic switch not in the Normal posiiton. B is incorrect because the static switch is aligned to alternate, and while the DC power is supplying the inverter, the inverter output cannot flow through static switch with B3 and B5 contacts open.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
2B VITAL INSTRUMENT BUS UPS SYSTEM O	S2.OP-SO.115-0012	5.4	19	6
2B VITAL INSTRUMENT BUS UPS SYSTEM O	S2.OP-SO.115-0012	Exhibit 1 (Static Switch	56	6

L.O. Number
115VACE014

Objectives

Material Required for Examination					
Question Source:	New	Question Modification Method:		Used During Training Program	☐
Question Source Comments					

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 15

Given the following conditions:

- Unit 2 tripped due to a transformer problem.
- 2A and 2C Vital Busses are energized in SEC Mode 2.
- 2B Vital Bus is de-energized because 2B Diesel Generator failed to start.
- OHA B-10, 2B 125VDC CNTRL BUS VOLT LO, just actuated.

In accordance with S2.OP-AR.ZZ-0002, Overhead Annunciators Window B, which of the following describes the required action?

a. Place the 2B2 Battery Charger in service.

b. Transfer the 2B1 Charger to its alternate power supply.

c. Transfer 2B 125 VDC bus loads to their alternate source.

d. Ensure the 2B2 Battery Charger has automatically energized.

Answer a **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000058A101 AA1.01 **RO Value:** 3.4* **SRO Value:** 3.5 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Loss of DC Power 058

KA Statement: Ability to operate and / or monitor the following as they apply to Loss of DC Power:
Cross-tie of the affected dc bus with the alternate supply

Explanation of Answers: 55.41.b(8) The 2B1 battery charger is normally in service. The use of 2B2 Battery charger is limited to 7 days per Tech Specs and is not normally in service. There is no auto swap. Transferring loads is only done if the backup battery charger cannot be placed in service.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Overhead Annunciators Window B	S2.OP-AR.ZZ-0002		21-22	36

L.O. Number | Objectives

DCELECE005

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Editorially Modified **Used During Training Program**

Question Source Comments 80249

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 16

Which of the following identifies when the 21/22SW122, CC HX SW INLET VALVES automatically reposition, and why?

The 21/22SW122 valves…

a. open on ANY SI signal to ensure cool CCW is supplied to the RHR HXs and pump seals.

b. close on ANY SI signal to ensure SW pump runout does not occur with all CFCUs running.

c. open on a SI signal coincident with a LOOP to ensure cool CCW is supplied to the RHR HXs and pump seals.

d. close on a SI signal coincident with a LOOP to ensure SW pump runout does not occur with all CFCUs running.

Answer d **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000062K302 AK3.02 **RO Value:** 3.6 **SRO Value:** 2.9 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Loss of Nuclear Service Water 062

KA Statement: Knowledge of the reasons for the following responses as they apply to Loss of Nuclear Service Water:
The automatic actions (alignments) within the nuclear service water resulting from the actuation of the ESFAS

Explanation of Answers: 55.41(7,8) The SW122 valve are normally open and operate in conjunction with the CCW HX SW outlet valves SW127. During a SI coincident with a Loss of Offsite Power, the SW122 valves are automatically repositioned from open to shut. SEC Mode III closes SW122's due to SW Pump runout (and potential loss of all SW) concerns with all CFCU's I/S if only 2 SW pumps are operating, due to EDG/SEC failure. Also, the SW122's must stroke closed in less than 30 seconds to ensure the CFCU's are operational within 60 seconds following Mode III initiation (Tech. Spec. 3/4.3.2 Table 3.3-5)

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Service Water System - Nuclear	NOS05SWONUC		34-35	13

L.O. Number Objectives

SW0NUCE006

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program**

Question Source Comments 125675

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 17

Both Salem Units are operating normally at 100% power when Unit 2 recieves OHA A-7 FIRE PROT FIRE.

Which of the following is a correct response when assessing the affected Fire Zone(s) on 2RP5, and why?

a. If ANY rows "Fire" light is illuminated ensure at least one Fire Pump is running to supply fire protection water by verifying OHA A-15 FIRE PUMP 1/2 RUN.

b. If a fire is indicated in the Relay Room select Fire Outside Control Area in both control rooms to prevent smoke from entering control rooms.

c. If ANY CO2 / Halon Discharge lights are lit then ensure EDG control room ventilation has automatically stopped to prevent egress of gas to adjoining areas.

d. If fire indication for BOTH Zones 59 and 74 are received, then open 2FP147 Fire Protection Containment Isolation to provide normally isolated fire protection water to containment.

Answer d **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000067K302 AK3.02 **RO Value:** 2.5 **SRO Value:** 3.3 **Section:** EPE **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title Plant Fire on Site 067

KA Statement: Knowledge of the reasons for the following responses as they apply to Plant Fire on Site:
Steps called out in the site fire protection plan, FPS manual, and fire zone manual

Explanation of Answers: 55.41.b(10,4) A is incorrect because the FIRE light can illuminate if a manual fire pull box is activated, which only gives indication and does not initiate fire protection water flow. C is incorrect because Halon supplied to relay rooms would not indicate stopping EDG supply ventilation. B is incorrect because for a fire in Relay Room (physically located outside CR but using same AC system) Fire Outside Control Area would not be selected. D is correct because the fire protection line to containment is normally isolated and is pressurized if both the zone 59 and 74 alarms are received.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Control Room Fire Response	S2.OP-AB.FIRE-0001		2	9
Overhead Annunciators - Window A	S2.OP-AR.ZZ-0001		23-24	56

L.O. Number
FIRPROE008

Objectives

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic: RO 18

Given the following conditions:

- Operators are performing actions in 2-EOP-FRCC-1, Response to Inadequate Core Cooling.
- Containment pressure is 2 psig and stable.

Which of the following describes the SG level and AFW flow requirements PRIOR to initiating the SG Depressurization to Inject ECCS Accumulators?

SG NR level in at least one SG must be greater than______

a. 9% OR total AFW flow must be >22E4 lbm/hr.

b. 15% OR total AFW flow must be >22E4 lbm/hr.

c. 9% AND total AFW flow available of >22E4 lbm/hr.

d. 15% AND total AFW flow available of >22E4 lbm/hr.

Answer	a	Exam Level	R	Cognitive Level	Memory	Facility:	Salem 1 & 2	ExamDate:	12/21/2015

KA:	000074K203	EK2.03	RO Value:	4.0	SRO Value:	4.0	Section:	EPE	RO Group:	2	SRO Group:	2	55.43	☐

System/Evolution Title: Inadequate Core Cooling | 074

KA Statement: Knowledge of the interrelations between Inadequate Core Cooling and the following:
AFW pump

Explanation of Answers: 55.41.b(10) Step 13 asks if any SG NR level is >9% (15% adverse). Since containment pressure is stated as 2 psig, it is below the 4 psig at which adverse numbers would be used. If SG NR level is >9% in at least one SG, the step for asking if >22E4 lbm/hr AFW flow is present is bypassed. If SG NR level is <9%, then it requires 22E4 lbm/hr. So you need at least 9% OR actual total AFW flow >22E4 lbm/hr. The availability is plausible as it is used in other Emerg procedures, but in this case a secondary heat sink is required, which is defined as >9% or >22E4 lbm/hr flow.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Response to Inadequate Core Cooling	2-EOP-FRCC-1		2	22

L.O. Number
FRCC00E005

Objectives

Material Required for Examination:

Question Source: New | **Question Modification Method:** | **Used During Training Program** ☐

Question Source Comments:

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 19

Unit 2 is at 80% power when RMS channel 2R31, Letdown Line-Failed Fuel Process Rad Monitor starts a rising trend.

When responding with S2.OP-AB.RC-0002, High Activity in Reactor Coolant System, how will operators differentiate between a crud burst and failed fuel as the cause of the rising 2R31 indication?

a. By monitoring 2R31. Fuel damage will cause the indication to rise at a higher rate than a crud burst.

b. By raising letdown flow rate to 120 gpm. The 2R31 readings will lower if crud burst caused the rising trend but will NOT lower if failed fuel caused the rising trend.

c. By requesting Radiation Protection to survey the letdown pipe area in the Auxiliary building. Radiation levels will be higher due to failed fuel than from a crud burst.

d. By requesting a Shift Chemistry Technician perform a radiological analysis of the RCS. A crud burst will show different concentrations of certain radionuclides than will failed fuel.

Answer d **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000076A203 AA2.03 **RO Value:** 2.5 **SRO Value:** 3.0 **Section:** EPE **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title High Reactor Coolant Activity 076

KA Statement: Ability to determine and interpret the following as they apply to High Reactor Coolant Activity:
RCS radioactivity level meter

Explanation of Answers: 55.41.b(5,10) D is correct.This is the method as directed by procedure to determine if there is failed fuel. A is incorrect because there is no procedural guidance for the operator to use to determine source of elevated readings by how fast indications are rising. C is incorrect because Radiation Protection is sent to perform surveys to repost areas as necessary for personnel protection, not to determine source of activity. . B is incorrect because Letdown is maximized to expedite RCS cleanup for valid elevated activity, not to determine cause of the elevated activity

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
High Activity in Reactor Coolant System	S2.OP-AB.RC-0002			8

L.O. Number
ABRC02E001
ABRC02E003

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program**

Question Source Comments 71483

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 20

Given the following conditions:

- Salem Unit 1 is offline.
- Salem Unit 2 operating at 95% power, 1150 Mwe, with its Power System Stabilizer (PSS) out of service.
- Unit 2 Main Generator gas pressure is 75 psig.
- Hope Creek is operating at 100% power, with its PSS out of service.
- The Hope Creek 5-6 breaker is out of service.

- Subsequently, a 500KV grid disturbance results in lower than normal grid voltage.

If a power reduction was required, which of the following identifies Main Generator loading which is outside the allowable for Salem Unit 2 IAW A-5-500-EEE-1686, Artificial Island Operating Guide?

Trip-A-Unit is NOT armed.

Salem Unit 2 operating at ______ Mwe with MVAR loading _____ out.

a. 1000, 150.

b. 1100, 150.

c. 1000, 575.

d. 1100, 575.

Answer	b	**Exam Level**	R	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2	**ExamDate:**	12/21/2015

KA:	000077A201	AA2.01	**RO Value:**	3.5	**SRO Value:**	3.6	**Section:**	EPE	**RO Group:**	1	**SRO Group:**	1

55.43

System/Evolution Title Generator Voltage and Electric Grid Disturbances 077

KA Statement: Ability to determine and interpret the following as they apply to Generator Voltage and Electric Grid Disturbances: Operating point on the generator capability curve

Explanation of Answers: 55.41.b(4) With Unit 1 O/S and the HC 5-6 breaker O/S, the correct curve is 2S2H-5-6 on page 291. With both Units PSS O/S, the red dashed line will be used for allowable generator excitation. A is incorrect because the PSS is O/S. If either units PSS was IN service, then it would be correct. The 2 distracters with higher MVARS are both within the limit. Since there are two different Mwe loading conditions, and the choices for each are high/low, the answer cannot be obtained by ruling out 2 of the choices because there would have to be 2 correct answers for them to be correct. Not a direct lookup because several different Figures are given

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Artificial Island Operating Guide	A-5-500-EEE-1686		291	11

L.O. Number
GEN002E016
GEN002E017

Objectives

Material Required for Examination	RO 20 A-5-500-EEE-1686, pages 123,291,308

Question Source:	Previous 2 NRC Exams	**Question Modification Method:**	Significantly Modified	**Used During Training Program**	☐

Question Source Comments	13-01 RO Q21 all 4 choices changed to different combination of numbers. No original numbers from 13-01 exam used. Answer position changed.

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 21

Given the following conditions:

- A SBLOCA has occurred.
- The crew is performing the actions of EOP-LOCA-2, POST LOCA COOLDOWN AND DEPRESSURIZATION.
- SI pumps have been stopped.
- Normal Charging is aligned.
- The crew is depressurizing the RCS using normal spray.

Which of the following describes the strategy for controlling RCS subcooling during the depressurization?

Subcooling will be...

a. minimized to reduce RCS break flow.

b. maximized to ensure continued RCP operation.

c. maximized to prevent a challenge to the core cooling critical safety function.

d. minimized to ensure pressurizer level remains above the lower limit to allow heater operation during the RCS cooldown.

Answer a **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 00WE03A103 EA1.3 **RO Value:** 3.7 **SRO Value:** 4.1 **Section:** EPE **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title LOCA Cooldown and Depressurization E03

KA Statement: Ability to operate and / or monitor the following as they apply to LOCA Cooldown and Depressurization:
Desired operating results during abnormal and emergency situations.

Explanation of Answers: 55.41.b(10) Strategy of step 31 is to depressurize and attempt to minimize subcooling so that break flow is reduced, due to the minimal makeup provided by charging pumps. B is incorrect because RCP operation is not required for this event, although desired. C is incorrect because core cooling should not be challenged on loss of subcooling at these temps and pressures(this point in the cooldown) D is incorrect because PZR heater operation may be required to reduce the rate of increase in pressurizer level, but is not the reason for minimizing subcooling.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Post LOCA Cooldown and Depressurization	2-EOP-LOCA-2 Basis Doc	Step 31	59	25

L.O. Number

LOCA02E001

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program**

Question Source Comments 81069

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic: RO 22

Given the following conditions:

- Unit 2 is attempting to identify and isolate a LOCA outside containment.
- 2-EOP-LOCA-6, LOCA Outside Containment, has just been entered.
- The source of the water is backleakage from the 23 cold leg injection line.

Assuming that any valves required to be operated during LOCA-6 operate correctly, which of the following leak locations would **NOT** be isolated while using 2-EOP-LOCA-6?

a. On the valve inlet flange on 22SJ49, RHR DISCH TO COLD LEGS.

b. On the valve outlet flange on 21SJ49, RHR DISCH TO COLD LEGS.

c. Between the 2RH20, RHR HX BYP VALVE and the 2RH26, HOT LEG ISOL VALVE.

d. Between the 2RH2, RHR COMMON SUCT VALVE, and 22RH4, RHR PMP SUCT VALVE.

Answer: b **Exam Level:** R **Cognitive Level:** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 00WE04K202 EK2.2 **RO Value:** 3.8 **SRO Value:** 4.0 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title: LOCA Outside Containment E04

KA Statement: Knowledge of the interrelations between LOCA Outside Containment and the following:
Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.

Explanation of Answers: 55.41(3,8) 2-EOP-LOCA-6 closes/checks closed the following valves: 2RH1 OR 2RH2, 21 and 22RH19s, 2RH26, 21 and 22SJ49s. Using drawing 205332-SIMP, it shows that any leak between the RH1/2 and the SJ49s will be isolated with the above valves closed. The only location which wouldn't be affected by those valve being closed in the downstream/outlet side of the SJ49 valves. The stem statement of proper valve operation was inserted to preclude a candidate from assuming a leaking valve may not close fully when operated. K/A match is based on the decay heat removal system knowledge required to ascertain the leak location

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
LOCA Outside Containment	2-EOP-LOCA-6			21
	205332-SIMP			

L.O. Number

LOCA06E002

Objectives

Material Required for Examination:

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program:** ☐

Question Source Comments: 133792. Used 3 NRC exams ago Sept 2011 RO exam

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 23

Given the following conditions:

- The crew is in 2-EOP-FRHS-1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, and the criteria for initiating RCS bleed and feed has been met.
- Prior to the actual procedure steps there is a CAUTION statement that reads: TO ESTABLISH RCS HEAT REMOVAL BY RCS BLEED AND FEED, STEPS 24 THRU 29 MUST BE PERFORMED QUICKLY AND WITHOUT INTERRUPTION

Which of the following describes the basis for that statement?

a. Stopping RCP's is the first step in the process. This terminates all RCS heat removal until bleed and feed is initiated.

b. Expeditious performance of the steps allows time for other compensatory actions if bleed and feed actions are unsuccessful.

c. Delay allows core cooling to degrade further. RCS pressure rises such that ECCS flow is lower when bleed and feed is initiated.

d. Establishing SI flow and then delaying opening the PZR PORV's may lead to damage to the PORV's and Code Safety Valves when they pass water.

Answer c **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 00WE05G420 2.4.20 **RO Value:** 3.8 **SRO Value:** 4.3 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Loss of Secondary Heat Sink E05

KA Statement: Knowledge of operational implications of EOP warnings, cautions, and notes.

Explanation of Answers: 55.41.b(10)Per FRHS Basis document states that delay allows further degradation of cooling, followed by RCS pressure rise, and core uncovery may be greater because ECCS flow is limited by RCS pressure. A is incorrect because there is still some cooling after the RCP's are stopped since there is water left in the SG's. B is incorrect because there are no alternative steps. D is incorrect because ECCS flow is actually reduced by the delay - the PZR will not go solid.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of Secondary Heat	2-EOP-FRHS-1	Basis Doc	7	24

L.O. Number | **Objectives**

FRHS00E009

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program**

Question Source Comments 80840

Comment

Question Topic: RO 24

Given the following conditions for Unit 2:

- A LOCA has occurred.
- While performing 2-EOP-LOCA 1 "LOSS OF REACTOR COOLANT" 22 RHR pump motor seizes and power is lost to 21 RHR pump.
- The crew enters 2-EOP-LOCA-5, "LOSS OF EMERGENCY RECIRCULATION".
- A cooldown has been initiated as directed in 2-EOP-LOCA-5.
- During the cooldown, the crew restores power to 21 RHR pump.
- RWST Level is 30'

Based on current plant conditions, which of the following describes the mitigation strategy?

a. Continue with the cooldown and start 21 RHR pump when directed in 2-EOP-LOCA-5.

b. Return to 2-EOP-LOCA-1 and continue recovery actions with the step previously in effect.

c. Start 21 RHR pump and continue actions of 2-EOP-LOCA-5 until the RWST LO Level alarm actuates.

d. Start 21 RHR pump and transition to 2-EOP-LOCA-3, Transfer to Cold Leg Recirculation, to verify recirculation flowpath.

Answer: b | **Exam Level:** R | **Cognitive Level:** Memory | **Facility:** Salem 1 & 2 | **ExamDate:** 12/21/2015

KA: 00WE11A103 | EA1.3 | **RO Value:** 3.7 | **SRO Value:** 4.2 | **Section:** EPE | **RO Group:** 1 | **SRO Group:** 1 | 55.43

System/Evolution Title: Loss of Emergency Coolant Recirculation | E11

KA Statement: Ability to operate and / or monitor the following as they apply to Loss of Emergency Coolant Recirculation:
Desired operating results during abnormal and emergency situations.

Explanation of Answers: 55.41.b(10) B is correct because Continuous action step states that if any train of emergency recirculation capability is restored then the crew should return to the procedure and step in effect. This is consistent with the organization of the EOPs. C is incorrect because Continuous action Step 6.1 directs return to evaluate train status and a return to the procedure in effect; A is incorrect because continuation of the cooldown in LOCA-5 is not required. The purpose of the procedure is mitigation and recovery of recirculation capability. D is incorrect because a transfer to LOCA-3 is not initiated until RWST level is evaluated in LOCA-1. This question is not considered SRO level based on only requiring general mitigative actions.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of Emergency Coolant Recirculation	2-EOP-LOCA-5			25

L.O. Number: LOCA05E008

Objectives

Material Required for Examination:

Question Source: Facility Exam Bank | **Question Modification Method:** Direct From Source | **Used During Training Program:** ☐

Question Source Comments: 81096

Comment:

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic: RO 25

Given the following conditions:

- Unit 1 has experienced a MSLB at the mixing bottle.
- MSLI has failed to close ANY MS167.
- Operators have transitioned out of 1-EOP-LOSC-1, Loss of Secondary Coolant.
- RCS pressure is 1345 psig and dropping slowly.
- RCS Tcs are dropping.

Which of the following describes Reactor Coolant Pump strategy, and why?

RCPs should...

a. be tripped to minimize the heat input into the RCS.

b. continue to be run, because RCP pressure dependent trip criteria are only applicable during a LBLOCA.

c. continue to be run, since RCP pressure dependent trip criteria is not used when a cooldown is in progress.

d. be tripped so that 2 phase flow doesn't develop if they were to be tripped later in the event, leading to higher peak clad temperatures.

