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

Applicant Information

Name:	Region: I
Date: 12/15/2014	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

Given the following conditions:

- Unit 2 is operating at 100% power.
- A degraded stator water cooling system condition causes a Main Generator Stator Water runback to occur.
- The runback terminates at 80% power when the initiating signal clears.
- During the runback, the RO reported 2 control bank D rods have stopped moving at 215 steps.
- The CRS entered S2.OP-AB.ROD-0001, Immovable / Misaligned Control Rods, and rod control is placed in manual.
- Control Bank D Group Demand is 185 steps.
- A Rx trip is not required.

Which of the following identifies the minimum required action for how the crew will proceed?

Assume the 2 inoperable control rods will NOT be restored to operable status, and the remaining control rods will NOT be realigned to the inoperable rods.

a. Place the unit in Hot Standby.

b. Place the unit in Hot Shutdown.

c. Reduce power to <50%, power operation at up to 50% may continue.

d. Reduce power to less than 75%, power operation at up to 75% may continue.

Answer:	a	Exam Level:	R	Cognitive Level:	Application	Facility:	Salem 1 & 2	ExamDate:	12/15/2014

KA:	000005A203	AA2.03	RO Value:	3.5	SRO Value:	4.4	Section:	EPE	RO Group:	2	SRO Group:	2	55.41: ☑

System/Evolution Title: Inoperable/Stuck Control Rod | 005

KA Statement: Ability to determine and interpret the following as they apply to Inoperable/Stuck Control Rod:
Required actions if more than one rod is stuck or inoperable

Explanation of Answers: 55.41.b(10)With more than one rod misaligned, the crew is directed to place the unit in Hot Standby at step 3.37 of AB.ROD-1. This is derived from TSAS 3.1.3.1 action b, which states that with more than one rod inoperable or misaligned from its associated group step counter demand position by more than 18 steps <85% power, be in Hot Standby within 6 hours. The question is RO appropriate since it does not ask for the 6 hour time frame, rather it is asking for knowledge of a procedure step which requires HSB if 2 or more rods are affected. The 75% distracter is the action for a single inoperable rod, the 50% distracter is plausible because
<50% power there are other rod induced problems which do not apply, i.e., AFD and QPTR TS are only applicable >50% power

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Immovable / Misaligned Control Rods	S2.OP-AB.ROD-0001			8
Salem Tech Specs		3.1.3.1	3/4 1-13	

LO Number
ABROD1E001

Objectives

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

Question Topic RO 2

Given the following conditions:

- Unit 2 was responding to a SGFP trip from 100% power at EOL.
- 22 SG NR level reached 16% and continued to drop.
- IAW S2.OP-AB.CN-0001, Main Feedwater / Condensate System Abnormality, the CRS directed the RO to trip the Rx.
- The RO turned the Rx Trip Handle on 2CC2 and performed the immediate actions of EOP-TRIP-1.

When reporting his review of the OHA's prior to the first shift brief in the EOP's, the RO reports the following "F" Window alarms are locked in:

F-3 21 SG LVL LO-LO
F-11 22 SG LVL LO-LO
F-19 23 SG LVL LO-LO
F-27 24 SG LVL LO-LO
F-36 TRB TRIP & P-9
F-44 MAN RX TRIP INITIATED

The F-11 OHA is red, while all the others are white.

Which of the following describes the information provided by the "F" OHA Window Boxes?

a. The first Rx trip signal was LO-LO SG NR level. An ATWT has occurred.

b. The first Rx trip signal was the manual Rx trip. The F-36 window indicates the Main Turb failed to automatically trip.

c. The first Rx trip signal was the manual Rx trip. The red box only indicates the first automatically generated Reactor Protection System trip.

d. The first Rx trip signal was LO-LO SG NR level. Only a review of the Sequence of Events Recorder can determine whether or not an ATWT has occurred.

Answer	d	**Exam Level**	R	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2	**ExamDate:**	12/15/2014

KA:	000007A205	EA2.05	**RO Value:**	3.4	**SRO Value:**	3.9	**Section:**	EPE	**RO Group:**	1	**SRO Group:**	1	55.43	☑

System/Evolution Title Reactor Trip 007

KA Statement: Ability to determine and interpret the following as they apply to Reactor Trip:
Reactor trip first-out indication