Answer: c **Exam Level:** R **Cognitive Level:** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 00WE12A202 EA2.2 **RO Value:** 3.4 **SRO Value:** 3.9 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title: Uncontrolled Depressurization of all Steam Generators E12

KA Statement: Ability to determine and interpret the following as they apply to Uncontrolled Depressurization of all Steam Generators: Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Explanation of Answers: 55.41.b(10,3)The RCP trip criteria with regards to pressure in a LOSC condition is for pump protection only. The Generic issues segment of the ERG executive volume describes the SBLOCA scenarios where pumping coolant out the break then stopping RCP's leads to peak clad temps in excess of 2200 degrees. That is not applicable here. What is more important in the LOSC is forced flow. LOSC-2 basis document page 12.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Multiple Steam Generator Depressurization	1-EOP-LOSC-2		12	22

L.O. Number

LOSC02E003

Objectives

Material Required for Examination:

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program**

Question Source Comments: 63166

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 26

Given the following conditions:

- Unit 2 has experienced an event which has resulted in 24 SG pressure rising to 1115 psig.
- A MSLI has been performed.

How many total SG Safety Valves will be open if 24 SG pressure remains at 1115 psig and all Safety Valves operate when expected?

a. 2

b. 3

c. 4

d. 5

Answer	b	**Exam Level**	R	**Cognitive Level**	Memory	**Facility:**	Salem 1 & 2	**ExamDate:**	12/21/2015

KA:	00WE13K202	EK2.2	**RO Value:**	3.0	**SRO Value:**	3.2	**Section:**	EPE	**RO Group:**	2	**SRO Group:**	2	55.43

System/Evolution Title Steam Generator Overpressure | E13

KA Statement: Knowledge of the interrelations between Steam Generator Overpressure and the following:
Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.

Explanation of Answers: 55.41.b(4) Each SG has five safeties, with lift setpoints of 1070, 1100, 1110, 1120, 1125 psig

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Unit 2 Main Steam System	205303 Sheet 2			61

L.O. Number STMGENE008

Objectives

Material Required for Examination

Question Source:	Facility Exam Bank	**Question Modification Method:**	Direct From Source	**Used During Training Program**	

Question Source Comments 152360 used 3 NRC exams ago Sept 2011.

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 27

Of the following choices, which is the only automatic action expected to occur as containment pressure rises from 12 psig to 18 psig during a LOCA?

a. Phase A Isolation

b. Feedwater Isolation.

c. Main Steamline Isolation.

d. Containment Ventilation Isolation

Answer c **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 00WE14A101 EA1.1 **RO Value:** 3.7 **SRO Value:** 3.7 **Section:** EPE **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title High Containment Pressure E14

KA Statement: Ability to operate and / or monitor the following as they apply to High Containment Pressure:
Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Explanation of Answers: 55.41.b(7) Phase A isolation occurs on any SI signal, which at the very least would have occurred at 4 psig in containment if not sooner. Feedwater Isolation occurs on any SI or SG NR level >67%. Main steamline Isolation occurs at 15 psig. Containment Ven isolation occurs any SI, RMS alarm of associated monitors, Phase B. The SI signal would have already actuated.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Licensed Operator Fluency List	NOS05FLUNCY		13-16	9

L.O. Number | **Objectives**

FLUNCYE002

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Concept Used **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 28

Which of the following identifies when will OHA E-48 ROD BOTTOM will clear during a reactor startup?

When 1)_______ rods are withdrawn past 2) _____ steps.

a. 1) Control Bank A
2) 20

b. 1) Control Bank A
2) 35

c. 1) Control Bank D
2) 20

d. 1) Control Bank D
2) 35

Answer a **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 001000A302 A3.02 **RO Value:** 3.7 **SRO Value:** 3.6 **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title Control Rod Drive System 001

KA Statement: Ability to monitor automatic operations of the Control Rod Drive System including:
Rod height

Explanation of Answers:
55.41.b(6) There are 3 Rod Bottom Bypass Bistable Modules, for Control Banks B, C, and D only
1)Blocks OHA E–48, ROD BOTTOM for its own bank when entire bank is <35 steps
2)When all banks are on bottom, OHA E–48, ROD BOTTOM alarm is illuminated.
3)When Control Bank A is >20 steps alarm is cleared (Control Banks B, C, D, bypassed)
4)If no bypass, alarm would stay in until bank D was >20 steps. Bypassing control banks B, C, D, until >35 steps gives indication of a dropped rod on any shutdown bank and control bank and each bank >35 steps.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Rod Control and Position Indications Systems L	NOS05RODS00		51-52	12

L.O. Number
RODS00E008

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Concept Used **Used During Training Program**

Question Source Comments 57724

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic: RO 29

Given the following conditions:

- Unit 2 is in MODE 6.
- The Reactor vessel head is removed and on its storage stand.
- The Refueling Cavity is being filled from the RWST IAW S2.OP-SO.SF-0003, FILLING THE REFUELING CAVITY. (Assume RWST level was at 40.5' when the unit was shutdown)
- Refueling cavity water level is 110' and rising.

Which choice identifies the indications which will be present on the Control Room Console?

PZR Cold Calibrated level is...

a. 3%; RWST level is 27'.

b. 80%; RWST level is 20'.

c. off-scale low; RWST level is 40'.

d. off-scale high RWST level is 10'.

Answer: a **Exam Level:** R **Cognitive Level:** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 002000A111 A1.11 **RO Value:** 2.7 **SRO Value:** 3.2 **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title: Reactor Coolant System 002

KA Statement: Ability to predict and/or monitor changes in parameters associated with operating the Reactor Coolant System controls including: Relative level indications in the RWST, the refueling cavity, the PZR and the reactor vessel during preparation for refueling

Explanation of Answers: 55.41.b(3,)The refueling cavity at 110' will hold ~112,000 gallons. The RWST normal operating level is a minimum of 40.5 feet prior to refueling (364,500 gal). Subtract and the total left in RWST will be 253,000 gallons, which will be ~27.5'. The corresponding PZR cold cal level will be > the 0% level at the 108' 11" elevation in containment. This question does not require memorization of tank levels, but rather an understanding of the physical connections and relative elevations of the systems.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Draining the Refueling Cavity	S2.OP-SO.SF-0004		29-30	17

L.O. Number: RCS000E006

Objectives

Material Required for Examination:

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program**

Question Source Comments: 48947

Comment:

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 30

Prior to opening 1CV114, RCP Seal Bypass Valve IAW S1.OP-SO.RC-0001, RCP Operation, all of the following conditions must be met EXCEPT:

a. RCS pressure < 100 psig.

b. Any RCP seal leakoff flow < 1 gpm.

c. 11-14CV104, SEAL LEAKOFF valves open.

d. Seal water flow to each RCP is at least 6 gpm.

Answer a **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 003000A407 A4.07 **RO Value:** 2.6* **SRO Value:** 2.6 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Reactor Coolant Pump System 003

KA Statement: Ability to manually operate and/or monitor in the control room:
RCP seal bypass

Explanation of Answers: 55.41.b(3) RCS pressure must be between 100-1,000 psig. If pressure is less than 100 psig, the CV114 is required to be shut. All distracters are listed in SO.RC-1 step 5.2.1.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Reactor Coolant Pump Operation	S1.OP-SO.RC-0001		13	34

L.O. Number Objectives

RCPUMPE013

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Concept Used **Used During Training Program**

Question Source Comments 43005

Comment

RO SkyScraper	SRO Skyscraper	RO System/Evolution List	SRO System/Evolution List	Outline Changes

Question Topic: RO 31

Operators are preparing to start 21 RCP IAW S2.OP-SO.RC-0001, Reactor Coolant Pump Operation.

Which of the following would prevent the RCP from starting when its START PB is depressed?

21 RCP...

a. #1 seal D/P < 200 psig.

b. 4KV breaker trip springs not charged.

c. STANDPIPE LEVEL LO alarm locked in.

d. Oil Lift Pump discharge pressure <500 psig.

Answer	d	Exam Level	R	Cognitive Level	Memory	Facility:	Salem 1 & 2	ExamDate:	12/21/2015

KA:	003000K101	K1.01	RO Value:	2.6	SRO Value:	2.8	Section:	SYS	RO Group:	1	SRO Group:	1	55.43

System/Evolution Title: Reactor Coolant Pump System | 003

KA Statement: Knowledge of the physical connections and/or cause-effect relationships between Reactor Coolant Pump System and the following: RCP lube oil

Explanation of Answers: 55.41.b(3) A is incorrect because it is a manaul RCP trip setpoint stated at Step 3.2.9 third bullet. B is incorrect because the trip springs are charged when the breaker closes, it woiuld be the closiong springs not charged which would prevent the 4KV braker form closing. C is incorrect because the standpipe level low has no interlock to prevent pump starting. D is correct as shown on drawings.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Reactor Coolant Pump Instrumentation	220424			05
RCPs and RCPs Lift Oil Pumps	224405			4

L.O. Number
RCPUMPE006

Objectives

Material Required for Examination:

Question Source:	Facility Exam Bank	Question Modification Method:	Concept Used	Used During Training Program

Question Source Comments: 80226

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic: RO 32

With normal charging and letdown in service, which of the following valves failing closed is interlocked to cause 1CV4, Letdown Orifice Isolation Valve, to automatically shut?

a. 1CV18, Letdown Pressure Control valve.

b. 1CV77, 23 Loop Chg Line Stop valve.

c. 1CV7, Letdown HX Inlet Isolation valve.

d. 1CV2, Letdown Isolation valve.

Answer: d | **Exam Level:** R | **Cognitive Level:** Memory | **Facility:** Salem 1 & 2 | **ExamDate:** 12/21/2015

KA: 004000K413 | K4.13 | **RO Value:** 3.2* | **SRO Value:** 3.5 | **Section:** SYS | **RO Group:** 1 | **SRO Group:** 1 | 55.43

System/Evolution Title: Chemical and Volume Control System | 004

KA Statement: Knowledge of Chemical and Volume Control System design feature(s) and or interlock(s) which provide for the following:
Interlock between letdown isolation valve and flow control valve

Explanation of Answers: 55.41.b(7) The 1CV2 being closed would cause any of the 3 open orifice isolation valves to shut. 2CV4 is stated in the stem to be the open isolation valve.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
1CV4 Logic Diagram	224430			5

L.O. Number

CVCS00E006

Objectives

Material Required for Examination:

Question Source: Facility Exam Bank | **Question Modification Method:** Concept Used | **Used During Training Program**

Question Source Comments: 61622

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 33

Which of the following methods is used prior to cooldown to remove hydrogen from the RCS after a unit shutdown to enter a refueling outage, and why is hydrogen removed?

_________ degassification is used to remove hydrogen from the RCS to prevent_______

a. Chemical, an inadvertent crud burst during RCS cooldown.

b. Mechanical, an inadvertent crud burst during RCS cooldown.

c. Chemical, having an explosive concentration present when oxygen is introduced to system.

d. Mechanical, having an explosive concentration present when oxygen is introduced to system.

Answer	d	**Exam Level**	R	**Cognitive Level**	Memory	**Facility:**	Salem 1 & 2	**ExamDate:**	12/21/2015

KA:	004000K549	K5.49	**RO Value:**	2.7	**SRO Value:**	3.3	**Section:**	SYS	**RO Group:**	1	**SRO Group:**	1	55.43

System/Evolution Title Chemical and Volume Control System 004

KA Statement: Knowledge of the operational implications of the following concepts as they apply to the Chemical and Volume Control System:
Purpose and method of hydrogen removal from RCS before opening system: explosion hazard, nitrogen purge

Explanation of Answers: 55.41.b(3,5) Both chemical (addition) and mechanical (replacement of H2 with N2) degasses are performed during a shutdown/cooldown. Mechanical is most effective at NOP/NOT (see P&L 2.1.5) A is incorrect because chemical degass is performed when RCS temp is less than 250 (see pre-req 3.1.7). B is incorrect because of wrong reason for mechanical degas. C is incorrect because chenical degass is performed to initiate crud burst (addition of H2O2).

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
RCS Degassification	S2.OP-SO.CVC-0011			15

L.O. Number
CVCS00E013

Objectives

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program** ☐

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 34

Given the following conditions:

- Unit 2 has experienced a Large Break LOCA.
- 2-EOP-LOCA-3, Transfer to Cold Leg Recirculation, is complete with NO abnormalities encountered.
- Operators are currently at step 26, "Preparation for Hot Leg Recirc", of 2-EOP-LOCA-1, Loss of Reactor Coolant.
- Off-site power is supplying all 4KV Vital busses.

If BOTH RHR pumps are operating, what would be the effect if 22 RHR Pp were to trip?

a. 21 and 22 SI pumps would begin to cavitate.

b. 22 Containment Spray Pump would lose NPSH.

c. 21 and 22 Charging pumps would begin to cavitate.

d. Flow to the Containment Spray header would be lost.

Answer d **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 005000K305 K3.05 **RO Value:** 3.7* **SRO Value:** 3.8* **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Residual Heat Removal System 005

KA Statement: Knowledge of the effect that a loss or malfunction of the Residual Heat Removal System will have on the following:
ECCS

Explanation of Answers: 55.41.b(5) Distracter A is incorrect because the closure of the RH19's is done to prevent RHR pump runout if only a single RHR pump is operating, so the SI pumps will not lose suction. D is the correct answer. LOCA-3 explicitly states that if BOTH RHR pumps are operating, then 22CS36 is opened to supply containment spray from 22 RHR pp discharge.
Distracter C is incorrect charging pumps, as well as the SI pumps, will not lose suction.
Distracter B is incorrect because all containment spray pumps are stopped in LOCA-3, which has been completed as stated in stem

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of Reactor Coolant	EOP-LOCA-1			
			28	8

L.O. Number
ECCS00E016
RHR000E016

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Editorially Modified **Used During Training Program**

Question Source Comments Modified correct answer terminology from Containment Spray flow would be lost to Flow to the Containment Spray header would be lost.

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic: RO 35

Given the following conditions:

- Unit 2 is operating at 100% power with 22 charging pump in service.
- 23 charging pump is out of service and operable.

Which of the following Tech Spec LCO's would be applicable if 22 charging pump were to trip?

a. 3.5.4 - Seal Injection Flow.

b. 3.5.2 -ECCS Subsystems >350°F.

c. 3.1.2.4 -Charging Pumps - Operating.

d. 3.1.2.2 - Boration Flowpaths - Operating.

Answer	Exam Level	Cognitive Level	Facility:	ExamDate:
b	R	Application	Salem 1 & 2	12/21/2015

KA:		RO Value:	SRO Value:	Section:	RO Group:	SRO Group:	
006000G242	2.2.42	3.9	4.6	SYS	1	1	55.43

System/Evolution Title: Emergency Core Cooling System | 006

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

Explanation of Answers: 55.41.b(6,10) RO candidates are responsible for "Above the Line" knowledge of Tech Spec LCO's. A is incorrect because the LCO is for maximum seal injection flow which is set by adjusting manual seal injection throttle valves. Plausible because many procedures direct establishing 6-12 gpm seal injection flow per pump not to exceed 40 gpm total. B is correct because the LCO states 2 complete trains of ECCS are required, and 22 charging pump (hi head ECCS) is required for the B train of ECCS. C is incorrect because only 2 charging pumps are required to be operable, and the LCO would not be entered until 2 of 3 charging pumps were inoperable. D is incorrect because 2 boration flow paths from RWST through charging pumps remain available, as does the Boric Acid tank flowpath with one BAT pump and one charging pump.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem Tech Specs				

L.O. Number
ECCS00E010

Objectives

Material Required for Examination:

Question Source: New | **Question Modification Method:** | **Used During Training Program** ☐

Question Source Comments:

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 36

Given the following conditions:

- Unit 2 was operating at 100% reactor power when a Reactor Trip and Safety Injection were initiated due to lowering Pressurizer pressure.
- Five minutes after the SI actuation, containment humidity and pressure have just begun rising.

Assuming NO operator actions were taken, which of the following would result in those conditions?

a. RCP #1 Seal failure.

b. Pressurizer Spray Valve failed open.

c. Pressurizer Safety Valve failed open.

d. Steam Generator Blowdown piping failure.

Answer c **Exam Level** R **Cognitive Level** Comprehension **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 007000K101 K1.01 **RO Value:** 2.9 **SRO Value:** 3.1 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Pressurizer Relief Tank/Quench Tank System 007

KA Statement: Knowledge of the physical connections and/or cause-effect relationships between Pressurizer Relief Tank/Quench Tank System and the following:

Containment system

Explanation of Answers: 55.41.b(9)The failure of a RCP #1 seal will not be seen in containment outside of closed systems. The excess seal leakoff flow past the #2 seal will be seen as a rise in RCDT level. The PZR safety failing open will cause the PRT to pressurize and the rupture disk to rupture, causing the saturated steam in the PRT to continuously be vented to containment. The Spray valve failing open would cause the lowering PZR pressure, bit would not cause changing containment conditions.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
No. 2 Unit Reactor Coolant	205301-1			59

L.O. Number | Objectives

PZRPRTE008

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program**

Question Source Comments Salem May 2010 RO NRC exam, created from Point Beach 1/20/2006 NRC exam

Comment

RO SkyScraper	SRO Skyscraper	RO System/Evolution List	SRO System/Evolution List	Outline Changes

Question Topic RO 37

Given the following conditions:

- Unit 2 is operating normally at 100% power.
- Excess Letdown is in service due to a problem with an orifice isolation valve.
- The 2CC215, EXCESS LETDOWN HX CC INLET V air supply line breaks, and all air is vented from valve.

Which of the following describes the effect this failure will have on Excess Letdown temperature, and how will operators respond?

Excess Letdown temperature will...

a. rise and the 2CC215 bypass will be throttled open to restore normal letdown temperature.

b. lower and the 2CC215 bypass will be throttled open to restore normal letdown temperature.

c. rise and Excess Letdown flow will be secured to prevent lifting 2CV115 CVC RCP SEAL WTR INJECTION RETURN RELIEF VLV.

d. lower and Excess Letdown flow will be secured to prevent VCT temperature from lowering to the point where 23 charging pump must be secured.

Answer c **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 008000A205 A2.05 **RO Value:** 3.3* **SRO Value:** 3.5 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Component Cooling Water System 008

KA Statement: Ability to (a) predict the impacts of the following on the Component Cooling Water System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:

Effect of loss of instrument and control air on the position of the CCW valves that are air operated

Explanation of Answers: 55.41.b(7) The Excess Letdown HX CC isolation valves 2CC113 (outlet) and 2CC215 (inlet) are fail close (air and power) isolation valves. With excess letdown in service and no cooling flow, temperature and pressure will both rise. Excess letdown flows into the seal return header and rising pressure causes seal return line relief valve to open. Knowledge of both the effect (valve failure position) and operator action (isolate excess letdown) required. SO.CVC-3 P&L 3.3 states to maintain excess letdown pressure <150 psig to prvent lifting seal return relief

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Excess Letdown	S2.OP-SO.CVC-0003			6
CVCS drawing	205228-2			84

L.O. Number CCW000E012

Objectives

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 38

Given the following conditions:

- Salem Unit 2 is operating normally at 100% power.
- The controlling PZR level channel fails low.
- As the operators respond IAW S2.OP-AB.CVC-0001, Loss of Charging, and before an operable channel is selected for control, the RO reports that PZR backup heaters in auto are energized with the controlling PZR level channel indicating 0%.

Which of the following describes the operation of the PZR B/U heaters?

PZR heaters in auto 1)_______ be energized because 2)_______.

a. 1) should
2) PZR level has risen 5% above program.

b. 1) should
2) PZR pressure has lowered to the auto on setpoint of 2210 psig.

c. 1) should NOT
2) PZR low level cutoff at 17% should be keeping heaters OFF.

d. 1) should NOT
2) PZR pressure has remained above the auto on setpoint of 2218 psig.

Answer c **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 010000A402 A4.02 **RO Value:** 3.6 **SRO Value:** 3.4 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Pressurizer Pressure Control System 010

KA Statement: Ability to manually operate and/or monitor in the control room:
PZR heaters

Explanation of Answers: 55.41.b(7,5) The low level on the control channel will cause an automatic letdown isolation. Charging flow will continue and raise PZR level. The backup heaters are designed to energize at 5% above program to ensure stauration conditions are maintained in the PZR. However, either an alarm or control channel failing low deenergizes all PZR heaters. Nothing has occurred which would cause a PZR pressure change except for the rise in PZR level. Pressure will not lower. PZR B/U heaters are designed to energize at 2210 psig decreasing, and turn off at 2218 psig increasing

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of Charging	S2.OP-AB.CVC-0001			9
Overhead Annunciator Window E	S2.OP-AR.ZZ-0005	OHA E-20	29	20

L.O. Number

PZRP&LE006

Objectives

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 39

Which of the following describes how the PZR Spray Nozzle is prevented from being thermally shocked during normal operation?

a. Initiating spray flow when the Spray Nozzle delta T exceeds 320°F.

b. PZR Backup heater groups operating in auto forces continuous spray flow.

c. PZR Control heater group firing to maintain PZR pressure at setpoint forces continuous spray flow.

d. A small amount of spray flow is bypassed around the PS1 and PS3 Spray Valves to keep the spray line continuously warm.

Answer	Exam Level	Cognitive Level	Facility:	ExamDate:
d	R	Memory	Salem 1 & 2	12/21/2015

KA:		RO Value:	SRO Value:	Section:	RO Group:	SRO Group:	
010000K401	K4.01	2.7	2.9	SYS	1	1	55.43

System/Evolution Title Pressurizer Pressure Control System 010

KA Statement: Knowledge of Pressurizer Pressure Control System design feature(s) and or interlock(s) which provide for the following:
Spray valve warm-up

Explanation of Answers: 55.41.b(5,7) PZR spray bypass flow is set during unit startup while @ NOT/NOP to ensure spray line temp is >500°F with both spray valves shut. Salem runs with one PZR B/U heater group in MANUAL which forces the spray valves open a small amount to provide continuous spray for boron mixing also, but that is not a choice. Spray flow is NOT initiated if spray line delta T exceeds 320°F. Control groups are SCR controlled and normally fire to maintain pressure ON program, and do not force spray flow.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Setting Pressurizer Spray Bypass Flow	S2.OP-SO.PZR-0008			4

L.O. Number PZRP&LE012

Objectives

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 40

Given the following conditions:

- Unit 2 was operating at 90% power with 21 charging pump in service when the controlling PZR Level Channel I failed low.
- The Charging Master Flow Controller was placed in Manual when directed by S2.OP-AB.CVC-0001, Loss of Charging.
- The alternate PZR level channel has been selected as the controlling channel.
- Letdown has been restored.

Which of the following identifies a consequence of returning the Master Flow Controller to auto PRIOR to returning PZR level to program as directed in S2.OP-AB.CVC-0001 ?

Charging flow will…

a. rise, and VCT auto makeup may initiate.

b. lower, and flashing in the Letdown line could occur.

c. rise, and RCP seal injection flow could exceed Tech Spec limit total seal injection flow.

d. lower, and 2CC71 LTDWN HX CC CONT VALVE will not respond quickly enough to prevent Mixed Bed Demin isolation on high inlet temperature.

Answer b **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 011000A404 A4.04 **RO Value:** 3.2 **SRO Value:** 2.9 **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title Pressurizer Level Control System 011

KA Statement: Ability to manually operate and/or monitor in the control room:
Transfer of PZR LCS from automatic to manual control

Explanation of Answers: 55.41.b(7)With a CCP in service, the failure LOW of the controlling PZR level channel will cause charging flow to RISE. The stem stated that MFC was taken to manual when directed IAW AB, so there was sufficient time for actual charging flow to rise substantially. With actual level higher than programmed level, if the MFC were placed in auto it would force charging flow to lower. If charging flow lowered to <~60 gpm, inadequate cooling of letdown flow would occur in the regenerative heat exchanger, and letdown line flashing would occur. The CC71 is normally only ~10% open, and has plenty of room to open if letdown temp were to rise downstream of the letdown HX, and temps would not reach demin isolation levels. The 2 rises are incorrect because charging flow wouldn't rise, but the actions associated with higher flow are correct.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of Charging	S2.OP-AB.CVC-0001			9

L.O. Number
PZRP&LE015

Objectives

Material Required for Examination	

Question Source:	Facility Exam Bank	Question Modification Method:	Direct From Source	Used During Training Program	☐

Question Source Comments	125676

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic: RO 41

Which of the following describes the interface between the Reactor Trip Handles on 2CC2 and the Reactor Protection System?

Turning either Reactor Trip Handle to the trip position is designed to operate ________.

a. the UV trip ONLY for Reactor Trip AND Reactor Trip Bypass breakers.

b. the shunt trip ONLY for Reactor Trip AND Reactor Trip Bypass breakers.

c. BOTH the shunt trip and UV trip for Reactor Trip AND Reactor Trip Bypass breakers.

d. BOTH the shunt trip and UV trip for Reactor Trip breakers, and the shunt trip ONLY for the Reactor Trip Bypass breakers..

Answer: c **Exam Level**: R **Cognitive Level**: Memory **Facility**: Salem 1 & 2 **ExamDate**: 12/21/2015

KA: 012000A401 A4.01 **RO Value**: 4.5 **SRO Value**: 4.5 **Section**: SYS **RO Group**: 1 **SRO Group**: 1 55.43

System/Evolution Title: Reactor Protection System 012

KA Statement: Ability to manually operate and/or monitor in the control room:
Manual trip button

Explanation of Answers: Salem has 2 Reactor Trip Handles/Switches. Either switch operates BOTH the UV and shunt trips for BOTH the reactor trip breakers and bypass breakers. The distracters are plausible because: 1) an automatic reactor trip ONLY actuates the UV trip; 2) manually tripping the reactor trip breakers from the control console ONLY actuates the shunt trip.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Reactor Protection System Reactor Trip Signals	221051			13

L.O. Number
RXPROTE010
RXPROTE007

Objectives

Material Required for Examination:

Question Source: New **Question Modification Method**: **Used During Training Program**

Question Source Comments:

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 42

What would be the effect on the Reactor Protection System if the 2B Vital Instrument Bus were to become deenergized with the unit at 100% power?

a. SSPS Train B slave relays would not actuate on a Safety Injection signal.

b. OHA A-34 SSPS TRN A TRBL in alarm due to loss of 1 of 2 45VDC power supplies to Train A logic cabinet.

c. Logic coincidence for Containment Spray actuation would go from 2/4 to 1/3 due to channel II bistable tripped.

d. 2RP4 bistable lights flashing for all channel II indications due to train disagreement between SSPS Trains A and B.

Answer a **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 012000K201 K2.01 **RO Value:** 3.3 **SRO Value:** 3.7 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Reactor Protection System 012

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

Explanation of Answers: 55.41.b(7) B is incorrect because Train A 45 VDC power comes from A and D vital power. C is incorrect because CS bistables are energize to actuate. D is incorrec because there is no disagreement since none of the slave relays have energized with the other train ot having energized.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Overhead Annunciators Window A	S2.OP-AR.ZZ-0001			56
Solid State Reactor Prot Train A AC Power Distr	Drawing 240136			4

L.O. Number

RXPROTE011

RXPROTE020

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program**

Question Source Comments Used on Salem June 2004 NRC exam

Comment

RO SkyScraper	SRO Skyscraper	RO System/Evolution List	SRO System/Evolution List	Outline Changes

Question Topic: RO 43

Given the following conditions:

- Unit 2 is operating at 100% power when a turbine trip event and subsequent switchyard disturbance result in an undervoltage condition (<70%) on the 2A & 2C 4160 V vital buses.
- 2 minutes later, a Safety Injection signal is generated.

Which of the following describes the plant response when the SI occurs?

a. EDG output breakers remain shut and safeguards loads sequence on each vital bus.

b. EDG output breakers remain shut, blackout loads are stripped, then safeguards loads are sequenced on each vital bus.

c. EDG output breakers open, blackout loads are stripped, EDG output breaker shuts, then only safeguards loads are sequenced on each vital bus.

d. EDG output breakers open, blackout loads are stripped, EDG output breaker shuts, then safeguards and blackout loads are sequenced on each vital bus.

Answer: c **Exam Level**: R **Cognitive Level**: Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 013000K112 K1.12 **RO Value:** 4.1 **SRO Value:** 4.4 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title: Engineered Safety Features Actuation System 013

KA Statement: Knowledge of the physical connections and/or cause-effect relationships between Engineered Safety Features Actuation System and the following:
ED/G

Explanation of Answers: 55.41.b(7) 2/3 4KV vital bus UV causes ALL 3 4KV vital buses to load in SEC MODE II BLACKOUT. This mode starts ALL EDGs and sequences BLACKOUT loads onto ALL vital buses. When the SI occurs, the SEC initiates a MODE III, which opens any running EDG breaker, strips whatever loads are energized, then sequences SAFEGUARDS loads onto ALL buses. Distracters are plausible based on determining the 2 buses 2A and 2C load individually in BLACKOUT based on the UV on those 2 buses only.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Safeguards Equipment Controller Lesson Plan	NOS05SEC000		19	6

L.O. Number

- ESF000E005
- SEC000E010

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Concept Used **Used During Training Program**

Question Source Comments: 45695

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 44

A loss of off-site power resulted in a reactor trip. The operating crew is attempting to confirm natural circulation flow but neither SPDS NOR the Plant Computer is operating. You are the 3rd NCO and have been assigned to monitor and log CET's at the CET Control Panel.

Which of the following describes the "ALL" Mode at the Train A CET Control Panel?

It displays......

a. Train A CET temperatures in sequential order.

b. Train A CET temperatures from lowest to highest reading.

c. any Train A CET >700°F, then remainder of Train A CETs from lowest to highest.

d. the two highest reading Train A CET's in each quadrant then sequentially display all Train A CETs.

Answer	d	**Exam Level**	R	**Cognitive Level**	Memory	**Facility:**	Salem 1 & 2	**ExamDate:**	12/21/2015

KA:	017000K402	K4.02	**RO Value:**	3.1	**SRO Value:**	3.6	**Section:**	SYS	**RO Group:**	2	**SRO Group:**	2	55.43

System/Evolution Title In-Core Temperature Monitor System | 017

KA Statement: Knowledge of In-Core Temperature Monitor System design feature(s) and or interlock(s) which provide for the following:
Sensing and determination of location core hot spots

Explanation of Answers: 55.41.b(7) Table C of CFST-1 states that in ALL Mode the display will progress through the first and second highest CETS in each quadrant, then sequentially display all cETs assigned to that channel. A is incorrect because does not display in sequential order without first displaying the 2 highest in each quadrant. B is incorrect because it doesn't display lowest to highest. C is incorrect because the 700°F noted in choice is criteria for purple path CFST for Core Cooling.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Critical Safety Function Status Trees	2-EOP-CFST-1		15	25

L.O. Number

INCOREE016

Objectives

Material Required for Examination

Question Source:	Facility Exam Bank	**Question Modification Method:**	Editorially Modified	**Used During Training Program**

Question Source Comments 43165

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 45

Given the following conditions:

- Unit 2 is operating at 100% power.
- A Main Steamline break inside containment occurs.
- The Rx was tripped, but the MSLI failed to shut ANY MSIV.
- Safety injection was initiated successfully.
- Containment pressure has risen steadily and is currently 11 psig.
- RCS pressure is 1700 psig and lowering slowly.
- Safeguards reset actions have just been completed in 2-EOP-LOSC-2, Multiple Steam Generator Depressurization.

Which of the following describes how the Containment Cooling system will respond if containment pressure were to rise to >15 psig?

a. Both Containment Spray pumps will start and Containment Spray valves will reposition.

b. Neither Containment Spray pump will start, and Containment Spray valves will reposition.

c. Both Containment Spray pumps will start, and Containment Spray valves will NOT resposition.

d. Neither Containment Spray pump will start, and Containment Spray valves will NOT resposition.

Answer b **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 022000A301 A3.01 **RO Value:** 4.1 **SRO Value:** 4.3 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Containment Cooling System 022

KA Statement: Ability to monitor automatic operations of the Containment Cooling System including:
Initiation of safeguards mode of operation

Explanation of Answers: 55.41.b(9,7) Containment Spray Pump Sequencing
1)If the SSPS Containment HI-HI Pressure signal is not present when the SEC initially tries to start the Spray Pumps, the SEC contact will re-open
2)Once the SEC has completed the last step of its loading sequence, the CS Pump start contact is re-closed
a)If Hi-Hi Containment Pressure occurs the CS Pumps will auto start
b)If the SEC has been reset, the CS Pumps will NOT respond to a HI-HI Containment Pressure until the SEC is again actuated

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Safeguards Equipment Controller Lesson Plan	NOS05SEC000-06		17	6

L.O. Number

CSPRAYE009

Objectives

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 46

Given the following conditions:

- Operators are responding to a LBLOCA IAW 2-EOP-LOCA-3, Transfer to Cold Leg Recirculation.
- RWST level is 8.9' and lowering as expected.

Which of the the following describes the effect if 21CS2 Containment Spray pump discharge valve experienced a short and motored closed?

Containment Spray Header flow will...

a. lower to 0 gpm.

b. lower but remain > 0 gpm.

c. be unaffected since 21CS36 RHR CS STOP VALVE is open supplying all spray flow

d. be unaffected since 22CS36 RHR CS STOP VALVE is open supplying all spray flow.

Answer a **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 026000K302 K3.02 **RO Value:** 4.2* **SRO Value:** 4.3 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Containment Spray System 026

KA Statement: Knowledge of the effect that a loss or malfunction of the Containment Spray System will have on the following:
Recirculation spray system

Explanation of Answers: 55.41.b(8,10) When RWST level reaches 15.2', operators will beging alignment to Cold Leg Recirc IAW LOCA-3. 22 Containment Spray pump is stopped first if both Containment Spray pumps are operating. With the stem condition of current RWST level, 21 CS pump will still be running. When RSWT level reaches lo-lo setpoint, the remaining CS pump (21) will be stopped, and 21CS36 opened to supply recirculation spray flow.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Transfer to Cold Leg Recirc	2-EOP-LOCA-3			29

L.O. Number Objectives

LCA3U1E006

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 47

Given the following conditions:

- Salem Unit 1 was operating at 100% power when a LOCA occurred.
- A manual reactor trip and manual SI were initiated.
- When the Main Generator output breakers opened, a loss of off-site power occurred.
- 1A vital bus locked out on bus differential.

Which of the following identifies which Containment Iodine Removal Units (IRUs) can be started if required?

a. 11 IRU ONLY.

b. 12 IRU ONLY.

c. 11 or 12 IRUs.

d. NEITHER IRU is available.

Answer d **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 027000K201 K2.01 **RO Value:** 3.1* **SRO Value:** 3.4* **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title Containment Iodine Removal System 027

KA Statement: Knowledge of bus power supplies to the following:
Fans

Explanation of Answers: 55.41.b(9) Containment IRUs are powered from G and E non-vital 460VAC. With the loss of off-site power, none of the non vital busses are energized. The distracters are based on the operator knowing that the loading of a vital bus in Mode IV doesn't have any bearing on IRU operation.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
1E1 Aux Building 460-230V One line	207916			26
1E1 Aux Building 460-230V One line	207919			23

L.O. Number
CONTMTE003

Objectives

Material Required for Examination

Question Source: Previous 2 NRC Exams **Question Modification Method:** Direct From Source **Used During Training Program**

Question Source Comments 11-01 RO NRC Q47

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 48

Given the following conditions:

- Unit 2 has experienced a Large Break Loss of Coolant Accident (LOCA).
- Containment H2 concentration has risen to 2%.
- 21 H2 Recombiner has been placed in service with containment pressure at 4.1 psig.
- 24 hours later, containment H2 concentration has remained at 2%, and containment pressure has risen to 5.1 psig.

Which of the following describes the effect the higher containment pressure has on H2 Recombiner operation, and how should the crew proceed?

H2 Recombiners are _____ effective as containment pressure rises with a constant power setting. The power setting must be ______ IAW S2.OP-SO.CAN-0001, Hydrogen Recombiner Operation.

a. less, raised.

b. more, raised.

c. less, lowered.

d. more, lowered

Answer a **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 028000A201 A2.01 **RO Value:** 3.4* **SRO Value:** 3.6* **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title Hydrogen Recombiner and Purge Control System 028

KA Statement: Ability to (a) predict the impacts of the following on the Hydrogen Recombiner and Purge Control System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:
Hydrogen recombiner power setting, determined by using plant data book

Explanation of Answers: 55.41.b(7,8,10) H2 recombiners are placed in service when directed in the EOPs with containment H2 concentration between 2-4%. The hydrogen recombiners use electric heating elements to elevate the temperature of the containment atmosphere. As shown in Attachment 2, RECOMBINER POWER CORRECTION FACTOR CURVE, a higher containment pressure would result in a higher power correction factor, which would cause recombiner power setpoint to rise. So initially the higher pressure would cause the recombiner to become less effcient, and the power setpoint would be raised as directed at Step 5.1.9.C which syas if H2 has risen or remained constant and Containemnt pressure has changed, perform attachment 1 and adjust power.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Hydrogen Recombiner Operation	S2.OP-SO.CAN-0001		4,7,8	9

L.O. Number | **Objectives**

CONTMTE012

Material Required for Examination RO 48 S2.OP-SO.CAN-0001 (because K/A says so!)

Question Source: Facility Exam Bank **Question Modification Method:** Concept Used **Used During Training Program** ☐

Question Source Comments 80552

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 49

Given the following conditions:

- Salem Unit 2 is 7 days into a refueling outage.
- The core is partially offloaded with 7 bundles remaining in the Rx.
- Fuel movement is in progress, and S2.OP-IO.ZZ-0010 SPENT FUEL POOL MANIPULATIONS is in effect.
- SFP temperature is 120 deg. F.
- 21 SFP becomes air bound, trips on motor OL, and can NOT be restarted.
- 22 SFP pump will NOT start.
- SFP hi level alarm is in alarm.
- SFP heatup rate is 12 deg F/ hr.

If SFP cooling can NOT be restored, which of the following choices describes an adverse consequence of this loss of Spent Fuel Pool cooling?

a. Rx cavity overflow due to rising SFP level if the Gate Valve remains open.

b. Increased production of radioactive waste liquid as the tell-tale drains flow rises to the FHB sump.

c. Increased radiation levels at the FHB charcoal filter due to Spent Fuel off-gassing at temps > 150 deg. F.

d. Inability to place a raised Spent Fuel bundle into any location in the pool due to rising radiation level on 2R32 Fuel Handling Crane Area Monitor.

Answer c **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 033000K303 K3.03 **RO Value:** 3.0 **SRO Value:** 3.3 **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title Spent Fuel Pool Cooling System 033

KA Statement: Knowledge of the effect that a loss or malfunction of the Spent Fuel Pool Cooling System will have on the following: Spent fuel temperature

Explanation of Answers: 55.41.b(13, 10) Distractor b is incorrect because the pool would overflow into the ventilation system, not come over the physical wall of the pool. C is correct because rising radiation will be seen as fuel off-gassing and is expected to occur as temp increase to 150 deg. Distractor a is incorrect because any overflow will go out the ventilation openings in the SFP. Distractor d is incorrect because it is always possible to lower a SF bundle.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of Spent Fuel Cooling	S2.OP-AB.SF-0001			12

L.O. Number

SFP000E007

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Editorially Modified **Used During Training Program** ☐

Question Source Comments Used on Salem June 2004 NRC RO exam (6 exams ago)

Comment

RO SkyScraper	SRO Skyscraper	RO System/Evolution List	SRO System/Evolution List	Outline Changes

Question Topic: RO 50

Given the following conditions:

- Unit 1 is operating at 95% power performing a 1% per minute load reduction due to high radio frequency in the Main Generator.
- 11 SG Narrow Range Level channel II is undergoing a channel calibration IAW S1.IC-CC.RCP-0035, 1LT519 #11 STEAM GENERATOR LEVEL PROTECTION CHANNEL II, and all associated bistables are tripped.