Explanation of Answers: 55.41.b(7) The "F" windows have dual backlights, red and white. The first signal to be generated to trip the Rx is locked in RED, and can only be reset with a keyswitch and SM permission. In the above condition, the time it took to order and carry out the manual Rx trip was sufficient to allow SG NR level to lower past the auto trip setpoint of 14%. Since a manual trip was ordered but an auto trip occurred, the SER must be reviewed quickly to determine which signal was sent to the RPS system first; a manual trip or auto trip. This information is provided on a computer on Control Console 2CC1. B is incorrect because the RED box indicates an auto trip occurred before the manual trip, while the F-36 does indicate the turbine tripped before the Rx. C is incorrect because of B above AND because the RED box is the first TRIP signal, not the first AUTO TRIP signal. occurred as the Rx was tripped though the second part would be correct if it was thought that a manual trip occurred first. A is incorrect because an ATWT may or may not have occurred, and D is more correct because the SER must be reviewed to determine if the manual trip was initiated before the auto trip occurred.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Overhead Annunciator Window F	S2.OP-AR.ZZ-0006			16
Overhead Annunciator System	NOS05ANN00-06		41	6

L.O. Number
OHA000E008

Objectives

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

Question Topic RO 3

Given the following conditions:

- Unit 2 is operating normally at 100% power when one PZR safety valve fails full open.
- All plant systems respond as designed.

Which of the following identifies how PZR level will respond after the Rx is tripped?

PZR level will lower initially, then…

a. rise rapidly until the PZR becomes water solid.

b. rise very slowly until the PZR becomes water solid.

c. lower rapidly until the PZR empties and remains empty.

d. lower very slowly until the PZR empties and remains empty.

Answer a **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000008A106 AA1.06 **RO Value:** 3.6 **SRO Value:** 3.6 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Pressurizer Vapor Space Accident 008

KA Statement: Ability to operate and / or monitor the following as they apply to Pressurizer Vapor Space Accident:
Control of PZR level

Explanation of Answers: 55.41.b(5,7,14) A characteristic of a vapor space accident is that pressure and level will initially lower, then as the RPV begins to void, level will rapidly rise in the PZR, whereas a LOCA would lose pressure and level.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision

L.O. Number

CVCS00E008

Objectives

Material Required for Examination

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

Question Source Comments Q57432 changed from why level rises rapidly to what does level do

Comment

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

Question Topic RO 4

Complete the following statement:

EOP-LOCA-4, Transfer to Hot Leg Recirculation, is performed when directed during the response to a Large Break LOCA to...

a. ensure enough boron remains in the RPV to provide adequate SDM as long as vessel level remains > 39% RVLIS.

b. prevent thermal gradients across the upper vessel from becoming fissures which could divert recirculation flow from the core.

c. ensure boron does not concentrate in the reactor vessel (due to boil off) to the point of solidification and blockage of coolant channels.

d. prevent thermal stratification of the fluid in the core which would add to the assumed 1% fuel damage which has already occurred and is accounted for in the accident analysis.

Answer c **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000011K312 EK3.12 **RO Value:** 4.4 **SRO Value:** 4.6 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title Large Break LOCA 011

KA Statement: Knowledge of the reasons for the following responses as they apply to Large Break LOCA:
Actions contained in EOP for emergency LOCA (large break)

Explanation of Answers: 55.41.b(2,10) Salem UFSAR, Section 15, Accident Analysis for Condition IV - Limiting Faults, page 15.4-2b states..."Approximately 14 hours (Unit 1) and 6.5 hours (Unit 2) after initiation of the LOCA, the RHR and Intermediate Head Safety Injection pumps are realigned to supply water to the RCS hot legs in order to control the boric acid concentration in the reactor vessel." Additionally, EOP-LOCA-1, Loss of Reactor Coolant, step 28, directs the operator to perform EOP-LOCA-4. The bases for this step is based on the time after which boric acid concentrations could approach the solubility limit in the reactor vessel/core region following a double ended guillotine cold leg break.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of Reactor Coolant	2-EOP-LOCA-1	Basis Document	51	28
Salem FSAR		15	15.4-2b	24
ECCS Lesson Plan	NOS05ECCS00-07		20	7

L.O. Number | **Objectives**
LOCA01E010

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 5

Which of the following is an unexpected control room indication / alarm if a RCP thermal barrier rupture occurs?

a. Component Cooling surge tank level lowering.

b. 2CC131 Thermal Barrier Return Valve, indicates closed in AUTO.

c. Rising activity or alarm on 2R17A or 2R17B, Component Cooling Radiation Monitor.

d. RCP Thermal Barrier DISCHARGE FLOW HI console alarm will annunciate then clear shortly afterward.