Which of the following identifies the consequence if a second channel of Narrow Range level on 11 SG were to fail to 30% with NO operator action?

11 SG level will become...

a. higher than program because 11BF19 and 11BF40 ONLY swapped to manual and will be over feeding 11 SG.

b. lower than program because 11BF19 and 11BF40 ONLY swapped to manual and will be under feeding 11 SG.

c. higher than program because both SGFPs and 11BF19 and 11BF40 swapped to manual and will be over feeding 11 SG.

d. lower than program because both SGFPs and 11BF19 and 11BF40 swapped to manual and will be under feeding 11 SG.

Answer: a **Exam Level:** R **Cognitive Level:** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 035000K603 K6.03 **RO Value:** 2.6 **SRO Value:** 3.0 **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title: Steam Generator System 035

KA Statement: Knowledge of the of the effect of a loss or malfunction on the following will have on the Steam Generator System:
S/G level detector

Explanation of Answers: 55.41.b(7) SG NR level is programmed from 33-44% up to 100% power. As the downpower continues, the BF19 will be closing in response to the lower steam flow requiring less feed. The 11BF19 and 11BF40 (expected to be shut at this power level) swap to manual upon the second NR level channel failure. The SGFPs do not. When the 11BF19 swaps to manual, it will have a certain demand on it. As power (and steam flow) continues to lower, the demand will be higher than required, and SG NR level will become higher than program level

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Overhead Annunciators Window G	S1.OP-AR.ZZ-0007		17	42

L.O. Number

CN&FDWE004

Objectives

Material Required for Examination:

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments:

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 51

Salem Unit 2 is operating at 95% when the PO reports steam flow is rising on all SGs with no readily apparent reason.

Which of the following describes how the steam flow will affect the plant, and how operators should proceed if steam flow continues to rise uncontrollably IAW S2.OP-AB.STM-0001, Excessive Steam Flow?

Reactor power will rise at 1)______ rate as the increased steam flow. The crew will 2)______

a. 1) a higher
2) initiate a MSLI to determine if a safety injection is required.

b. 1) the same
2) Trip the reactor and confirm the trip, then initiate a MSLI to determine if a Safety Injection is required.

c. 1) a higher
2) Initiate a power reduction to ensure reactor power remains <100% while attempting to identify and isolate the leak.

d. 1) the same
2) Initiate a power reduction to ensure reactor power remains <100% while attempting to identify and isolate the leak.

Answer b **Exam Level** R **Cognitive Level** Comprehension **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 039000A205 A2.05 **RO Value:** 3.3 **SRO Value:** 3.6 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Main and Reheat Steam System 039

KA Statement: Ability to (a) predict the impacts of the following on the Main and Reheat Steam System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:
Increasing steam demand, its relationship to increases in reactor power

Explanation of Answers: 55.41.b(1,5,10) AB.STM does direct a power reduction at Step 3.8 if the EHC system is not causing the turbine to be the source of the rising steam flow. The stem states that there is no readily apparent reason for the rising steam flow, and EHC malfunction would be apparent. Also, the Continuous Action Summary is in effect at Step 1. CAS Step 1.1 states that at any time if reactor power is rising uncontrollable, trip, confirm, initiate MSLI. If souce of steam leak is isolated, then go to TRIP-1. If not, initiate SI and go to TRIP-1

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Excessive Steam Flow	S2.OP-AB.STM-0001			9

L.O. Number
MSTEAME008
ABSTM1E001

Objectives

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 52

Given the following conditions:

- Unit 2 has experienced a loss of all feedwater flow initiated by a Feedwater Isolation signal (P-14) condition on 23 SG.
- To mitigate the event after the P-14 has cleared an NCO has been directed to start 21 SGFP in accordance with S2.OP-SO.CN-0007, Rapid SGFP Recovery.
- The NCO successfully relatches the 21 SGFP but the speed of the pump does not rise automatically to minimum speed as he anticipated.

Which of the following is the cause of this response?

a. The P-14 signal "seal-in" feature.

b. 21 SGFP PUMP SPEED CONTROL is in AUTO.

c. 21 SGFP ENABLE/DISABLE switch is in the DISABLE position.

d. 21 SGFP speed was >160 rpm when the latch push button was depressed.

Answer d **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 059000A107 A1.07 **RO Value:** 2.5* **SRO Value:** 2.6* **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Main Feedwater System 059

KA Statement: Ability to predict and/or monitor changes in parameters associated with operating the Main Feedwater System controls including: Feed Pump speed, including normal control speed for ICS

Explanation of Answers: 55.41.b(4,10). A is incorrect because the P-14 signal automatically clears when the SG level lowers <setpoint, there is no seal in circuit. B is incorrect because auto speed control prevents latching of the SGFP. C is incorrect because the Enable/Disable switch in the disable position only removes the ADFWCS from controlling SGFP speed, the switch is placed in Disable when starting the SGFP. D is correct because the SGFP may be latched with speed <160 rpm, but it will not automatcally raise speed to minimum (1100 rpm idle speed)

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
SGFP Prompt Recovery	S2.OP-SO.CN-0007		6	4

L.O. Number | **Objectives**

SGFPLOE006

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Editorially Modified **Used During Training Program** ☐

Question Source Comments 44112. Removed second part of question which asked what you had to do to get speed to raise. Replaced implausible distracter.

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 53

With both 11 and 12 AFW pumps in service providing 6E4 lbm/hr flow to each SG, what would be the response if both 13AF21 and 14AF21 were shut fully?

a. 11 AFW pump automatic recirc valve would open.

b. The single automatic recirc valve for the MDAFW pumps would open.

c. The Pressure Override Circuit would actuate to prevent dead heading 11 AFW pump.

d. Normal MDAFW pump recirc flow would rise through the orificed continuous recirculation line.

Answer a **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 061000K503 K5.03 **RO Value:** 2.6 **SRO Value:** 2.9* **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Auxiliary / Emergency Feedwater System 061

KA Statement: Knowledge of the operational implications of the following concepts as they apply to the Auxiliary / Emergency Feedwater System: Pump head effects when control valve is shut

Explanation of Answers: 55.41.b(7,8) The MDAFW pumps each has its own dedicated recirc line and associated automatic recirc valve, which opens to maintain aFW pump flow >180 gpm. With the 6E4 lbm/hr in stem for each of the 2 SGs being supplied from 11 AFW pump that = 240 gpm, the valve would initially be closed and open when flow lowers <180 to prevent the increased pump head from causing pump damage from overheating. B is incorrect but plausible if it is thought there is a common recirc line. C is incorrect because the Pressure Override circuit acts to close the AF21s id AFW pump pressure lowers to far to prevent runout of pump. D is incorerect but plausible because that is how the recirc line for the TDAFW pump is setup for continuous recirc.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Auxiliary Feedwater System Lesson Plan	NOS05AFW000-14		19-20	

L.O. Number | **Objectives**

AFW000E008

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 54

Given the following conditions:

- Unit 2 is performing a normal shutdown at 20% per hour IAW the IOP's.
- 22 SGFP is shutdown.
- Current Rx power is 24%.
- 21 SGFP trips.

With NO operator action, what will be the status of the Auxiliary Feed Pumps?

a. ONLY the MDAFW pumps start immediately upon the trip of 21 SGFP.

b. ONLY the MDAFW pumps start when SG NR level in 1/4 S/G's lowers to 14%.

c. The MDAFW pumps AND the TDAFW pump start immediately upon the trip of 21 SGFP.

d. The MDAFW pumps AND the TDAFW pump start when NR level in 1/4 S/G's lowers to 14%.

Answer a **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 061000K602 K6.02 **RO Value:** 2.6 **SRO Value:** 2.7 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Auxiliary / Emergency Feedwater System 061

KA Statement: Knowledge of the of the effect of a loss or malfunction on the following will have on the Auxiliary / Emergency Feedwater System: Pumps

Explanation of Answers: 55.41.b (4) MDAFW pumps auto start when both SGFPs are tripped as shoen on logic drawing 221064. The TDAFW pump does not. The MDAFW pumps also auto start on 2/3 NR level channels in one SG lowers to 14%, but in this case they will already be running. The TDAFW pump starts on 2/3 NR level channels on 2/4 SGs.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
RPS AFW pumps startup	221064			8
AFW System LP	NOS05AFW000-14		33	14

L.O. Number

AFW000E006

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Editorially Modified **Used During Training Program**

Question Source Comments 41751

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 55

Given the following conditions:

- 2C Emergency Diesel Generator (EDG) is operating in parallel with the 500KV grid for a 24 hour endurance run IAW S2.OP-ST.DG-0014, 2C DIESEL GENERATOR ENDURANCE RUN, following a complete overhaul.
- Cumulative run times for all individual EDG load limits are less than 10% of rated.
- While operating at 2525 KW three hours into the test, the operator mistakenly adjusts 2C EDG speed control resulting in MW loading rising to 2610 KW.

What are the consequences, if any, of continued EDG operation at this KW load?

Operation for the remaining 21 hours of the test...

a. will not have any adverse effect on 2C EDG.

b. will result in exceeding the 30 minute load limitation for 2C EDG.

c. will result in exceeding the 2 hour load limitation for 2C EDG.

d. will result in exceeding the 24 hour load limitation for 2C EDG.

Answer a **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 062000A101 A1.01 **RO Value:** 3.4 **SRO Value:** 3.8 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title A.C. Electrical Distribution 062

KA Statement: Ability to predict and/or monitor changes in parameters associated with operating the A.C. Electrical Distribution controls including: Significance of D/G load limits

Explanation of Answers: 55.41.b(8) The EDG load limitations are maximum of: 2600KW continuous, 2600-2750KW for 2000 hours, 2750-2860KW for 2 hours, and 2860-3100KW for 30 minutes. With the EDG operating at 2610KW for 21 hours, the EDG will not exceed any limits, operation between 2600 (cont) and 2750(2000 hours) KW, since the stem stated that the cumulative run time for ALL EDG load limits was <10%, which would be 210 hours for this limit.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
2C DIESEL GENERATOR SURVEILLANCE TE	S2.OP-ST.DG-0003	P&L 3.5		52

L.O. Number Objectives

EDG000E012

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Editorially Modified **Used During Training Program**

Question Source Comments 63989 replaced 2000 hr distracter (implausible) with 24 hour distracter

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic: RO 56

IAW Salem FSAR Section 8.3.3.2, Station Batteries, on a total loss of all AC power the station vital 125 VDC batteries are designed to supply vital station loads for a minimum of _______ hours.

a. 1

b. 2

c. 4

d. 8

Answer	b	**Exam Level**	R	**Cognitive Level**	Memory	**Facility:**	Salem 1 & 2	**ExamDate:**	12/21/2015

KA:	062000K303	K3.03	**RO Value:**	3.7	**SRO Value:**	3.9	**Section:**	SYS	**RO Group:**	1	**SRO Group:**	1	55.43

System/Evolution Title: A.C. Electrical Distribution | 062

KA Statement: Knowledge of the effect that a loss or malfunction of the A.C. Electrical Distribution will have on the following:
DC system

Explanation of Answers: 55.41.b(7,8) IAW Salem FSAR Section 8.3.3.2, Station Batteries, states..."The batteries are sized for 2 hours of operation after a loss of ac power, based upon the required operation of the de emergency equipment."

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem FSAR		8.3.2.2	8.3-18	14

L.O. Number
DCELECE002

Objectives

Material Required for Examination:

Question Source: Facility Exam Bank | **Question Modification Method:** Direct From Source | **Used During Training Program**

Question Source Comments: L0910

Comment

RO SkyScraper	SRO Skyscraper	RO System/Evolution List	SRO System/Evolution List	Outline Changes

Question Topic RO 57

Given the following conditions:

- The control room receives Auxiliary Typewriter alarm point 0676, 2G 4KV GROUP BUS LOSS 125 VDC CONTROL PWR.
- An operator investigates and reports 125 VDC breaker 2BDC1AX12, 2G 4KV Bus Control Power Supply (Reg) tripped.

Which of the following identifies the effect, if any, this will have on 24 RCP 4KV breaker?

If 24 RCP is running it will...

a. trip immediately.

b. continue to run but will not trip if required.

c. trip if a RPS trip signal is subsequently developed, but would not be able to be re-started if directed.

d. continue to run and be unaffected as emergency control power from the alternate control power supply will automatically be provided.

Answer	b	**Exam Level**	R	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2	**ExamDate:**	12/21/2015

KA:	063000K401	K4.01	**RO Value:**	2.7	**SRO Value:**	3.0*	**Section:**	SYS	**RO Group:**	1	**SRO Group:**	1	55.43	☐

System/Evolution Title D.C. Electrical Distribution | 063

KA Statement: Knowledge of D.C. Electrical Distribution design feature(s) and or interlock(s) which provide for the following:
Manual/automatic transfers of control

Explanation of Answers: 55.41.b(8) 4KV Group bus control power is supplied from the DC electrical system. The alternate DC supply does not automatically transfer to supply DC control power to the bus, it must be manually transferred when the normal supply is lost. 4 KV breakers cannot be tripped remotely without 125VDC available to energize trip coil. A is incorrect because there is no power to energize the trip coil, plus no trip signal would be present. B is correct. C is incorrect because it would not trip if required (different from A is "immediate" vs. "subsequent") D is incorrect because the control power swap is performed manually

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
No. 24 Reactor Coolant Pump	211538-2			22

L.O. Number

DCELECE007

Objectives

Material Required for Examination

Question Source:	Facility Exam Bank	**Question Modification Method:**	Editorially Modified	**Used During Training Program**	☐

Question Source Comments 29217

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic: RO 58

Given the following conditions:

- 21 Diesel Fuel Oil Storage Tank indicated level is 96.0".
- 22 Diesel Fuel Oil Storage Tank indicated level is 96.1".
- 21 Diesel Fuel Oil Transfer Pump is selected to REGULAR.
- 22 Diesel Fuel Oil Transfer Pump is selected to BACKUP.
- The Diesel Fuel Oil Storage Tank area CO_2 Tank fails, and a projectile opens a hole in the bottom of 21 DFOST which completely empties.

Assuming no other damage from the CO_2 Tank failure has occurred, which of the following identifies how makeup flow to the EDG Day Tanks will be provided, if at all, if the 2C EDG starts automatically to provide power to 2C Vital bus on a single bus UV condition?

Makeup flow to the EDG Day tanks will be provided by......

a. BOTH DFO Transfer pumps because DFOSTs are normally cross connected but check valves will prevent 22 DFOST from draining out the rupture.

b. 21 DFO Transfer pump ONLY because the REGULAR pump is aligned to the highest storage tank level during normal surveillance testing.

c. NEITHER DFO Transfer pump because DFOSTs are normally cross connected and both will be empty.

d. 22 DFO Transfer pump ONLY because 21 DFO Transfer pump is aligned to an empty tank.

Answer	d	**Exam Level**	R	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2	**ExamDate:**	12/21/2015	
KA:	064000K608	K6.08	**RO Value:** 3.2	**SRO Value:** 3.3	**Section:** SYS	**RO Group:** 1	**SRO Group:** 1	55.43	☐	

System/Evolution Title: Emergency Diesel Generators | 064

KA Statement: Knowledge of the of the effect of a loss or malfunction on the following will have on the Emergency Diesel Generators:
Fuel oil storage tanks

Explanation of Answers: 55.41.b(8) DFOSTs are normal isolated from each other on the outlet side by the closed 2DF35, 21/22 DFO STOR TANK X-CONN VALVE. Each tank is supplied by its respective transfer pump. Return (overflow from DFO Day tanks) is directed to the tank which has its DFO transfer pump selected to lead, so that overflow won't be directed to the storage tank from which suction is not being taken. With an empty 21 DFOST, 21 transfer pump will still receive a start signal (at 33"), but has no fuel to pump. As Day Tank level continues to lower, 22 (Backup) pump will start (at 27") and provide flow from 22 storage tank.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Fuel Oil	205249-3			30
EDG Lesson Plan	NOS05EDG000-11		44	11

L.O. Number

FUEOILE004

Objectives

Material Required for Examination:

Question Source: New | **Question Modification Method:** | **Used During Training Program** ☐

Question Source Comments:

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 59

An explosive mixture is prevented from being present in the Waste Gas Holdup Sysytem IAW Salem Tech Spec LCO 3.11.2.5, Explosive Gas Mixture by limiting the 1)_________ concentration to 2)________ or less.

a. 1) oxygen 2) 2%

b. 1) oxygen 2) 4%

c. 1) hydrogen 2) 2%

d. 1) hydrogen 2) 4%

Answer a **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 071000K504 K5.04 **RO Value:** 2.5 **SRO Value:** 3.1 **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title Waste Gas Disposal System 071

KA Statement: Knowledge of the operational implications of the following concepts as they apply to the Waste Gas Disposal System:
Relationship of hydrogen/oxygen concentrations to flammability

Explanation of Answers: 55.41.b(13) Salem TS LCO 3.11.2.5 staes that oxygen concetration in Waste Gas Holdup System shall be maintained less than or equal to 2%. 4% is not correct all of the time. Hydrogen concentration is monitored but not address in Tech Specs

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem Tech Specs		3.11.2.5	3/4 11-15	282

L.O. Number
WASGASE009

Objectives

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 60

Given the following conditions:

- Unit 1 is operating at 100% power.
- Control room operators are preparing to perform a Containment Pressure Relief IAW S1.OP-SO.CBV-0002, CONTAINMENT PRESSURE-VACUUM RELIEF SYSTEM OPERATION.
- Containment radiation levels are NORMAL for 100% power operation with no failed fuel.

After opening the 1VC5 and 1VC6 CONT PRESS/VAC RELIEF ISOL valves to initiate the pressure relief, which choice describes how the respective radiation monitors indication will respond?

- 1R12A - Containment Gas Effluent
- 1R41B - Plant Vent Noble Gas Intermediate Range
- 1R41D - Plant Vent Noble Gas Release Rate

a. 1R12A rises; 1R41B rises; 1R41D rises.

b. 1R12A rises; 1R41B constant; 1R41D constant.

c. 1R12A constant; 1R41B constant; 1R41D rises.

d. 1R12A constant; 1R41B rises; 1R41D constant.

Answer c **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 073000A101 A1.01 **RO Value:** 3.2 **SRO Value:** 3.5 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Process Radiation Monitoring System 073

KA Statement: Ability to predict and/or monitor changes in parameters associated with operating the Process Radiation Monitoring System controls including:
Radiation levels

Explanation of Answers: 55.41.b(11)1R12A is sampling containment atmosphere, so it will NOT rise when the pressure relief is started. 1R41B is an intermediate range monitor that normally does not have sample flow through it. It's sample flow will start when the lo range 1R41A monitor nears its high end of monitoring range. It's indication will not change during a pressure relief with NORMAL containment radiation levels. The R41D provides the gaseous effluent release rate (uCi/sec) by combining (product of) the on-range R41A through R41C with plant vent flow(cc/sec). It will rise when the pressure relief is initiated, and also provides automatic termination of release on hi gaseous effluent.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Containment Ventilation System Operation	S1.OP-SO.CBV-0001			25
Abnormal Radiation	S1.OP-AB.RAD-0001			32

L.O. Number

RMS000E008

Objectives

Material Required for Examination					
Question Source:	Facility Exam Bank	**Question Modification Method:**	Direct From Source	**Used During Training Program**	☐
Question Source Comments	50514, used on June 2004 Salem NRC RO exam (7 exams ago)				

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 61

Given the following conditions:

- Unit 1 is operating at 25% power.
- 1B EDG is running in parallel with station power on 1B 4KV Vital Bus.
- 13 and 16 SW pumps are in service, 11 SW pump is in AUTO.
- 1A 4KV Vital bus becomes deenergized due to a Bus Differential signal.

1 minute after the 1A 4KV Vital bus deenergizes, with NO operator action, which of the following contains ALL the SW pumps which will be running?

a. 11, 13.

b. 11, 15.

c. 13, 16.

d. 15, 16.

Answer	a	**Exam Level**	R	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2	**ExamDate:**	12/21/2015

KA:	076000K201	K2.01	**RO Value:**	2.7*	**SRO Value:**	2.7	**Section:**	SYS	**RO Group:**	1	**SRO Group:**	1	55.43

System/Evolution Title Service Water System 076

KA Statement: Knowledge of bus power supplies to the following:
Service water

Explanation of Answers: 55.41(7) A bus powers 15, and 16 SW pumps. On a single bus UV as described in the stem, only that bus would load in blackout loading. A bus is locked out on Bus Differential (deenergized), and the loss of 16 SW pump would cause header pressure to lower to where the auto pump (11) would start. Only one SW pump is aligned for AUTO which is the normal at power configuration for the SW pumps, one in auto, and the rest in manual. 12 SW pump would never start unless 11 pump did not on a SEC initiation, that is why it is not listed in any of the choices. 14 SW pump would not start since B bus never loses power, which is why it isn't listed in any of the choices. There can be confusion about the running EDG and the loss of A vital bus causing a MODE II (Blackout), which would strip busses and load the primary SW pump on each bus. The unit 1 SW pump power supplies are reversed from unit 2 (21/22 pumps A bus, 25,26 pumps C bus)

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Service Water Pump Operation	S1.OP-SO.SW-0001			27
Unit 1 4KV Vital Buses One line	203002			34

L.O. Number
SWBAYSE005

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program**

Question Source Comments 152970, used on Sept 2011 NRC RO exam (3 exams ago)

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 62

Given the following conditions:

- Unit 2 is in MODE 3, NOT, NOP.
- # 2 ECAC was manually placed in operation to collect bearing vibration readings IAW S2.OP-SO.CA-0001, Control Air System Operation.
- PRIOR to starting the # 2 ECAC, BOTH Control Air headers were at 96 psig.
- 2C 4KV vital bus senses an UV condition, and the bus loads in MODE II*.
- 2A and 2B 4KV vital buses remain powered from SPT's.
- 5 minutes after the UV signal, Unit 2 ECAC oil pressure indicates 0 psig and has been 0 psig for > 1 minute.

With NO operator action, which of the following describes the effect this will have on the Control Air System?

Assume the ECAC Motor Overload has not actuated at any time.

2 ECAC is __________, and __________ Control Air header(s) is/are __________.

a. NOT running, "A", lower than "B" header.

b. running, "A", higher than "B" header.

c. NOT running, BOTH, 96 psig.

d. running, BOTH, 96 psig.

Answer d **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 078000A301 A3.01 **RO Value:** 3.1 **SRO Value:** 3.2 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Instrument Air System 078

KA Statement: Ability to monitor automatic operations of the Instrument Air System including:
Air pressure

Explanation of Answers: 55.41.b(7) The ONLY trip which remains active for the ECAC after ANY SEC start is motor overload. The ECAC operating characteristics are such that at 95 psig and above header pressure, the ECAC will NOT be supplying the CA header. With the stem conditions of 96 psig prior to and after the ECAC was originally started, the subsequent (SEC) stop and restart of the ECAC will have NO effect on CA header, since the Station air headers supplying the CA header were not affected by the II* loading of 2C vital bus. The stem states no operator action, so the requirement for operators to trip the ECAC manually after 25 seconds of low oil pressure per PT.CA-001 (Rev. 17) P&L 3.4 bullet 3 could not be used as justification for selecting an incorrect distracter.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Control Air System Operation	S2.OP-SO.CA-0001			14
Control Air Lesson Plan	NOS05CONAIR-12		30-31	

L.O. Number
CONAIRE008

Objectives

Material Required for Examination					
Question Source:	Facility Exam Bank	**Question Modification Method:**	Direct From Source	**Used During Training Program**	☐
Question Source Comments	87627				

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 63

In addition to providing a source of water for Fire Protection, Fresh Water and Fire Protection Storage Tank water can be aligned to which one of the following systems?

a. Service Water.

b. Main Condensate.

c. Auxiliary Feedwater.

d. Spent Fuel Pool Cooling.

Answer c **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 086000K103 K1.03 **RO Value:** 3.4* **SRO Value:** 3.5* **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title Fire Protection System 086

KA Statement: Knowledge of the physical connections and/or cause-effect relationships between Fire Protection System and the following:
AFW System

Explanation of Answers: 55.41.b(4) Fire protection water can be aligned to the AFW system through a normally disconnected spool piece.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
No. 1 & 2 Units Fire Protection	205222-4			63

L.O. Number Objectives

FIRPROE007

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic: RO 65

Which of the following identifies a condition in which the Unit 2 LCO for Containment Integrity, 3.6.1.1 Modes 1-4, would NOT be met?

a. A manual valve or Blind Flange outside containment required to be to be closed during accident conditions cannot be visually verified in correct position due to its location in a High Radiation Area.

b. The containment 100' elevation airlock doors are operated by procedure to allow entry into containment for Rad Pro to take radiation surveys.

c. A CVCS Letdown Orifice Isolation Valve fails to fully close on a failure of the controlling PZR level channel LOW.

d. A SW Accumulator nitrogen cover gas pressure falls below the minimum required.

Answer: d **Exam Level:** R **Cognitive Level:** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 103000G240 2.2.40 **RO Value:** 3.4 **SRO Value:** 4.7 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title: Containment System 103

KA Statement:

Ability to apply Technical Specifications for a system.

Explanation of Answers:

55.421.b(9,10). A is incorrect because 4.6.1.1.a specifically states that a manual valve or blind flange in a high radiation area may be verified using Admin controls. B is incorrect because while containment airlocks are required to be operable IAW 4.6.1.1.b (per spec 3.6.1.3 airlock), the doors are allowed to be opened for normal transit entry and exit. C is incorrect because CIV have their own TS 3.6.3 which is less restrictive that containment integrity and is not included in surv requirements for 3.6.1.1. D is correct because it is specificcaly delineated in 4.6.1.1.d which states surv requirements of 4.6.2.3.a for CFCUs is met, which includes SW

Accumulator level, pressure, and temp

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem Tech Specs		3.6.1.1		
		3.6.2.3		
		3.6.1.3		

L.O. Number

CONTMTE010

Objectives

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 66

Given the following conditions for Unit 2:

- Rx is in Mode 3, NOT, NOP.
- RWST concentration - 2450 ppm
- 21 BAT concentration - 6650 ppm
- 22 BAT concentration - 6650 ppm
- 22 BAT level - 43%

Which of the following describes the LOWEST level for 21 BAT that meets or exceeds the operability requirements for the BAT?

a. 43%.

b. 54%.

c. 92%.

d. 96%.

Answer b **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 194001G125 2.1.25 **RO Value:** 3.9 **SRO Value:** 4.2 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title GENERI

KA Statement: Ability to interpret reference materials, such as graphs, curves, tables, etc.

Explanation of Answers: 55.41.b(6,7) TS 3.1.2.6 requires a certain amount of borated water available. The BASTs are normally cross connected so the TOTAL volume of the 2 tanks is what is required to be above the limit. With RWST boron concentration of 2450, and both BAT tanks at 6650, the intersection is ~ 93.5%. If 1 tank is at 43 % the other tank must be at 50.5%. To preclude picking the wrong answer because of interpolation, the correct answer of 54% is 3.5% higher than required.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Saqlem Tech Specs				

L.O. Number CVCS00E010

Objectives

Material Required for Examination TS Figure 3.1-2 Boric Acid Tank Contents

Question Source: Facility Exam Bank **Question Modification Method:** Editorially Modified **Used During Training Program** ☐

Question Source Comments 135342 replaced a distracted and slightly modified correct answer.

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 67

With Salem Unit 2 in Mode 6 on November 20th, which of the following conditions would prevent Core Alterations from being commenced?

a. One Source Range NI is inoperable.

b. The reactor has been subcritical for 100 hours.

c. Any one of the Containment Airlock doors is open.

d. Only one loop of RHR is in service in Shutdown Cooling mode.

Answer a **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 194001G136 2.1.36 **RO Value:** 3.0 **SRO Value:** 4.1 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title GENERI

KA Statement:

Knowledge of procedures and limitations involved in core alterations.

Explanation of Answers:

55.41.b(10) A is correct because LCO 3.9.2 states 2 SR NI's must be operable. B is incorrect because between Oct 15-May 15th only 80 hours of subcriticality is required per LCO 3.9.3.a. C is incorrect because one ONE airlock door (per airlock)has to be capable of being closed per LCO 3.9.4.b. D is incorrect because only one RHR loop is required to be in service per LCO 3.9.8.1

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem Terch Specs				

L.O. Number

IOP009E004

Objectives

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 68

Given the following conditions:

- Both units are operating at 100% power.
- Reactor Engineering has determined that a single fuel assembly in the Spent Fuel Pool must be moved to a new storage location in the Spent Fuel Pool.
- All administrative requirements are complete to allow the movement of the Spent Fuel.

When the field operator arrives at the Spent Fuel Building, he notices that while a Qualified Reactor Engineer is present on elevation 130', a Licensed SRO is not.

Which of the following describes the Operations Department requirements for this evolution IAW S2.OP-IO.ZZ-0010, Spent Fuel Pool Manipulations?

The fuel movement 1)_______ occur because a SRO 2)_______

a. 1) CANNOT 2) shall direct the fuel movement from the crane trolley.

b. 1) CAN 2) is only required to be "in the area" for spent fuel moves.

c. 1) CANNOT 2) is required to provide oversight of the Reactor Engineer directing the fuel move.

d. 1) CAN 2) is not required to observe the fuel movement since a Qualified Reactor Engineer is present

Answer d **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 194001G142 2.1.42 **RO Value:** 2.5 **SRO Value:** 3.4 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title GENERI

KA Statement: Knowledge of new and spent fuel movement procedures.

Explanation of Answers: 55.41.b(10) Precaution and Limitation 2.2 of S2.OP-IO.ZZ-0010 states…"IF ANY spent fuel manipulation(s) being performed in the Spent Fuel Pool, THEN ASSIGN Reactor Services, qualified SRO, or Reactor Engineer to supervise spent fuel manipulation(s)." Since the RE is present, fuel movement can occur without a SRO.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Spent Fuel Pool Manipulations	S2.OP-IO.ZZ-0010		2	33

L.O. Number IOP010E005

Objectives

Material Required for Examination

Question Source: Previous 2 NRC Exams **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 69

Given the following conditions:

- Unit 1 is at 100% power.
- 11, 13, and 16 SW pumps are in service, with 15 SW pump selected to Auto.
- Subsequently, a loss of the 500 KV Switchyard occurs.
- 1A 4KV Vital Bus has de-energized due to a Bus Differential relay actuation.
- Unit 1 has initiated a MANUAL Safety Injection (SI).

Which of the following identifies the Service Water Pumps which will be running 2 minutes after the SI has been initiated?

a. 11 and 14.

b. 12 and 13.

c. 13 and 15.

d. 14 and 16.

Answer a **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 194001G203 2.2.3 **RO Value:** 3.8 **SRO Value:** 3.9 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title GENERI

KA Statement: (multi-unit license) Knowledge of the design, procedural, and operational differences between units.

Explanation of Answers: 55.41.b(7) This question meets the K/A because SW pumps are powered from opposite vital buses when Unit 1 is compared to Unit 2. U1 pumps are C,C,B,B,A,A, whereas U2 are A,A,B,B,C,C. The Lead pump on B bus is always 14 unless 14 is not available. With 1A bus deenergized, 15 and 16 SW pumps have no powerThe SW pump selected to auto (15) will not start on low pressure (nor will it have power) as it will be locked out by SEC initiation.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
1B 4KV vital bus one line diagram	203002			34

L.O. Number SWBAYSE005

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Editorially Modified **Used During Training Program**

Question Source Comments 48992

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 70

An Independent Verification (IV) of valve position is required in an area with a 75 mrem/hr dose rate.

For this job, which of the following is the longest time allowed for the IV before "hands-on" verification may be waived?

a. 5 minutes.

b. 7 minutes.

c. 9 minutes.

d. 11 minutes

Answer	b	**Exam Level**	R	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2	**ExamDate:**	12/21/2015

KA:	194001G214	2.2.14	**RO Value:**	3.9	**SRO Value:**	4.3	**Section:**	PWG	**RO Group:**	1	**SRO Group:**	1	55.43 ☑

System/Evolution Title GENERI

KA Statement: Knowledge of the process for controlling equipment configuration or status.

Explanation of Answers: 55.41.b(10) 10 mrem is the dose above which an IV is not required to be performed. A = 6.25 mrem. B=8.75 c=11.25 mrem

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Component Configuration Control	OP-AA-108-101-1002	Att 11 Step 1.5.1	65	7

L.O. Number MISCAP007

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Significantly Modified **Used During Training Program** ☐

Question Source Comments 60955 changed dose rate which changes correct naswer to a previous distracter.

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 71

Given the following conditions:

- Salem Unit 2 is operating at 100% power.
- 21 SW pump is C/T.
- 22, 25, and 26 SW pump are in service.

- Subsequently, 22 SW pump discharge strainer clogs, 22 SW pump is stopped, and 22 SW pump is declared inoperable.
- 2 hours after being secured, maintenance discovers a crack in the strainer drum which will take 1 day to repair.

Of the following, which is the only method of tracking SW pump status which is NOT performed IAW OP-SA-108-115-1001, Operability Assessment and Equipment Control Program?

Updating the _________ is NOT required.

a. Operational Status Board.

b. Control Room Narrative Log.

c. Tech Spec Action Statement Status Board.

d. Technical Specification Action Statement Log.

Answer a **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 194001G223 2.2.23 **RO Value:** 3.1 **SRO Value:** 4.6 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title GENERI

KA Statement: Ability to track Technical Specification limiting conditions for operations.

Explanation of Answers: 55.41.b(10) Initially, actions wil be attempted to clear the strainer clog, so it won't be readily apparent that the repair would take longer than one shift. (Sect 5.2.4) When it becomes apparent that it wILL take longer than one shift, Section 5.2.5 will be performed also. The Operational Staus Board is used during emergencies and is located in the control room area.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Operability Assessment and Equipment Control	OP-SA-108-115-1001			7

L.O. Number

TECHSPE015

Objectives

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 72

Given the following conditions:

- A Unit 2 shutdown is in progress.
- A containment entry is required to inspect an INOPERABLE component on elevation 78' outside the bioshield.
- The Unit is being shutdown at 10% per hour.

Which of the following additional approvals is required to authorize a containment entry other than the SM/CRS under these conditions?

a. Operations Director - Salem.

b. Station Vice President - Salem.

c. Work Control Center (WCC) Supervisor.

d. Radiation Protection Supervisor (RPS).

Answer d **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 194001G312 2.3.12 **RO Value:** 3.2 **SRO Value:** 3.7 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title GENERI

KA Statement: Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.

Explanation of Answers: Normal Containment entries at power are governed by SC.SA-ST.ZZ-0001 & RP-SA-102. Authorization to access containment is provided by the SM/CRS. However, to access containment when power is being changed >5%/hr, the Radiation Protection Supervisor's approval is required. (Pre-req 2.4)

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
SALEM CONTAINMENT ENTRIES IN MODES	SC.SA-ST.ZZ-0001			5

L.O. Number Objectives

RADCONE004

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Editorially Modified **Used During Training Program**

Question Source Comments 78014 added abbreviation to each title because its found that way in the procedure.

Comment

RO SkyScraper	SRO Skyscraper	RO System/Evolution List	SRO System/Evolution List	Outline Changes

Question Topic RO 73

Which of the following Area Radiation Monitors (ARM) will cause a ventilation system alignment change when it reaches its High Radiation Alarm setpoint?

a. 2R44A, Containment High Range.

b. 2R32A, Fuel Handling Crane.

c. 2R9, New Fuel Storage.

d. 2R52, Liquid PASS Room.

Answer	c	**Exam Level**	R	**Cognitive Level**	Memory	**Facility:**	Salem 1 & 2	**ExamDate:**	12/21/2015

KA:	194001G315	2.3.15	**RO Value:**	2.9	**SRO Value:**	3.1	**Section:**	PWG	**RO Group:**	1	**SRO Group:**	1	55.43

System/Evolution Title GENERI

KA Statement: Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.

Explanation of Answers: 55.41.b(11) C is correct because it realigns FHB ventilation through the charcoal filters and starts both FHB Exhaust fans. B is incorrect but plausible because its auto function is to prevent Fuel Crane motion except in downward direction. D is incorrect since it only has alarm light outside the PASS room which activates, but plausible because of the high radiation levels which would be expected in that area of the aux building following an accident. A is incorrect since it has no automatic function, but is plausible since other high radiation alarms associated with hi rad levels in containment perform automatic actions to isolate ventilation systems (VC5 and VC6 auto closure)

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
S2.OP-AB.RAD-0001	Abnormal Radiation	Attachment 5 RMS ch	14-16	30

L.O. Number

RMS000E005

Objectives

Material Required for Examination

Question Source:	Facility Exam Bank	**Question Modification Method:**	Direct From Source	**Used During Training Program**

Question Source Comments 125827 used on 9/2011 Salem NRC RO exam. 3 exams ago.

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 74

Given the following conditions:

- Salem Unit 1 is operating at 100% power.
- 1A EDG is C/T for maintenance.
- A 500KV switchyard malfunction causes a loss of offsite power, and 1B and 1C EDGs do not load due to 1B and 1C 4KV vital buses locking out on Bus Differential.

Of the following, which one states a procedure entry and its correct flowpath allowed by the rules of procedure IAW OP-AA-101-111-1003 Use of Procedures?

a. Enter EOP-LOPA-1 directly and perform immediate actions, which states to trip the Rx then trip the Turbine.

b. Enter EOP-LOPA-1 directly and perform immediate actions, which states to trip the Rx and confirm the Rx trip, then trip the Turbine.

c. Enter EOP-TRIP-1 and perform immediate actions, which states to trip the Rx and confirm the Rx trip, trip the Turbine, initiate SI, then transition to EOP-LOPA-1 based on no vital buses energized.

d. Enter EOP-TRIP-1 and perform immediate actions, which states to trip the Rx and confirm the Rx trip, trip the Turbine, initiate SI ONLY if conditions warrant, then transition to EOP-LOPA-1 based on no vital buses energized.

Answer a **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 194001G401 2.4.1 **RO Value:** 4.6 **SRO Value:** 4.8 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title GENERI

KA Statement: Knowledge of EOP entry conditions and immediate action steps.

Explanation of Answers: 55.41.b(10) Either TRIP-1 ot LOPA-1 can be entered upon a total loss of all AC power. If entered, the flowpath for TRIP-1 does not reach the SI evalution step before the kickout to LOPA-1 on no 4kv vital buses energized, so both TRIP-1 distracters are incorrect. LOPA-1 does not confirm the Rx trip (since there is no power to do anything about it anyways).

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Rx Trip or Safety Injection	1-EOP-TRIP-1			27
Loss of All AC Power	1-EOP-LOPA-1			25
Use of Procedures	OP-AA-101-111-1003		10	6

L.O. Number LOPA00E009

Objectives

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic RO 75

Given the following conditions:

- An Alert has been declared at Salem, and all required notifications have been made by the Primary Communicator.
- Conditions degrade to the point where a Site Area Emergency is declared.

Which of the following identifies the PRIMARY method which the Primary Communicator will use to make notifications to the States of Delaware and New Jersey, and how long from the SAE declaration do they have to make those notifications IAW Attachment 6, Primary Communicator Log of the Salem ECG?

a. NETS phones within 15 minutes.

b. NETS phones within 60 minutes.

c. ESSX phones within 15 minutes.

d. ESSX phones within 60 minutes.

Answer a **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 194001G429 2.4.29 **RO Value:** 3.1 **SRO Value:** 4.4 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title GENERI

KA Statement: Knowledge of the emergency plan.