Answer a **Exam Level** R **Cognitive Level** Comprehension **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000015K208 AK2.08 **RO Value:** 2.6 **SRO Value:** 2.6 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Reactor Coolant Pump Malfunctions 015

KA Statement: Knowledge of the interrelations between Reactor Coolant Pump Malfunctions and the following:
CCWS

Explanation of Answers: 55.41.b(3,7) The high flow alarm would come in as reactor coolant flows into the thermal barrier CCW system. This increased flow would cause a momentary hi flow alarm, then the CC131 return valve would auto shut on high flow. The RCS flow into the CCW system would be seen on the CCW surge tank rad monitors R17A and B. CC surge tank would RISE, not lower.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Reactor Coolant Pump Abnormality	S2.OP-AB.RCP-0001			21
Component Cooling System Simplified	205331-SIMP			0

L.O. Number
ABRCP1E005

Objectives

Material Required for Examination

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

Question Source Comments Q44499. Changed from a "NOT" question to an "what would be unexpected" stem.

Comment

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

Question Topic RO 6

Given the following condition:

- Unit 2 was operating at 100% power when 23 Charging Pump tripped.

Which of the following identifies an action which must be performed IAW S2.OP-AB.CVC-0001, Loss of Charging, prior to starting a charging pump, and why?

a. Check RCP seal inlet temperature <225°F to prevent damage to seals when CVCS flow is restored.

b. Check VCT pressure > 20 psig to ensure adequate NPSH is available to the charging pump being started.

c. Shut 2CV55, Charging Flow Control Valve, to prevent water hammer on the Regenerative Heat Exchanger.

d. Open 2CV71 Charging Header Pressure Control Valve, to prevent seal injection flow from being re-established > Tech Spec limit of 40 gpm total to all RCPs.

Answer a **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000022K101 AK1.01 **RO Value:** 2.8 **SRO Value:** 3.2 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Loss of Reactor Coolant Makeup 022

KA Statement: Knowledge of the operational implications of the following concepts as they apply to Loss of Reactor Coolant Makeup:
Consequences of thermal shock to RCP seals

Explanation of Answers: 55.41.b(10) AB.CVC-1 states to check RCP seal inlet temp <225 OR seal injection isolated. Seal isolation is not one of the available choices. The bases for AB.CVC-1 says this is done using LOPA-1 as guidance. LOPA-1 bases doc says that seals are isolated (because in LOPA you have additionally lost all CCW flow and seals HAVE heated up) to protect RCPs from seal and shaft damage that may occur when a centrifugal charging pump is started. While VCT is the source of NPSH to the CVCS pumps, it is automatically maintained 15-25 psig, and is not checked. 2CV55 is shut prior to starting the centrifugal charging pump, but that is to prevent excessive flow, and the CV55 is normally full open at power. The cV71 is not adjusted until after the CVCS pump is started, but the reason is correct.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of Charging	S2.OP-AB.CVC-0001	Bases Doc	2	9
Loss of all AC power	2-EOP-LOPA-1	Bases Doc	34	27

L.O. Number
ABCVC1E002

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

Which of the following describes an alternate method, if any, of establishing Rapid Boration if the 2CV175, Rapid Borate Stop Valve will not open IAW S2.OP-SO.CVC-0008, Rapid Boration?

a. Rapid Boration cannot be established with the 2CV175 shut.

b. Only opening the 2SJ1 OR 2SJ2 RWST to Charging Pumps Stop valves.

c. Opening the 2CV174 Blender Bypass valve and opening the 2CV172 Boric Acid Flow to Blender valve.

d. Aligning the CVCS Makeup System controls for a normal boration and fully opening 2CV172.

Answer c **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA 000024K201 AK2.01 **RO Value:** 2.7 **SRO Value:** 2.7 **Section:** EPE **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title: Emergency Boration 024

KA Statement: Knowledge of the interrelations between Emergency Boration and the following:
Valves

Explanation of Answers: 55.41.b(6) Using the 2CV175 to establish rapid boration is the most direct way. However, with closed, there are 3 other ways IAW S2.OP-SO.CVC-0006 in which Rapid Boration can be established. B is incorrect because the 2CV40 or 41 VCT outlet valves are required to be shut, otherwise the RWST water will not have enough head to be sucked into the charging pump suction, with ~20-30 psig in the VCT. C is correct because the flowpath from the BAT pumps through the 2CV172 and the 174 will establish flow. D is incorrect because a manual lineup is performed to ensure the valves required to be opened. 2CV172 and 2CV185 remain open

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Rapid Boration	S2.OP-SO.CVC-0008			6

L.O. Number | Objectives

CVCS00E013

Material Required for Examination

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

Question Source Comments Q80475.

Comment

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

Question Topic RO 8

Given the following conditions:

- Unit 2 was in MODE 4 with 21 RHR loop providing shutdown cooling, and 22 RHR loop aligned for ECCS.
- 21 RHR pump began cavitating due to a valve being mispositioned during a tagging release.
- The CRS entered S2.OP-AB.RHR-0001, Loss of RHR, and stopped 21 RHR pump.
- Plant conditions allowed time for normal restoration and local venting of the RHR System.

Which of the following describes the preferred flow rate when starting the RHR pump, and why?

a. Higher flow rate to sweep entrained air from system.

b. Lower flow rate to prevent high starting current on the RHR pump.

c. Higher flow rate to quickly terminate the temperature rise in the RCS.

d. Lower flow rate to limit initial sudden cooldown and to minimize level loss caused by collapsing voids.

Answer d **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000025K202 AK2.02 **RO Value:** 3.2* **SRO Value:** 3.2 **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:
LPI or Decay Heat Removal/RHR pumps

Explanation of Answers: 55.41.b(10) The preferred rate is a lower flow. The CAUTION on page 10 states that it is for the reason as stated in the correct choice above. Higher flow rate to sweep entrained air is the method used when time does NOT allow a normal venting as described in the stem. (CAUTION PAGE 14)

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of RHR	S2.OP-AB.RHR-0001			18

L.O. Number Objectives

ABRHR1E004

Material Required for Examination

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

Question Source Comments Q120590 (used on 8/2008 RO NRC exam, 4 NRC exams ago.)

Comment

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

Question Topic RO 9

Given the following conditions:

- Unit 2 is at operating normally at 100% power.
- A Component Cooling Water leak results in entry into S2.OP-AB.CC-0001, Component Cooling Abnormality.
- Make-up can maintain CC surge tank level > 38%
- The crew has implemented ATTACHMENT 4, Leak Isolation Method.
- When make-up is stopped, surge tank level lowers with either CC header in service.

Of the following, which is the only component that could be leaking to cause these indications?

a. 22 CCW HX.

b. Spent Fuel Pool HX.

c. 23 Charging pump mechanical seal HX.

d. Boric Acid Evaporator Distillate Cooler HX.

Answer b **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000026A102 AA1.02 **RO Value:** 3.2 **SRO Value:** 3.3 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Loss of Component Cooling Water 026

KA Statement: Ability to operate and / or monitor the following as they apply to Loss of Component Cooling Water: Loads on the CCWS in the control room

Explanation of Answers: 55.41.b(4) With the stem stating that the leak continues with EITHER CC header in service, that means the leak must be on the Non-Safeguards header, which is supplied from both CC headers. Of the 4 choices, 2 are on the safeguards header, and 2 are not. Of the 2 possible answers, the Boric Acid Distillate Cooler HX is not normally in service. That leaves the SFP HX, and SF cooling pressure is < CCW pressure, meaning the leak would be out of the CCW system. This question is different from Question 5 in that this question requires knowledge of system operation during performance of the AB to locate the leak, whereas Question 5 is a Thermal Barrier question.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Component Cooling System Abnormality	S2.OP-AB.CC-0001			14
Component Cooling System Simplified	205331-SIMP			0

L.O. Number

ABCC01E004

Objectives

Material Required for Examination

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

Question Source Comments Q57732

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 is operating at 60% power.
- There is a power ascension in progress at a rate of 10%/hr.
- PZR Pressure Channel III, PT-457 is selected for CONTROL.

Which of the following describes RCS pressure response if PZR Pressure Channel III fails low with no operator action?

RCS pressure will rise until…

a. ONE PZR PORV opens.

b. BOTH PZR PORV's open.

c. the PZR Spray Valves open.

d. a PZR Code Safety Valve opens

Answer: a **Exam Level:** R **Cognitive Level:** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000027K203 AK2.03 **RO Value:** 2.6 **SRO Value:** 2.8 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title: Pressurizer Pressure Control Malfunction 027

KA Statement: Knowledge of the interrelations between Pressurizer Pressure Control Malfunction and the following:
Controllers and Positioners