Explanation of Answers: 55.41(10) Salem ECG, lists the communications systems in order of preference. The NETS (Nuclear Emergency Telecommunications System) is the primary closed circuit communication system for off-site notifications. The ESSX is also a closed circuit system, which is used as a backup for NETS. The notifications to the States must be made within 15 minutes of the declaration of an Emergency, even if a lower classification emergency is already in progress. The 60 minutes is plausible if the candidate thinks the time is less restrictive since an emergency already exists.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Primary Communicator Log	EP-SA-111-F6			12
Emergency Preparedness Training Communicat	NEPCOMMDTYSC			05

L.O. Number GENISSE013

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program**

Question Source Comments Used on Salem Sept 2011 NRC exam (3 exams ago)

Comment

U.S. Nuclear Regulatory Commission
Site-Specific
Written Examination

Applicant Information

Name:	Region: I
Date: 12/21/2015	Facility: Salem 1 & 2
License Level: SRO	Reactor Type: W
Start Time:	Finish Time:

Instructions

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

Applicant Certification

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

____
Applicant's Signature

Results

RO/SRO-Only/Total Examination Values	____ / ____ / ____	Points
Applicant's Score	____ / ____ / ____	Points
Applicant's Grade	____ / ____ / ____	Percent

Senior Reactor Operator Answer Sheet

Circle the correct answer. If an answer is changed write it in the blank. **NAME:**______________________

1. a b c d ___
2. a b c d ___
3. a b c d ___
4. a b c d ___
5. a b c d ___
6. a b c d ___
7. a b c d ___
8. a b c d ___
9. a b c d ___
10. a b c d ___
11. a b c d ___
12. a b c d ___
13. a b c d ___
14. a b c d ___
15. a b c d ___
16. a b c d ___
17. a b c d ___
18. a b c d ___
19. a b c d ___
20. a b c d ___
21. a b c d ___
22. a b c d ___
23. a b c d ___
24. a b c d ___
25. a b c d ___

RO SkyScraper	SRO Skyscraper	RO System/Evolution List	SRO System/Evolution List	Outline Changes

Question Topic SRO 1

Given the following conditions:

- Unit 1 is performing a Rx startup IAW S1.OP-IO.ZZ-0003, Hot Standby to Minimum Load.
- Power is stable at 1x10-8 Amps for Low Power Physics Testing.
- A Shutdown Bank "A" rod drops fully into the core.
- The Rx does not trip.

Which of the following identifies:
1) How the CRS should proceed
2) Why rod withdrawl is not allowed?

Direct the RO to…

a. 1) trip the Rx.
2) A dropped rod recovery would constitute an approach to criticality.

b. 1) fully insert all Control Bank and Shutdown Bank rods.
2) A dropped rod recovery would constitute an approach to criticality.

c. 1) trip the Rx.
2) The depressed power distibution profile in the area around the dropped rod may cause power production in other parts of the core to exceed Tech Spec limits.

d. 1) fully insert all Control Bank and Shutdown Bank rods.
2) The depressed power distibution profile in the area around the dropped rod may cause power production in other parts of the core to exceed Tech Spec limits.

Answer b **Exam Level** S **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000003G409 2.4.9 **RO Value:** 3.8 **SRO Value:** 4.2 **Section:** EPE **RO Group:** 2 **SRO Group:** 2 55.43 ✔

System/Evolution Title Dropped Control Rod 003

KA Statement:
Knowledge of low power/shutdown implications in accident e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies.

Explanation of Answers:
55.43.b(6,5) This question is SRO level based on the knowledge of internal effects on core reactivity of a dropped rod while exactly critical, and the procedural direction to insert all rods based on becoming subcritical. The bases for that insertion is that performing a dropped rod recovery when the problem has been fixed, which would normally be done at power, would NOT be done if the Rx were subcritical, because withdrawing that rod would constitute an approach to criticality and is required to be performed IAW the appropriate startup procedure.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Dropped Rod	S1.OP-AB.ROD-0002			10

L.O. Number
ABROD2E002

Objectives

Material Required for Examination					
Question Source:	New	**Question Modification Method:**		**Used During Training Program**	☐
Question Source Comments					

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic SRO 2

Given the following conditions:

- Unit 2 is operating at 100% power.
- 21 charging pump is in service.
- 22 and 23 charging pumps are operable.

- Subsequently, 21 charging pump trips due to a breaker malfunction.
- The CRS enters S2.OP-AB.CVC-0001 and places 23 charging pump in service.

Which of the following:
1) Identifies ALL the Tech Spec LCO(s) which will be entered
2) What the required action(s) is/are if 21 charging pump remains inoperable for the next 4 days?

The CRS will enter.....

a. 1) LCO 3.1.2.2.b for not having required boration flowpaths, LCO 3.1.2.4 for not having required charging pumps, and LCO 3.5.2.a for not having required ECCS subsystems available.
2) Be in Mode 3 and borated to a SDM equivalent to at least 1% delta k/k within 78 hours of pump trip.

b. 1) LCO 3.1.2.2.b for not having required boration flowpaths, LCO 3.1.2.4 for not having required charging pumps, and LCO 3.5.2.a for not having required ECCS subsystems available.
2) Be in Mode 4 within 84 hours of pump trip.

c. 1) LCO 3.5.2.a ONLY for not having required ECCS subsystems available.
2) Be in Mode 3 and borated to a SDM equivalent to at least 1% delta k/k within 78 hours of pump trip.

d. 1) LCO 3.5.2.a ONLY for not having required ECCS subsystems available.
2) Be in Mode 4 within 84 hours of pump trip.

Answer d **Exam Level** S **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000022G222 2.2.22 **RO Value:** 4.0 **SRO Value:** 4.7 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43 ✔

System/Evolution Title Loss of Reactor Coolant Makeup 022

KA Statement:
Knowledge of limiting conditions for operations and safety limits.

Explanation of Answers:
55.42.b(2) This question is SRO level based on NUREG-1021, ES401, Attachment 2, page 17, II.B, 1st bullet for application of required actions. Inoperability of a single charging pump in Modes 1-3 only results in entry into the ECCS LCO. The 2 other LCOs would be entered upon inoperability of the second charging pump. The required action is to restore within 72 hours or be in Hot Shutdown within next 12 hours. The incorrect action in the distracters is for when 2 charging pumps are inoperable.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem Tech Specs		3.5.2, 3.1.2.2, 3.1.2.4		

L.O. Number
CVCS00E010

Objectives

Material Required for Examination	

Question Source:	New	Question Modification Method:		Used During Training Program	☐

Question Source Comments	

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic SRO 3

Given the following conditions:

- Unit 2 is in Mode 5.
- Rx vessel level is 97.4'.
- 22 RHR loop is in service.
- RHR HX inlet temperature is 125°F.
- 21 RHR loop is available.
- 21,24, and 26 SW pumps are in service.
- 21 charging pump is in service.

- Subsequently, a complete loss of Service Water occurs.

Which of the following identifies a procedure the CRS will enter, and the FIRST action operators will perform in that procedure?

a. S2.OP-AB.SW-0005, Loss of All Service Water. Start 23 charging pump.

b. S2.OP-AB.SW-0005, Loss of All Service Water. Stop 21 charging pump.

c. S2.OP-AB.RHR-0002, Loss of RHR at Reduced Inventory. Start 21 RHR pump.

d. S2.OP-AB.RHR-0002, Loss of RHR at Reduced Inventory. Stop 22 RHR pump.

Answer d **Exam Level** S **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000025G120 2.1.20 **RO Value:** 4.6 **SRO Value:** 4.6 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title Loss of Residual Heat Removal System 025

KA Statement: Ability to interpret and execute procedure steps.

Explanation of Answers: 55.43.b(5) This question is SRO level based on having to assess facility conditions, select the correct operating procedure, and know specific actions taken in that procedure. BOTH procedures may be entered, however, AB.SW-5 has a CAS that states if RHR is in service GO TO AB.RHR-1 or RHR-2 depending on RPV level. AB.SW-5 distracters are plausible because procedure states that if 23 charging pump is IMMEDIATELY available, then place it in service based on its being cooled by CCW, and will extend the time charging is in service to allow placing temporary cooling in service to it. Higher cognitive level required to discern from initial conditions that ALL SI and charging pumps EXCEPT one are required to be cleared and tagged with RCS temp < 312°F, and that there will not be another charging pump to go to. 21 charging pump WILL be stopped, but not before letdown is isolated. AB.RHR checks a RHR pump in service, so starting a second RHR pump will not be performed. The in service RHR pump will be stopped to preclude damage to the pump with RPV level <97.5'

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of All Service Water	S2.OP-AB.SW-0005			4
Loss of RHR at Reduced Inventory	S2.OP-AB.RHR-0002			14

L.O. Number

ABRHR1E004

Objectives

Material Required for Examination	

Question Source:	Facility Exam Bank	Question Modification Method:	Significantly Modified	Used During Training Program	☐

Question Source Comments	119222. Changed from 4 AB.RHR actions to which procedure and which action.

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic: SRO 4

Given the following conditions:

- Operators are responding to a 650 gpm tube rupture on 22 SG which occurred while operating at 100% power, IAW EOP-SGTR-1, Steam Generator Tube Rupture.
- All off-site power was lost when the Main Generator breakers opened.
- The RCS was cooled down to Target Temperature, and then depressurized to stop primary-to-secondary leakage.

- Subsequently, off-site power is restored, and all 4KV Group Buses are now energized from off-site power.
- The crew is evaluating RCP re-start.
- RVLIS Upper Range indication is 98%.

Which of the following contains:
1) ONLY the criteria in addition to RCS Subcooling which are checked to determine if RCP re-start will be performed
2) How the re-start of the RCP be accomplished if allowed

The crew will check....

a. 1) PZR level and the PZR saturated.
2) Start a RCP directly at SGTR-1 Step 49 based on RCP support conditions being desired but not required to start the RCP.

b. 1) RVLIS Full Range indication and SG NR level.
2) Start a RCP directly at SGTR-1 Step 49 based on RCP support conditions being desired but not required to start the RCP.

c. 1) PZR level and the PZR saturated.
2) Start a RCP using S2.OP-SO.RC-0001, Reactor Coolant Pump Operation to ensure all support systems and P&Ls for starting a RCP are met.

d. 1) RVLIS Full Range indication and SG NR level.
2) Start a RCP using S2.OP-SO.RC-0001, Reactor Coolant Pump Operation to ensure all support systems and P&Ls for starting a RCP are met.

Answer	c	**Exam Level**	S	**Cognitive Level**	Memory	**Facility:**	Salem 1 & 2	**ExamDate:**	12/21/2015

KA:	000038A217	EA2.17	**RO Value:**	3.8	**SRO Value:**	4.4	**Section:**	EPE	**RO Group:**	1	**SRO Group:**	1	55.43 ☑

System/Evolution Title: Steam Generator Tube Rupture | 038

KA Statement: Ability to determine and interpret the following as they apply to Steam Generator Tube Rupture:
RCP restart criteria

Explanation of Answers: 55.43.b(5) This question meets SRO only criteria listed in NUREG-1021, ES-401, Attachment 2, II.E. Figure 2, 1st bullet for 5th Block for assessment and implementation of a procedure or section of procedure, namely SO.RC-0001 vs direction strictly in the EOP. SGTR-1 does not contain a step which directly starts a RCP, rather it directs RCP start IAW SO.RCP-0001, which will require support conditions satisfied to start the RCP. There are other places in EOP network where RCPs are started without regard to suport conditions(FRCC). With RVLIS upper range ≤100%, PZR level and saturated conditions in PZR are required along with subcooling to start the RCP.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Steam Generator Tube Rupture	2-EOP-SGTR-1	Flowchart	7	7

L.O. Number
SGTR01E009

Objectives

Material Required for Examination	

Question Source:	New	**Question Modification Method:**		**Used During Training Program**	☐
Question Source Comments					

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic SRO 5

Given the following conditions:

- Unit 1 is operating at 100% power.
- 21, 24 and 26 SW pumps are in service.
- 21 and 22 SW header pressures are 108 psig.
- The following OHAs annunciate sequentially in this order:
  - B-13, 21 SW HDR PRESS LO
  - B-14, 22 SW HDR PRESS LO
  - B-15, TURB AREA SW HDR PRESS LO.
  - B-48, SW VLV RM FLOODED.

The standby SW pump starts automatically, and OHAs B-13, B-14, and B-15 clear.

Which of the following describes where a SW leak could be located which would produce these alarms, and the procedurally directed actions which would mitigate the event?

a. On a CFCU supply piping in the 78' Mechanical Penetration Area. S2.OP-AB.SW-0001, Loss of Service Water Header Pressure, will direct isolating multiple CFCUs IAW Attachment 5 CFCU leaks, until header pressure stabilizes and sump pump runs stop.

b. Upstream of the 2ST901, TURB LO CLR ST RET VLV. S2.OP-AB.SW-0002, Loss of Service Water-Turbine Header, will direct operators to adjust 2ST901 TURB LO CLR ST RET V, and 2ST1 TG AREA SW PRESS CONT VLV, to compensate for the SW leak.

c. On a CFCU supply piping in the 78' Mechanical Penetration Area. S2.OP-AB.SW-0001, Loss of Service Water Header Pressure, will direct isolating a single CFCU which would be readily identifiable from the control room.

d. Upstream of the 2ST901, TURB LO CLR ST RET VLV. S2.OP-AB.SW-0002, Loss of Service Water-Turbine Header, will direct removing the Main Turbine from service in preapration for isolating the TGA header.

Answer	c	**Exam Level**	S	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2	**ExamDate:**	12/21/2015

KA:	000062G445	2.4.45	**RO Value:**	4.1	**SRO Value:**	4.3	**Section:**	EPE	**RO Group:**	1	**SRO Group:**	1	55.43 ✔

System/Evolution Title Loss of Nuclear Service Water | 062

KA Statement:

Ability to prioritize and interpret the significance of each annunciator or alarm.

Explanation of Answers:

55.43.b(5)This question meets SRO only criteria listed in NUREG-1021, ES-401, Attachment 2, II.E. Figure 2, 1st bullet for 5th Block for assessment and implementation of a procedure or section of procedure in knowing where the leak could be (assessment), then correct procedure implementation and steps taken in the peocedure. The leak location could be in the TGA with the conditions in the stem except for the SW valve room flooding. Knowledge of where the SW valve room and what piping is there is needed to answer question. The 2ST901 would respond on a TGA leak, and depending on leak size could cause a restoration of header pressures. If it did not operators would be directed to ake manual control of 2ST901 and 2ST1. If it is thought that the TGA header must be isolated to stop the leak, then removing the MT from service would have to occur. The multiple cFCU isolations directed in attachment 5 is for leaks of undetermined CFCUs in containment, and refers to containment sump pump runs and trying to isolate the leak by stopping a bunch of CFCUs. Step 3.11 states if a single component can be isolated, and it can, to isolate it. Additionally, the SW indication in control room would identify that a single CFCU is affected. The sump pump runs referred to are containment sump pump runs, and are if the SW leak is in containment.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of Service Water Header Pressure	S2.OP-AB.SW-0001			16
Overhead Annunciators Window B	S2.OP-AR.ZZ-0002		81	36

L.O. Number
ABSW01E004

Objectives

Material Required for Examination					
Question Source:	Facility Exam Bank	**Question Modification Method:**	Significantly Modified	**Used During Training Program**	☐
Question Source Comments	153928 used on Salem SRO NRC exam more than 2 exams ago. Modified to add actions required.				

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic SRO 6

Given the following condition:

Both Unit 1 and Unit 2 control rooms have been evacuated due to a toxic gas release on site.

When performing local actions to stabilize the plant:
1) Where will PZR level be determined
2) How will PZR level be controlled

a. 1) At the Hot Shutdown Panel 213.
2) By ensuring the Charging System Master Flow Controller is controlling PZR level on program.

b. 1) At the Charging Pumps Flow and Pressure Panel 216-2.
2) By ensuring the Charging System Master Flow Controller is controlling PZR level on program.

c. 1) At the Hot Shutdown Panel 213.
2) By establishing local control of the CV55 CHARGING FLOW CONTROL VLV to maintain PZR level 22%-77%.

d. 1) At the Charging Pumps Flow and Pressure Panel 216-2.
2) By establishing local control of the CV55 CHARGING FLOW CONTROL VLV to maintain PZR level 22%-77%.

Answer c **Exam Level** S **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 000068A207 AA2.07 **RO Value:** 4.1 **SRO Value:** 4.3 **Section:** EPE **RO Group:** 2 **SRO Group:** 2 55.43 ☑

System/Evolution Title Control Room Evacuation 068

KA Statement: Ability to determine and interpret the following as they apply to Control Room Evacuation:
PZR level

Explanation of Answers: 55.43.b(5) This question meets SRO only criteria listed in NUREG-1021, ES-401, Attachment 2, II.E. Figure 2, 1st bullet for 5th Block for assessment and implementation of a procedure or section of procedure in knowing which procedure will be used to evacuate the control room, and how the RO will maintain PZR level, and where it will be indicated. AB.CR-1 contains field actions which will be directed by the CRS. AB.CR-3 for toxic gas directs the control room evacuation to occur using AB.CR-1, but does not contain field actions for establishing plant control. While the Master Flow Controller may actually be maintaining adequate PZR level, manual field control is established for positive plant control.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Control Room Evacuation	S2.OP-AB.CR-0001			22
Control Room Habitability	SC.OP-AB.CR-0003			6

L.O. Number
ABCR01E003

Objectives

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program** ☐

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic: SRO 7

Given the following conditions:

- A SBLOCA has occurred on Unit 2 outside containment.
- Actions of EOP-LOCA-6, LOCA OUTSIDE CONTAINMENT, have failed to isolate the break.
- RCS pressure is 1440 psig and continues to lower.

Which of the following identifies the procedure that will be used upon transition from EOP-LOCA-6 and the actions that will be directed in that procedure after the transition?

a. EOP-LOCA-1 Loss of Reactor Coolant. Add makeup to RWST, initiate a cooldown, and minimize injection flow.

b. EOP-LOCA-5 Loss of Emergency Coolant Recirculation. Add makeup to RWST, initiate a cooldown, and minimize injection flow.

c. EOP-LOCA-1, Loss of Reactor Coolant. Check for subsequent failure and conserve makeup inventory.

d. EOP-LOCA-5, Loss of Emergency Coolant Recirculation. Check for subsequent failure and conserve makeup inventory.

Answer: b **Exam Level:** S **Cognitive Level:** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 00WE04A201 EA2.1 **RO Value:** 3.4 **SRO Value:** 4.3 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title: LOCA Outside Containment E04

KA Statement: Ability to determine and interpret the following as they apply to LOCA Outside Containment:
Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Explanation of Answers: 55.43.b(5) This question is SRO level based on having to assess facility conditions, select the correct operating procedure, and know specific actions taken in that procedure. B is correct, because an unisolable break will transition out to LOCA-5. LOCA-1 is incorrect because it would be the appropriate transition if the break were isolated. 43.5 because the SRO is required to understand the actions of the LOCA-6 procedure to identify the appropriate procedure to transition to when it is complete, and actions performed in that procedure.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
LOSS OF EMERGENCY COOLANT RECIRCU	2-EOP-LOCA-5			25
LOCA Outside Containment	2-EOP-LOCA-6			21

L.O. Number: LOCA06E008

Objectives

Material Required for Examination:

Question Source: Previous 2 NRC Exams **Question Modification Method:** Direct From Source **Used During Training Program:** ☐

Question Source Comments: 13-01 NRC SRO exam (Dec. 2014)

Comment:

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic SRO 8

Given the following conditions:

- Unit 1 has experienced a Main Steamline Break (MSLB) inside containment from 100% power.
- Main Steam Line Isolation has failed to close any MS167.
- Safety Injection was manually initiated, with all components operating as expected.
- 11 AFP is C/T.
- 12 and 13 AFP's tripped after starting.
- Reactor Coolant System pressure is 1100 psig.
- All Reactor Coolant Pumps have been tripped.
- Containment pressure is 16 psig and rising.
- All Wide Range (WR) Steam Generator (SG) levels are 35% and dropping.
- All Steam Generator pressures are 465 psig and dropping.
- Reactor Coolant System Tc's have dropped from 540 to 438°F in 40 minutes.