Explanation of Answers: 55.41.b(7) The failure of the controlling PZR Pressure channel causes the Master Pressure Controller to sense a low pressure condition, and its output will go to zero. A 0% demand will cause all PZR heaters in auto to energize, and PZR Spray valves to shut. RCS pressure rises slowly but spray valves will not open because the MPC still sees a low pressure condition from the failed low PZR pressure channel. The PZR PORVs 2PR1 and 2PR2 are 2/2 coincidence required to open, from PZR pressure channels 1/3, and 2/4 respectively. Since Channel III is failed low, 2PR1 will not open. 2PR2 will open when channels I and III sense 2335 psig.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Pressurizer Pressure Control Malfunction	S2.OP-AB.PZR-0001			18
RPS PZR Pressure and Level Control	221060			7
PZR PORV Valves	231357			15

L.O. Number: ABPZR1E001

Objectives

Material Required for Examination:

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

Question Source Comments: Q80493

Comment:

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

Question Topic RO 11

Given the following conditions:

- Unit 1 has experienced a RCS leak while operating at 40% power.
- The crew is responding IAW S1.OP-AB.RC-0001, Reactor Coolant System Leak.
- As conditions continue to degrade without an automatic or manual Rx trip, which of the following identifies a condition where an ATWT is present and a manual Rx trip is required?

a. RCS loop D/T is 25°F.

b. The Main Turbine has tripped.

c. PZR level is 16% and lowering.

d. PZR pressure is 1860 psig and lowering.

Answer d **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000029G450 2.4.50 **RO Value:** 4.2 **SRO Value:** 4.0 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Anticipated Transient Without Scram 029

KA Statement: Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.

Explanation of Answers: 55.41.b(7) A is incorrect because it is the normal value for loop D/T at 40% power. B is incorrect because with Rx power <P-9 (49%), a turbine trip does not initiate a Rx trip. C is incorrect because the 17% threshold for PZR level is heater isolation, not Rx trip. D is correct because the auto trip setpoint for PZR pressure is 1865 psig.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Licensed Operator Fluency List	NOS05FLUNCY-09			9

L.O. Number Objectives

L.O. Number
FLUNCYE002

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 12

Given the following conditions:

- Unit 2 is performing a Rx startup.
- Power is 1.0E3 cps.
- Source Range Nuclear Instrument (SRNI) Channel I (2N31) fails LOW.

Which of the following identifies why power must be maintained less than P-6?

a. SR/IR overlap at 3.0-5.0 E3 cps cannot be verified with only one SRNI.

b. Permissive P-6 will not energize when required with only a single SRNI channel.

c. The ability to monitor Rx power on anything other than a one dimensional plane is lost.

d. A single SR channel cannot be considered reliable with no other Rx power indication to verify it against.

Answer	Exam Level	Cognitive Level	Facility	ExamDate
d	R	Memory	Salem 1 & 2	12/15/2014

KA		RO Value	SRO Value	Section	RO Group	SRO Group	55.41
000032K301	AK3.01	3.2	3.6	EPE	2	2	☑

System/Evolution Title: Loss of Source Range Nuclear Instrumentation | 032

KA Statement: Knowledge of the reasons for the following responses as they apply to Loss of Source Range Nuclear Instrumentation: Startup termination on source-range loss

Explanation of Answers: Below P-6, the SR and IR Nis may not be overlapped. This in actuality reduces Rx power indication to a single channel, and while adequate for shutdown monitoring, cannot be relied upon to provide Rx power indication when performing a startup. Tech Spec bases for 3.3.1.1 for Rx trip instrumentation generalizes about all Rx trip and ESF instrumentation, but states that the maintaining operability is to..."2.) the specified coincidence logic and sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance consistent with maintaining an appropriate level of reliability of the Reactor Protection System. 3) sufficient system functional capability is available from diverse parameters."

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem Tech Spec Bases	3.3.1.1	Bases	3/4 3-1	282

L.O. Number: EXCOREE012 | 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 13

During movement of irradiated fuel in the Spent Fuel Pit with the Rx in Mode 1, a Spent Fuel Assembly is not fully withdrawn from its rack before the Spent Fuel Crane is moved. The Spent Fuel Assembly is visibly damaged when the crane moves.

Which of the following conditions would require ALL personnel to evacuate the Fuel Handling Building IAW S2.OP-AB.FUEL-0001, Fuel Handling Incidents?

a. Radiation level in the FHB reaches 1 R/hr.

b. Bubbles coming from the damaged fuel assembly.

c. Fuel Handling Crane motion locked out upon reaching Radiation Monitor 2R32A alarm setpoint.

d. Automatic re-alignment of the Fuel Handling Building exhaust filter train to HEPA plus Charcoal has occurred.

Answer a **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000036K101 AK1.01 **RO Value:** 3.5 **SRO Value:** 4.1 **Section:** EPE **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title Fuel Handling Incidents 036

KA Statement: Knowledge of the operational implications of the following concepts as they apply to Fuel Handling Incidents:
Radiation exposure hazards

Explanation of Answers: The R32A distracter is plausible if it is thought that because the crane can't be moved everyone should evacuate. AB.FUEL-1 CAS 1.0 states to evacuate at 1R/hr. Not LOD 1 because AB.FUEL-2 (Loss of Refueling Cavity or Spent Fuel Pool Level) don't evacuate FHB until 2R /hr. Bubbles coming from fuel assembly may be present, but are not cause for evacuation until the radiation from them, or any other cause, reaches 1R/hr. Ventilation Realignment is expected to occur either on high local rad level or manual actuation

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Fuel Handling Incident	S2.OP-AB.FUEL-0001			5

L.O. Number | Objectives
ABFUE2E002

Material Required for Examination

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

Question Source Comments Q78657

Comment

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

Question Topic RO 14

Which of the following describes when rising radiation levels on 2R19A, STM GEN BLOWDOWN RAD MONITOR, will automatically close the 21GB4, SG B/D OUTLET ISOL VALVE, and why?

2R19A in _______ will close the 21GB4 _____.

a. Warning, to prevent the spread of contamination from a Steam Generator Tube Rupture (SGTR) on 21 Steam Generator to secondary systems.

b. Alarm, to prevent the spread of contamination from a Steam Generator Tube Rupture (SGTR) on 21 Steam Generator to secondary systems.

c. Warning, to prevent backfeeding contamination from 21 Steam Generator to any other Steam Generator through the unaffected Steam Generators blowdown lines.

d. Alarm, to prevent backfeeding contamination from 21 Steam Generator to any other Steam Generator through the unaffected Steam Generators blowdown lines.

Answer b **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000038K303 EK3.03 **RO Value:** 3.6* **SRO Value:** 4.0 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title Steam Generator Tube Rupture 038

KA Statement: Knowledge of the reasons for the following responses as they apply to Steam Generator Tube Rupture:
Automatic actions associated with high radioactivity in S/G sample lines

Explanation of Answers: 55.41.b(11) B is correct because isolating the blowdown path from the S/G to the condenser will prevent the spread of contamination, and also will prevent any type of release from the main condenser to atmosphere. A is incorrect because the auto closure occurs upon an Alarm signal, not warning. C and D are incorrect because the S/Gs each have its own blowdown line, so backfeeding contamination is not possible through the blowdown lines.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Radiation Monitoring Systems Operation	S2.OP-SO.RM-0001		20	38

L.O. Number
ABSG01E001

Objectives

Material Required for Examination

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

Question Source Comments Q134429

Comment

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

Question Topic: RO 15

During an event in which a steamline rupture cause ALL SG's to blow down completely, why is AFW flow and steam release used to prevent the RCS from heating up?

RCS heatup will…

a. result in a larger Delta-T between the AFW injection flow and the internal temperature of the SG J-tubes, which can cause water hammer in the feed ring when incoming AFW flashes to steam.

b. cause PZR level to rise, which will repressurize the RCS. The severe cooling of the RPV downcomer combined with the pressure rise can cause a flaw in the vessel to propagate threatening the integrity of the vessel.

c. result in a larger Delta-T between the ECCS injection water from the RWST and the RCS cold leg injection points, which can cause a flaw at the ECCS to cold leg piping weld to propagate threatening the integrity of the RCS.

d. cause PZR level to rise which will repressurize the RCS. The thermal stress on the SG secondary side components from excessive heat transfer during the blowdown, combined with the pressure rise across the SG tubes can cause tubesheet deformation and leakage.

Answer: b **Exam Level:** R **Cognitive Level:** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000040K101 AK1.01 **RO Value:** 4.1 **SRO Value:** 4.4 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title: Steam Line Rupture 040

KA Statement: Knowledge of the operational implications of the following concepts as they apply to Steam Line Rupture: Consequences of PTS

Explanation of Answers: 55.41.b(3,4) RCS heatup after a rapid cooldown/depressurization can result in a Pressurized Thermal Shock condition, as described on page 2 of FRTS-1 Basis Document. Distracter a is incorrect while it might be what happens, its not why the RCS is prevented from heating up, and the reason is loosely based on the Indian Point Feed Line water hammer event. Distracter c is incorrect because it is RPV failure that is a concern, not cold leg piping. Distracter D is incorrect because the pressure delta across the utubes is a concern when SG secondary depressurizes with a repressurization of primary side, not the tube sheet problem

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Response to Imminent Pressurized Thermal Sh	2-EOP-FRTS-1	Basis Doc	2	25

L.O. Number
FRTS00E002

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 16

Given the following conditions:

- Operators are recovering from a total loss of all AC power.
- While in 2-EOP-LOPA-1, Loss of All AC Power, 2B 4KV vital bus has been energized from off-site power.
- The crew has transitioned out of LOPA-1 to LOPA-2, Loss of All AC Power Recovery / SI Not Required.
- Safety injection was initiated as directed in LOPA-1, but is not required.