If these condition were present when transitioning out of 1-EOP-TRIP-1, Reactor Trip Response, which procedure must be entered and what action must be taken upon that transition?

a. 1-EOP-FRTS-1, Response to Imminent Pressurized Thermal Shock Conditions. Reset Safeguards Actuation and restore normal charging and letdown.

b. 1-EOP-FRHS-1, Response to Loss of Secondary Heat Sink. Initiate feed and bleed ONLY when 3/4 SG WR levels have dropped <32%.

c. 1-EOP-FRTS-1, Response to Imminent Pressurized Thermal Shock Conditions. Shut all MS10's and steam dump valves.

d. 1-EOP-FRHS-1, Response to Loss of Secondary Heat Sink. Initiate feed and bleed immediately.

Answer d **Exam Level** S **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 00WE05A202 EA2.2 **RO Value:** 3.7 **SRO Value:** 4.3 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43 ✔

System/Evolution Title Loss of Secondary Heat Sink E05

KA Statement: Ability to determine and interpret the following as they apply to Loss of Secondary Heat Sink:
Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Explanation of Answers: 55.43(5) 55.43.b(5) This question is SRO level based on having to asses the conditions given in stem and determine both what procedure will be entered and the action(s) required in that procedure, D is correct because the conditions given in stem would transition to FRHS-1 due to a RED path of no AFW flow and <9% NR level. The Bleed and Feed initiation criteria are when S/G WR levels are <36%(adverse), NOT 32% (normal) as in distracter B. Distracters A & C are incorrect because it is a lower priority RED path, though it's action is correct for the procedure

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Response to Loss of Secondary Heat Sink	1-EOP-FRHS-1			21
Response to Imminent Pressurized Thermal Sh	1-EOP-FRTS-1			22
Critical Safety Function Status Trees	1-EOP-CFST-1			22

L.O. Number
FRHS00E005
FRHS00E013

Objectives

Material Required for Examination	

Question Source:	Facility Exam Bank	Question Modification Method:	Direct From Source	Used During Training Program	☐

Question Source Comments	43189, Used on Salem SRO NRC exam more than 2 exams ago.

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic: SRO 9

Given the following conditions:

- Unit 2 is responding to a degraded core cooling condition in accordance with 2-EOP-FRCC-2, "Response to Degraded Core Cooling."
- After depressurizing to inject the accumulators, the STA reports a RED priority on the Thermal Shock Status Tree, and recommends transitioning to 2-EOP-FRTS-1, "Response to Imminent Pressurized Thermal Shock."

Which actions describe the operator response?

a. Do NOT implement 2-EOP-FRTS-1 until 2-EOP-FRCC-2 is completed because thermal shock is a lower priority CFST.

b. Implement 2-EOP-FRTS-1 immediately because the potential damage done to the RPV by delaying entry into FRTS after entry conditions are met may be irreparable.

c. Do NOT implement 2-EOP-FRTS-1 until 2-EOP-FRCC-2 is completed because while in FRTS the core will continue to boil away injected accumulator water, and could lead to a RED path for Core Cooling.

d. Implement 2-EOP-FRTS-1 immediately because it is a higher priority CFST and rules of usage stipulate the transition to a higher priority procedure always takes precedence over notes and cautions.

Answer: c | **Exam Level:** S | **Cognitive Level:** Memory | **Facility:** Salem 1 & 2 | **ExamDate:** 12/21/2015

KA: 00WE06G423 | 2.4.23 | **RO Value:** 3.4 | **SRO Value:** 4.4 | **Section:** EPE | **RO Group:** 2 | **SRO Group:** 2 | 55.43 ☑

System/Evolution Title: Degraded Core Cooling | E06

KA Statement:

Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations.

Explanation of Answers:

55.43.b(5) This question is SRO level based on knowledge of diagnostic steps and decision points in EOP that involve transition points to event specific emergency contingency procedures. Knowledge of the bases for when NOT to implement a RED priority CFST even when indications are present is just as importanct as knowing when to implement, in this case to preserve and inventory in the reactor pressure vessel. Stopping the depressurization to go to FRTS would cause the cooldown to be stopped, and a thermal soak to be performed. The core will continue to boil away injected accumulator water and begin to uncover once again.
Eventually, CETs and/or RVLIS level values could exist which would require transition to FRCC-1 via a RED path CFST. The stopping of the cooldown could lead to a degraded core cooling condition to deteriorate to an inadequate core cooling condition.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Response to Degraded Core Cooling	2-EOP-FRCC-2			21

L.O. Number

FRCC00E006

Objectives

Material Required for Examination:

Question Source: Facility Exam Bank | **Question Modification Method:** Direct From Source | **Used During Training Program** ☐

Question Source Comments: 59315

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic SRO 10

Given the following conditions:

- Salem Unit 2 tripped from 100% when a loss of off-site power occurred.
- All systems respond as expected, and operators progress normally through the EOP's.
- It has been determined a rapid natural circulation cooldown will be performed.

Which of the following describes procedures/actions which are REQUIRED to be performed PRIOR to transitioning to either 2-EOP-TRIP-5, Natural Circulation Rapid Cooldown Without RVLIS, or 2-EOP-TRIP-6, Natural Circulation Rapid Cooldown With RVLIS , and the bases for them?

a. 2-EOP-TRIP-2, Rx Trip Response, must be performed to ensure adequate SDM and natural circulation have been established, containment cooling remains in service, and equipment not needed for the cooldown has been secured.

b. 2-EOP-TRIP-4, Natural Circulation Cooldown, must be performed to ensure adequate SDM and upper head cooling have been established, SI signals have been blocked, and initial cooldown/depressurization have been performed.

c. 2-EOP-TRIP-4, SI Initiation Criteria step must be performed to ensure SI will not be required prior to blocking SI before a cooldown can be initiated.

d. 2-EOP-TRIP-2, SI Initiation Criteria step must be performed to ensure SI will not be required prior to blocking SI before a cooldown can be initiated.

Answer b **Exam Level** S **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 00WE10A202 EA2.2 **RO Value:** 3.4 **SRO Value:** 3.9 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title Natural Circulation with Steam Void in Vessel with/without RVLIS E10

KA Statement: Ability to determine and interpret the following as they apply to Natural Circulation with Steam Void in Vessel with/without RVLIS:
Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Explanation of Answers: 55.43.b(5) This question is SRO level based on having to asses the conditions given in stem and determine both what procedure must have been performed and the bases behind that performance. Both TRIP-5 and TRIP-6 contain a caution at Step 1 which says that TRIP-4 must be completed steps 3-17 prior to entering TRIP-5 or 6. Also, the reson is correct in the bases. TRIP-2 must be performed, but does not check for adequate containment cooling or SI initiation criteria (other than CAS), other reasons are correct. TRIP-3 will not be performed at all since it is entered from TRIP-1, FRHS-1 or LOCA-1

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Natural Circulation Rapid Cooldown with RVLIS	2-EOP-TRIP-6			23
Natural Circulation Rapid Cooldown without RVL	2-EOP-TRIP-5			23

L.O. Number
TRP004E005

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program** ☐

Question Source Comments 153885

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic SRO 11

Given the following conditions:

- Unit 2 is operating at 75% power.
- 21 Waste Holdup Tank (WHUT) is being processed via the Portable Liquid Radwaste Processing System.
- Console alarm SURGE TANK LEVEL HI-LO for the CC system alarms.
- Surge tank levels are 59.3% and 59.2% on Channels A and B, and rising slowly.
- No other alarms are present.

Which of the following describes the effect if Surge Tank Level were to continue to rise, and what action the control room will take in response to the rising level?

a. 2CC149 CC SURGE TANK VENT VLV will auto close to prevent overflow. Stop processing 21 WHUT as directed in the S2.OP-AR.ZZ-0011, Control Console 2CC1.

b. Overflow of the Surge Tank will contaminate the Waste Holdup System with chromates. Close 2CC149 CC SURGE TANK VENT VLV from 2CC2 as directed in the S2.OP-AR.ZZ-0011, Control Console 2CC1.

c. 2CC149 CC SURGE TANK VENT VLV will auto close to prevent overflow. Open the CC Surge Tank Drain Valve from 2CC1 as necessary to maintain Surge Tank Level <100% as directed in S2.OP-AB.CC-0001, Component Cooling Abnormality.

d. Overflow of the Surge Tank will contaminate the Waste Holdup System with chromates. Direct a NEO to locally drain the Surge Tank to 55 gallon drum as necessary to maintain Surge Tank Level <100% as directed in S2.OP-AB.CC-0001, Component Cooling Abnormality.

Answer d **Exam Level** S **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 008000A202 A2.02 **RO Value:** 3.2 **SRO Value:** 3.5 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title Component Cooling Water System 008

KA Statement: Ability to (a) predict the impacts of the following on the Component Cooling Water System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:

High/low surge tank level

Explanation of Answers: 55.43.b(5) This question is SRO level based on having to asses the conditions given in stem and determine which action in which procedure will be taken. The 2CC149 auto closes on hi radiation in the CCW systen, nnot high pressure, to prevent radiation release from the CCW system. The Surge Tank will be locally drained. The overflow from the tank will go to the Waste Holdup system and contaminate the WHUT. WHUT processing will be stopped in both the AB.CC and ARP procedures. Locally draining the tank is also directed by both procedures.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Component Cooling Abnormality	S2.OP-AB.CC-0001			14
Control Console 2CC1	S2.OP-AR.ZZ-0011			60
205331	205331 Sheet 1			54

L.O. Number

CCW000E008

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Concept Used **Used During Training Program** ☐

Question Source Comments 82785 modified to make SRO level and fit KA.

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic SRO 12

Given the following conditions:

- Unit 2 is operating at 100% power.
- 2PR1 fails open and remains open.

Which of the following identifies how this affects the PZR Master Pressure Controller (MPC) response, and what consequences, if any, are associated with the actions performed by the crew IAW S2.OP-AB.PZR-0001, Pressurizer Pressure Malfunction?

a. MPC output will RISE. A unit shutdown will be required if 2PR1 cannot be restored to operable status within 72 hours.

b. MPC output will LOWER. A unit shutdown will be required if 2PR1 cannot be restored to operable status within 72 hours.

c. MPC output will RISE. The unit may continue to operate indefinitely after the initial mitigative actions are completed.

d. MPC output will LOWER. The unit may continue to operate indefinitely after the initial mitigative actions are completed.

Answer b **Exam Level** S **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 010000A203 A2.03 **RO Value:** 4.1 **SRO Value:** 4.2 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title Pressurizer Pressure Control System 010

KA Statement: Ability to (a) predict the impacts of the following on the Pressurizer Pressure Control System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:
PORV failures

Explanation of Answers: 55.43(2) This question is SRO level because of the Tech Spec knowledge required, and what actions TS directs for different PORV malfunctions. Additionally, while the question doesn't specifically ask what procedure to use (too easy for AB.PZR), it does require knowledge of the actions IN that procedure. The MPC raises output when actual pressure rises, and lowers as actual pressure lowers. As pressure lowers due to the open PORV, the output will lower to turn on heaters and close spray valves. When the PORV Block valve is shut to isolate the PORV in AB.PZR, Tech Spec 3.4.5 action b, if the PORV is not restored within 72 hours, shutdown is required. A PORV isolation that DOESN'T require shutdown if not fixed is a leaking PORV, which is isolated by its Block Valve with power maintained to the Block valve.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Pressurizer Pressure Malfunction	S2.OP-AB.PZR-0001			18
PZR Pressure and Level Control LP	NOS05PZRP&L			10
Salem Tech Specs				

L.O. Number
ABPZR1E002
PZRP&LE010

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program** ☐

Question Source Comments 125725 used on Salem SRO NRC exam more than 2 exams ago

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic SRO 13

Given the following conditions:

- Unit 2 is conducting a rapid plant shutdown due to a loss of condenser vacuum.
- Two IRPIs in control bank D go dark, and their P-250 readings are 0 steps.
- Maintenance Controls Dept. will be unable to repair the IRPIs until after shutdown.
- Rx Engineering has made no specific recommendations outside of procedural direction regarding boration.

Which action is required when the plant is placed in Hot Standby?

a. Borate to Cold Shutdown SDM to prevent a Yellow Path on FRSM from occurring during the shutdown.

b. Borate an additional 540 ppm to prevent a Yellow Path on FRSM from occurring during the shutdown.

c. Borate an additional 540 ppm since it is assumed that the reactivity associated with the affected rods is unavailable for shutdown.

d. Borate to Cold Shutdown SDM since it is assumed that the reactivity associated with the affected rods is unavailable for shutdown.

Answer c **Exam Level** S **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 014000A202 A2.02 **RO Value:** 3.1 **SRO Value:** 3.6 **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43 ✔

System/Evolution Title Rod Position Indication System 014

KA Statement: Ability to (a) predict the impacts of the following on the Rod Position Indication System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:

Loss of power to the RPIS

Explanation of Answers: 55.43.b(6,5) This question is SRO level based on having to determine the effect on core reactivity based on the 2 control rods which have to be assumed to remain fully withdrawn in the absence of IRPI indication. Additionally, the sRO must select the portion of AB.ROD-4 (CAS action 2.0) which requires an additional 270 ppm boration for each failed IRPI if a shutdown is performed before the IRPI is declared operable. Boration to cold shutdown conditions is not required for a shutdown to hot standby. It assumes the reactivity associated with the affected ros(s) is/are unavailable, thereby increasing the required reactivity in the core

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Rod Position Indication Failure	S2.OP-AB.ROD-0004			10

L.O. Number

ABROD4E002

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** **Used During Training Program** ☐

Question Source Comments 140829

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic SRO 14

Given the following conditions:

- Unit 2 is operating at 100% power.
- Intermediate Range Nuclear Instrument (IRNI) Channel I (2N35) failed yesterday.
- The CRS entered TSAS 3.3.1.1, action 3, and the crew removed the channel from service IAW S2.OP-SO.RPS-0001, Nuclear Instrumentation Channel Trip / Restoration.

- Subsequently, the RO reports IRNI Channel II (2N36) just started indicating erratically, oscillating between 1x10-11 amps and 1x10-5 amps.
- The reactor remains at power.

The CRS shall…

a. Enter S2.OP-AB.NIS-0001, Nuclear Instrumentation Malfunction. Remove IRNI Channel 2N36 from service. Power operation may continue with no restrictions.

b. Enter S2.OP-AB.NIS-0001, Nuclear Instrumentation Malfunction. Remove IRNI Channel 2N36 from service. Initiate actions within one hour to place the unit in Hot Standby within the next 6 hours.

c. Direct the RO to trip the reactor based on an ATWT. BOTH Source Range Nuclear Instrument Channels must be manually energized in EOP-TRIP-2, Reactor Trip Response, if the Rx trip is successful, or 2-EOP-FRSM-1, Response to Nuclear Power Generation, if the reactor does not trip.

d. Direct the RO to trip the reactor based on an ATWT. ONLY Source Range Nuclear Instrumentation Channel II (2N32) will automatically energize. SRNI Channel I (2N31) must be manually energized in EOP-TRIP-2, Reactor Trip Response, if the Rx trip is successful, or 2-EOP-FRSM-1, Response to Nuclear Power Generation, if the reactor does not trip.

Answer	b	**Exam Level**	S	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2
ExamDate:	12/21/2015						

KA:	015000G107	2.1.7	**RO Value:**	4.4	**SRO Value:**	4.7	**Section:**	SYS	**RO Group:**	2	**SRO Group:**	2	55.43 ☑

System/Evolution Title Nuclear Instrumentation System 015

KA Statement:

Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.

Explanation of Answers:

55.43.b(5) This question is SRO level based on having to asses the conditions given in stem and determine both what procedure will be entered and the action(s) required in that procedure, as well as the TSAS which is applicable and actions required. Loss of a single IRNI channel is specifically excluded from entry into LCO 3.0.3 even though the minimum operable channel requiremnt is 2. Loss of the second channel would require entry into TS 3.0.3, which requires actions initiated within one hour to place unit in Hot Standby in next 6 hours. Detailed system knowledge is required to know that with the one IRNI channel in the tripped condition, the other channel going below 7x10-11 Amps would automatically energize Source Range NI's if not for the fact that the P-10 interlock prevent Source Range instruments from energizing >10% power.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Nuclear Instrumentation Malfunction	S2.OP-AB.NIS-0001			7
Nuclear Instrumentation Lesson Plan	NOS05EXCORE-09			9
Salem Tech Specs		3.3.1.1		

L.O. Number
ABNIS1E003
EXCOREE007

Objectives

Material Required for Examination					
Question Source:	New	**Question Modification Method:**		**Used During Training Program**	☐
Question Source Comments					

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic SRO 15

Given the following conditions:

- Unit 2 is operating at 100% power.
- At 1200 on December 5th, 21 CFCU was C/T for an emergent electrical repair window.
- A very small SW leak is noticed by a NEO on his rounds on the 21SW52, 23 CFCU SW INLET V and is isolated by closing the 21SW52 at 1200 on December 7th.

After the 21SW52 is shut and the leak isolated, which of the following describes 21 -23 CFCU operability, and the required actions if 21-23 CFCUs remain in their current status?

a. 21 and 23 CFCUs ONLY are inoperable. Restore BOTH inoperable CFCUs to operable status by 1200 on December 12th or be in Hot Standby within the next 6 hours, and Cold Shutdown within the next 30 hours.

b. 21 and 23 CFCUs ONLY are inoperable. Restore EITHER inoperable CFCU to operable status by 1200 on December 14th or be in Hot Standby within the next 6 hours, and Cold Shutdown within the next 30 hours.

c. 21, 22, and 23 CFCUs are inoperable. Restore at least ONE of the inoperable CFCUs to operable status by 1300 on December 7th or be in Hot Standby within the next 6 hours, and Cold Shutdown within the next 30 hours.

d. 21, 22, and 23 CFCUs are inoperable. Restore at least TWO of the inoperable CFCUs to operable status by 1300 on December 7th or be in Hot Standby within the next 6 hours, and Cold Shutdown within the next 30 hours.

Answer	a	**Exam Level**	S	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2	**ExamDate:**	12/21/2015

KA:	022000G242	2.2.42	**RO Value:**	3.9	**SRO Value:**	4.6	**Section:**	SYS	**RO Group:**	1	**SRO Group:**	1	55.43

System/Evolution Title Containment Cooling System 022

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

Explanation of Answers: This is not considered solely RO Tech Spec knowledge based on the ability to determine CFCU status based on SW header availability. SO.SW-5, Attachment 2, page 34 of 35 states "Enter the Action Statement for Technical Specification 3.6.2.3 if during Modes 1, 2, or 3, Containment Fan Coil Unit #23 is isolated from either SW supply header, i.e. if the manual header cross-connect supply valve 21SW52 OR 22SW52 for one SW header is CLOSED. Additionally, knowledge of where the SW isolation valve is physically located in the supply to the CFCUs will be used to detemrine if 22 CFCU is also inoperable, which it is not. For this case with one ot two CFCU's inoperable, BOTH CFCUs must be restored to operable within 7 days of the FIRST CFCU being declared inoperable, not from when the 2nd CFCU becomes inoperable. The 3 CFCU distracters are plausible if it is thought 22 CFCU loses its SW supply.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Service Water System Operation	S2.OP-SO.SW-0005		130	41
Salem Tech Specs		3.6.3		
No. 2 Unit Service Water Nuclear Area	205342	Sheet 6		70

L.O. Number

CONTMTE009

Objectives

Material Required for Examination SRO 15 205342 Sheet 6

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment

RO SkyScraper | **SRO Skyscraper** | **RO System/Evolution List** | **SRO System/Evolution List** | **Outline Changes**

Question Topic: SRO 16

Given the following conditions:

- Unit 1 was operating at 100% power when a catostrophic failure of 12 SG steam piping occurred inside containment.
- The Rx tripped and SI initiated.
- 12 SG rapidly blew down to containment, and containment pressure peaked at 16 psig prior to transition out of EOP-TRIP-1 Reactor Trip or Safety Injection to EOP-LOSC-1, Loss of Secondary Coolant.
- Operators have just transitioned out of LOSC-1 to EOP-LOCA-1, Loss of Reactor Coolant, with the following conditions:
  - RCS pressure is 1780 psig and rising slowly.
  - RCS subcooling is 100°F.
  - PZR level is 22% and stable.
  - 11, 13, and 14 SG levels are 17% and rising slowly.