Which of the following describes how the listed equipment has, or will be, operated?

a. 22 CCW pump was started as soon as a SW pump was started in LOPA-1.

b. 21 Charging pump will be started after RCP seal return valve 2CV116 is shut.

c. 21 Charging pump was started as soon as a SW pump was started in LOPA-1.

d. 22 CCW pump will be started after Thermal Barrier return valve 2CC131 is shut.

Answer d **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000055A107 EA1.07 **RO Value:** 4.3 **SRO Value:** 4.5 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Station Blackout 055

KA Statement: Ability to operate and / or monitor the following as they apply to Station Blackout:
Restoration of power from offsite

Explanation of Answers: 55.41.b(10) A is incorrect due to not starting CCW pump until Thermal Barrier return is isolated. B is incorrect because seal return isolation is not the concern, seal injection to a hot RCP seal is. CVCS pump not started until RCP seal inlet is isolated.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of All AC Power	2-EOP-LOPA-1			27
Loss of All AC Power Recovery/SI Not Required	2-EOP-LOPA-2			22

L.O. Number

LOPA00E013

Objectives

Material Required for Examination

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

Question Source Comments Q148063 modified to include procedure transition in stem.

Comment

Question Topic RO 17

Which of the following describes how a power reduction would be performed after a loss of the indicated Unit 2 115VAC Vital bus?

a. A loss of 2A 115VAC Vital bus would require only the use of boration due to the loss of input to control rod speed and direction.

b. A loss of 2B 115VAC Vital bus would require only the use of manual rod insertion due to the loss of CVCS totalizer function.

c. A loss of 2C 115VAC Vital bus would require only the use of manual rod insertion due to the loss of CVCS totalizer function.

d. A loss of 2D 115VAC Vital bus would require only the use of boration due to the loss of input to control rod speed and direction.

Answer d **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000057K301 AK3.01 **RO Value:** 4.1 **SRO Value:** 4.4 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title Loss of Vital AC Instrument Bus 057

KA Statement: Knowledge of the reasons for the following responses as they apply to Loss of Vital AC Instrument Bus:
Actions contained in EOP for loss of vital ac electrical instrument bus

Explanation of Answers: 55.41.b(10,6,7) Each loss of vital bus prevents auto and manual rod WITHDRAWAL, based on the PRNI on each channel bistables being energized for High Rx Power, which is a rod block. A loss of A bus would cause rods to drive in in auto at maximum rate due to the loss of PT-505 Turbine Steamline inlet pressure, and rods would be placed in manual, and remain available. B and C buses would not cause auto rod movement, and manual rod control remains available. D bus is a unique loss that affects rod control speed and direction, and rods remain "as is", with no ability to move them via the Rod Control System. While memorization of all 115VAC vital loads is not required, knowledge of how rod control is affected by each of the 4 155VAC vital instrument buses is not minutia.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of 2A(B,C,D) 115 VAC Vital Instrument Bu	S2.OP-AB.115-0001(2,3,4)			20,19,14

L.O. Number
AB1151E003

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:

- Unit 2 is in MODE 3, NOP, NOT.
- The control room receives OHA B-18 2C 125VDC CNTRL BUS VOLT LO
- Upon further investigation, the NCO reports that 2C 125VDC bus voltage is at 126 volts, and no current is indicated on 2RP9.

Describe the condition which is present, and the actions required to be taken?

2C 125VDC bus is...

a. within the normal operating band, direct maintenance to raise the charger float voltage.

b. experiencing a minor short-to-ground, initiate S2.OP-SO.125-0004 125VDC GROUND DETECTION.

c. below the Tech Spec minimum setpoint, secure the operating battery charger and place the standby battery charger in service.

d. above the Tech Spec minimum setpoint, ONLY continued monitoring for any indication of further voltage degradation is required.