Which of the following describes containment cooling operation during subsequent EOP performance?

Containment Spray will be secured in......

a. LOCA-2, Post LOCA Cooldown and Depressurization, when containment pressure is < 4 psig. Containment Spray Additive Tank will be isolated based on normal radiation levels in containment.

b. EOP-TRIP-3, SI Termination, when containment pressure is < 4 psig. Containment Spray Additive Tank will be isolated based on normal radiation levels in containment.

c. EOP-TRIP-3, SI Termination if containment pressure is less than 13 psig. CFCUs will continue to operate in Low Speed.

d. LOCA-2, Post LOCA Cooldown and Depressurization. CFCUs will continue to operate in Low Speed.

Answer	c	**Exam Level**	S	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2	**ExamDate:**	12/21/2015

KA:	026000A208	A2.08	**RO Value:**	3.2	**SRO Value:**	3.7	**Section:**	SYS	**RO Group:**	1	**SRO Group:**	1	55.43	☑

System/Evolution Title: Containment Spray System — 026

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

Safe securing of containment spray when it can be done)

Explanation of Answers: 55.43.b(5) This question is SRO level based on having to asses the conditions given in stem and determine both what procedure will be entered and how containment cooling/spray equipment will be operated. With conditions in stem, the transition out of LOCA-1 to TRIP-3 will be made at step 9 based on adequate subcooling, SG NR level status, and PZR level, otherwise the transition would be made to LOCA-2 at Step 18 with RCS pressure >420 psig. Both procedures have CS terminated. Neither procedure addresses either CS Spray Additive tank isolation, which is plausible given that the event is a steam leak vs a LOCA, or CFCU operation, which would be goverened by the System operating Procedure when EOP network weas exited to the Integrated operating Procedure (IOP)

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
SI Termination	EOP-TRIP-3			25
Post LOCA Cooldown and Depressurization				25

L.O. Number
CSPRAYE012
TRP003E005

Objectives

Material Required for Examination	

Question Source:	New	Question Modification Method:		Used During Training Program	☐
Question Source Comments					

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic SRO 17

Given the following conditions:

- Unit 2 is in Mode 5 entering a refueling outage.
- 2C EDG was C/T yesterday for scheduled outage window.
- The normal 31 day surveillance test of 2A EDG was completed SAT 2 days ago while in Mode 4.

- Subsequently, the Unit 2 CRS notices that the 18 month Hot Restart surveillance for 2A EDG, was NOT performed as scheduled after the normal 2A EDG 31 day run surveillance, and is now outside its required periodicity including any allowable grace time.

Which of the following describes:
1) The status of 2A EDG
2) When the associated Hot Restart test must be performed

a. Operable. The Hot Restart test must be performed prior to entering Mode 4.

b. Operable. The Hot Restart test must be performed prior to entering Mode 6.

c. Inoperable. The Hot Restart test must be performed prior to entering Mode 4.

d. Inoperable. The Hot Restart test must be performed prior to entering Mode 6.

Answer a **Exam Level** S **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 064000G120 2.1.20 **RO Value:** 4.6 **SRO Value:** 4.6 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title Emergency Diesel Generators 064

KA Statement:

Ability to interpret and execute procedure steps.

Explanation of Answers:

55.43.b(2) This question is SRO level based on being able to apply TSAS 3.8.1.2 for electrical power in Modes 5 and 6, and the action required based on the conditions in the stem. RO knowledge would be "above the LCO line", and SRO level for actions below the line. LCO 3.8.1.2 requires 2 operable EDGs, and the stem states 2C is already tagged out. The surveillance requirements of 4.8.1.2 specifically state that certain surveillances are NOT required to maintain EDG operability. The bases for this is that we don't want to the EDG "paralelled with the off site power network or otherwise rendered inoperable during performance of the surveillance requirement, and to preclude de-energizing a required ESF bus or disconnecting a required offsite circuit during performance of surveillance requirements......It is the intent that these surveillance requirements must still be capable of being met, but actual performance is not required during periods when the DG and the offsite circuit are required to be operable. During startup, prior to entering Mode 4, the surveillance requirements are required to be completed if the surveillance frequency has been exceeded...." The provided reference does not give answer, but allows the operator to interpret the surveillance requirement, and in any case does not contain the action required which is located in the bases.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem Tech Specs		3.8.1.2	3/4 8-7a	246
Salem Tech Specs		Bases	B3/4 8-3	282

L.O. Number

EDG000E011

Objectives

Material Required for Examination	SRO Q17 Tech Spec 3/4.8.1 Electrical Power Systems, A.C Sources

Question Source:	New	**Question Modification Method:**		**Used During Training Program**	☐

Question Source Comments	

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic: SRO 18

Given the following conditions:

- Unit 2 is operating at 60% power, steady state.
- 21A Circulator is C/T.
- The Condensate Polisher is O/S and in standby.

- Subsequently, the 13 KV South ringbus breaker D-E opens causing a loss of 23 SPT.

Which of the following describes:
1) The plant status 15 minutes after the loss of 23 SPT
2) How the operators will respond to this event

a. 1) The reactor remains at power.
2) Operators will be performing S2.OP-AB.CW-0001, Circulating Water System Malfunction, and establishing Low Pressure Turbine Hood Spray.

b. 1) The reactor was manually tripped.
2) Operators will be utilizing S2.OP-AB.COND-0001, Loss of Condenser Vacuum, in conjunction with the TRIP series of EOP's, to break condenser vacuum.

c. 1) The reactor remains at power.
2) Operators will be performing S2.OP-AB.CHEM-0001, Abnormal Secondary Chemistry, and placing the Condensate Polisher in service for the expected rise in Dissolved O2.

d. 1) The reactor was manually tripped.
2) Operators will be utilizing S2.OP-AB.CN-0001, Main Feedwater / Condensate System Abnormality, in conjunction with the TRIP series of EOP's to respond to the loss of condenser hotwell levels and possible Condensate pump cavitation.

Answer	a	**Exam Level**	S	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2	**ExamDate:**	12/21/2015

KA:	075000A202	A2.02	**RO Value:**	2.5	**SRO Value:**	2.7	**Section:**	SYS	**RO Group:**	2	**SRO Group:**	2	55.43 ✔

System/Evolution Title: Circulating Water System | 075

KA Statement: Ability to (a) predict the impacts of the following on the Circulating Water System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:
Loss of circulating water pumps

Explanation of Answers: 55.43.b(5) This question is SRO level based on knowing the appropriate procedure or section of procedure used in applying the conditions which will occur based on the initial conditions in the stem. 23 SPT powers 23 CW bus, and 24 SPT powers 24 CW bus. 23 CW bus powers the "A" circulatros and 24 SPT powers the "B" circulators. The loss of 23 SPT will cause a loss of 2 additional circulators in addition to 21A which is C/T. The operator must know how many circulators are now not running, 3 or 4. If it is thought 4 are O/S, there is a CAS to trip the Rx >P-9 (49% power). Additionally, the 2 Rx trip distracters AB's may be used if it thought condenser vacuum would degrade or DO increased based on losing hotwell levels and its effect on condensate pump seals. Manually bypassing the Turbine Hood Spray is allowed (and directed) in AB.CW-1, even though normally it remains secured > 15% power. (AB.CW-1 page 5)

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Circulating Water System Malfunction	S2.OP-AB.CW-0001		5	35

L.O. Number
ABCW01E004

Objectives

Material Required for Examination					
Question Source:	New	**Question Modification Method:**		**Used During Training Program**	☐
Question Source Comments					

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic SRO 19

Given the following conditions:

- Unit 2 is performing a reactor startup by control rods IAW S2.OP-IO.ZZ-0003, Hot Standby to Minimum Load.
- Estimated Critical Conditions are:
  - Cb= 500 ppm
  - Control Bank D = 77 steps
  - Xe free
  - 11,756 EFPH

When the ICRR value reaches 0.125, the Predicted Critical Rod Height is 122 steps on Control Bank D.

What action(s), if any, is/are required to be taken in response to this Predicted Critical Rod Height?

a. Continue with no special actions are required.

b. Continue the reactor startup, and evaluate the post startup data for trend.

c. Initiate rapid boration, insert Control Rod Banks, and recalculate the ECC.

d. Insert the Control Rod Banks and recalculate the ECC prior to withdrawing Control Rods.

Answer a **Exam Level** S **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 194001G123 2.1.23 **RO Value:** 4.3 **SRO Value:** 4.4 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title GENERI

KA Statement: Ability to perform specific system and integrated plant procedures during all modes of plant operation.

Explanation of Answers: 55.43.b(6) Table 1-8 77 steps is 1079.4 pcm. 122 steps is 877.0 difference is 202.4 pcm. With <300 pcm difference between ECC and predicted at the eightfold position, there is no action, and the startup will continue with no additional action required.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Curve Book	S2.RE-RA.ZZ-0016			8
Hot Standby to Minimum Load	S2.OP-IO.ZZ-0003			

L.O. Number **Objectives**

Material Required for Examination SRO 19 S2.RE-RA.ZZ-0016 Rev. 8

Question Source: Facility Exam Bank **Question Modification Method:** Concept Used **Used During Training Program** ☐

Question Source Comments 151642 Used 3 NRC exams ago Sept 2011. Different numbers based on different revision of Curve Book.

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic: SRO 20

Choose the answer which contains ONLY actions directed to be performed IAW S2.OP-IO.ZZ-0007, Cold Shutdown to Refueling, BEFORE Rx Vessel Head detensioning would be initiated for a refueling outage starting in November.

I. The Rx shall be subcritical for at least 168 hours.
II. Direct, continuous communication between the control room and refuel floor is established.
III. The RCS is drained to <104' elevation.
IV. Unit CRS AND SM approval.

a. I, II.

b. III, IV.

c. I, III.

d. II, IV.

Answer: b **Exam Level:** S **Cognitive Level:** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 194001G141 2.1.41 **RO Value:** 2.8 **SRO Value:** 3.7 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title: GENERI

KA Statement: Knowledge of the refueling process.

Explanation of Answers: 55.43(6,2) This question is SRO level based on knowing the requirements which must be met before alterations affecting core configuration will be started entering a refueling outage. The reactor does not have to be subcritical for 168 hours (Oct 15-May 15th) prior to moving fuel in the reactor (TSAS 3.9.3) Direct communications is required during CORE ALTS, and detensioning the head is NOT core alts.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Cold Shutdown to Refueling	S2.OP-IO.ZZ-0007			17

L.O. Number: IOP007E002

Objectives

Material Required for Examination:

Question Source: Facility Exam Bank **Question Modification Method:** Editorially Modified **Used During Training Program**

Question Source Comments:

Comment:

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic SRO 21

Given the following conditions:

- Unit 2 is in MODE 6 with core reload in progress.
- 10 fuel assemblies have been moved into the Rx.
- Rx cavity level is 26' above the RPV flange.
- 21 RHR loop is in service in Shutdown Cooling.
- 22 RHR loop is O/S and available.

Which one of the following would prevent continuation of fuel movement into the reactor?

a. Loss of Control Air to containment.

b. Racking down the 22 RHR pump 4KV breaker.

c. Both 100' elevation containment airlock doors are opened.

d. With both SRNIs operable, only ONE is capable of providing audible indication in the control room.

Answer a **Exam Level** S **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 194001G201 2.2.1 **RO Value:** 4.5 **SRO Value:** 4.4 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title GENERI

KA Statement: Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.

Explanation of Answers: 55.43(7, 6) This question is SRO level because of the knowledge require for fuel handling procedures, and the ability to continuously apply that knowledge when operating the fuel handling equipment. The requirement for SRNI's is BOTH operable and providing VISUAL indication in the Control room, with ONE providing AUDIBLE indication in the control room. The manipulator crane is air powered for gripping, so the loss of air to containment would preclude being able to perform core alts. Only ONE RHR loop is required to be in operation in MODE 6. 2 RHR loops are required to be OPERABLE when <23' level above the flange.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Refueling Operations	S2.OP-SO.SF-0009			18
Reac Pene Area & Cont Control Air	205347-1,3			42,36

L.O. Number
REFUELE007
IOP009E002

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Editorially Modified **Used During Training Program** ☐

Question Source Comments 125721 changed to reload from defuel. Used on Salem SRO NRC exam more than 2 exams ago.

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic SRO 22

Which of the following Salem events requires a 15 minute notification?

a. A unit shutdown is initiated to comply with Technical Specifications.

b. An oil discharge directly into the Delaware River with a visible sheen.

c. An endangered species of sturgeon is found deceased during circ water trash rack cleaning.

d. Rx power is determined to be greater than 3459 MWth after removing a Feedwater Heater from service.

Answer b **Exam Level** S **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 194001G238 2.2.38 **RO Value:** 3.6 **SRO Value:** 4.5 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43 ✔

System/Evolution Title GENERI

KA Statement:

Knowledge of conditions and limitations in the facility license.

Explanation of Answers:

55.43.b(1) This question is SRO level based on the knowledge required of Conditions and Limitation required in the facility license, and meets the criteria in ES-401, Attachment 2, page 17, II.A, 4th bullet. Knowledge of events which require 15 minute notifications is critical for SRO to know from memory to faciliate timely and correct notifications. The question matches the K/A because Salem Unit 2 Facility Operating License, Renewed License No. DPR-75, Section C.2, Technical Specifications and Environmental Protection Plan, states that the facility will be operated IAW the Environmental Protection Plan as contained in Appendix B

Appendix B, Section 4.1, Unusual or Important Environmental Events, staes that the NRC must be notified of ..."Any occurrence of an unusual or important event that indicates or could result in significant environmental impact causally related to plant operation...". RAL 11.5.2.b contains conditions for which an oil spill is reportable in 15 minutes. The distracters are all reportable, A is 11.1.1.a (4 hour report) C is 11.5.2.c (4 or 24 hour report) and D is at least a one hour report. Question is balanced with 2 environmental choices and 2 Tech Spec choices.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem ECG		RAL 11.5.2.b		4
Salem ECG		Attachment 16	4-5	4
Salem Operating License				

L.O. Number

ELO_11.d

Objectives

Material Required for Examination					
Question Source:	New	**Question Modification Method:**		**Used During Training Program**	☐
Question Source Comments					

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic SRO 23

Given the following conditions:

- Unit 2 is operating at 100% power.
- The operating crew entered S2.OP-AB.RC-0002, High Activity in Reactor Coolant System, when RMS channel 2R31, Letdown Line Monitor, went into WARNING.

Which of the following is required to be performed IAW S2.OP-AB.RC-0002, and why?

The CRS will...

a. direct Radiation Protection Technician to take surveys to determine if radiation levels may have changed access requirements.

b. direct Radiation Protection Technician to survey the letdown line in the vicinity of 2R31 to confirm the suspected rise in RCS activity.

c. direct Chemistry Technician to sample hourly for isotopic analysis to determine predominant radiation hazard (gamma, neutron, beta, alpha).

d. direct Chemistry Technician to initiate confirmatory sample analysis because the 2R31 reads in CPM and therefore has no correlation to dose level changes.

Answer a **Exam Level** S **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 194001G314 2.3.14 **RO Value:** 3.4 **SRO Value:** 3.8 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43 ✔

System/Evolution Title GENERI

KA Statement: Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.

Explanation of Answers: 55.43(4) This question is SRO level based on the "why" the action will have to be taken, as knowledge of radiation hazards which is occurring during an abnormal situation. A is correct as described in S2.OP-AB.RC-002 basis, so that prompt identification and subsequent notification of plant personnel is ensured. B is incorrect because chemistry sampling confirms 2R31 readings, not survey results. D is incorrect because rising counts does indicate dose level changes. C is incorrect because the hourly isotopic analysis performed is for gamma to determine DEI for trending (Step 3.18)

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
High Activity in Reactor Coolant System	S2.OP-AB.RC-0002			8

L.O. Number ABRC02E003

Objectives

Material Required for Examination

Question Source: Facility Exam Bank **Question Modification Method:** Direct From Source **Used During Training Program** ☐

Question Source Comments Used on Salem SRO NRC exam more than 2 exams ago.

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic SRO 24

Given the following conditions:

- At time T-0, while operating at 100% power, the Auxilary Typewriter prints an alarm without OHA A-41, AUX ALM SYS PRINT annunciating. Operators immediately enter S2.OP-AB.ANN-0001, Loss of Overhead Annunciator System and begin assessing the OHA system functionality.
- A T+5 minutes, and prior to verifying if either SER is in command, the Rx trips.
- At T+14 minutes, the PO reports that neither SER is in command.

Which of the following identifies:
1) The correct ECG classification
2) The time at which it should have been declared?

a. 1) Alert
2) T+5 minutes.

b. 1) Alert
2) T+14 minutes.

c. 1) Unusual Event
2) T+5 minutes.

d. 1) Unusual Event
2) T+14 minutes.

Answer: b **Exam Level:** S **Cognitive Level:** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 194001G432 2.4.32 **RO Value:** 3.6 **SRO Value:** 4.0 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43 ✔

System/Evolution Title GENERI

KA Statement: Knowledge of operator response to loss of all annunciators.

Explanation of Answers: 55.43.b(1) This question is SRO level based on the requirement to declare an emergency. The requirement to declare an emergency under any of the loss of annunciators (S5) EALs is the loss for greater than or equal to 15 minutes. Declaring at T+5 minutes with 10 minutes of assessment time left is not indicated even though the significant transient (Rx trip) has occurred, because the AB.ANN takes actions in an attempt to restore functionality of OHA system, and it is not a long drawn out procedure. Manunally swapping to the BU SER in command takes only a minute or so. When it is reported that neither SER is in command at T+14, the event should be declared.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem ECG		S5 - Instrumentation		

L.O. Number
ABANN1E002

Objectives

Material Required for Examination SRO Q24 ECG Section S5

Question Source: New **Question Modification Method:** **Used During Training Program** ☐

Question Source Comments

Comment

RO SkyScraper | SRO Skyscraper | RO System/Evolution List | SRO System/Evolution List | Outline Changes

Question Topic SRO 25

Which of the following identifies a condition during a declared Emergency which REQUIRES a Protective Action Recommendation, either initial or upgrade, when the TSC/EOF have NOT been activated yet?

a. ANY General Emergency initial declaration.

b. ANY event which results in a radiological release to the environment.

c. ANY time the wind shifts after the initial 15 minute notifications have been made during a General Emergency.

d. ANY event which in the judgement of the Emergency Coordinator could result in exceeding 10CFR Part 100 limits.

Answer a **Exam Level** S **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/21/2015

KA: 194001G444 2.4.44 **RO Value:** 2.4 **SRO Value:** 4.4 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title GENERI

KA Statement:

Knowledge of emergency plan protective action recommendations.

Explanation of Answers:

55.43.b(5,1) This question is SRO level based on the knowledge of how to implement the associated section of the ECG, EP-SA-111-F4, Attachment 4, General Emergency, and the conditions which require making a PAR or PAR upgrade. The ICMF for a GE requires a PAR, see Appendix 1. There is a PAR for a Rapidly Progressing Severe Accident, a PAR for Hostile Action, and a defualt PAR, one of which must be made. B is incorrect because a radiological release is defined as "Any release above normal, attributable to the event." C is incorrect because if a Security Event is what caused the GE, then a PAR upgrade is not performed for a wind shift (see Appendix 1). D is incorrect because there is no "judgement" directed in the PAR based on exceeding radiation limits, the PAR is determined based on the the GE that directed its implementation.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
General Emergency	EP-SA-111-F4			02

L.O. Number

ELO_24.a

Objectives

Material Required for Examination

Question Source: New **Question Modification Method:** **Used During Training Program**

Question Source Comments

Comment