Answer	a	**Exam Level**	R	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2	**ExamDate:**	12/15/2014

KA:	000058G446	2.4.46	**RO Value:**	4.2	**SRO Value:**	4.2	**Section:**	EPE	**RO Group:**	1	**SRO Group:**	1	55.43	☑

System/Evolution Title Loss of DC Power 058

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

Explanation of Answers: 55.41.b(8) A is the correct answer because the control band as specified in the NCOs logs is 125-139.8V. Voltage is in the normal band, and the AR states to have maint adjust the float voltage. Distractor b is incorrect because there is no indication of a ground. Distracter c is incorrect because action IS required IAW ARP. Distracter d is incorrect because voltage is above the TS limit.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Overhead Annunciator Window B	S2.OP-AR.ZZ-0002		35	35
Control Room Logs Modes 1-4	S2.OP-DL.ZZ-0003	Att. 1	48	97

L.O. Number DCELECE008

Objectives

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 19

Given the following conditions:

- Unit 2 is operating at 7% power.
- Unit 1 and Unit 2 Operators receive Console Alarm CONTROL AIR PRESSURE LO.
- Station Air header pressure is 110 psig and steady.
- Control Air header "A" pressure is 78 psig and dropping slowly.
- Control Air header "B" pressure is 93 psig and steady.

Which choice describes the actions required to be performed by the Unit 2 operators?

a. Immediately trip the reactor and GO TO 2-EOP-TRIP-1 REACTOR TRIP OR SAFETY INJECTION.

b. GO TO S2.OP-AB.CA-0001 LOSS OF CONTROL AIR, and trip the reactor due to loss of the "A" control air header pressure.

c. Insert control rods to lower power to <5%, and start 21 and 22 AFW pumps IAW S2.OP-AR.ZZ-0011 CONTROL CONSOLE 2CC1.

d. GO TO S2.OP-AB.CA-0001 LOSS OF CONTROL AIR, and verify redundant air panels have swapped to the "B" control air header.

Answer d **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000065G107 2.1.7 **RO Value:** 4.4 **SRO Value:** 4.7 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title Loss of Instrument Air 065

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(7)A is incorrect because a reactor trip is not required since the given condition in the stem does not indicate a loss of Control Air on both headers. B is incorrect because a reactor trip is not required. D is correct because the ARP for the alarms directs the operators to go to AB.CA, and they will verify swap of panels after reading NOTE at step 55 or 63. Distracter C is incorrect because there is no direction to lower power and start AFW pps.

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

L.O. Number

ABCA01E003

Objectives

Material Required for Examination

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

Question Source Comments Q75662

Comment

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

Question Topic: RO 20

Given the following conditions:

- Unit 2 is operating at 100% power.
- There is no primary-to-secondary leakage.
- Excess letdown is in service due to a problem with the 2CV18, Letdown Pressure Control Valve, which is currently shut.
- A fuel pin failure occurs, releasing a large amount of fission products into the RCS.

Of the following radiation monitors, which would show a change because of the failed fuel BEFORE the others?

a. 2R26, Reactor Coolant Filter Monitor.

b. 2R31, Letdown Heat Exchanger Monitor.

c. 2R4, Charging Pump Room Area Monitor.

d. Any 2R19, Steam Generator Blowdown Monitor.

Answer: c | **Exam Level:** R | **Cognitive Level:** Application | **Facility:** Salem 1 & 2 | **ExamDate:** 12/15/2014

KA: 000076A104 | AA1.04 | **RO Value:** 3.2 | **SRO Value:** 3.4 | **Section:** EPE | **RO Group:** 2 | **SRO Group:** 2

System/Evolution Title: High Reactor Coolant Activity | 076

KA Statement: Ability to operate and / or monitor the following as they apply to High Reactor Coolant Activity: Failed fuel-monitoring equipment

Explanation of Answers: 55.41.b(11,5)With the CV18 shut, normal letdown will be out of service, and if out of service for an extended period of time, will have Excess letdown placed in service. Excess letdown does NOT pass through the 2R31 process monitor. The RC filter also will not have flow from the discharge of the mixed bed demins since normal letdown is secured. The stem states that there is no pri to sec leakage, so the R19s should be unaffected. The excess letdown line flowpath goes to the suction of the charging pumps where it would be seen on 2R4, as a rise in the area radiation levels around the pumps. This question was not written using the tech spec definition of failed fuel monitoring equipment, but rather the method of monitoring for failed fuel under other than normal conditions using installed plant equipment.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Radiation System Monitoring	S2.OP-SO.RM-0001			38
CVCS System	205228			73
High Activity in the Reactor Coolant System	S2.OP-AB.RC-0002			8

L.O. Number: ABRC02E001

Objectives

Material Required for Examination:

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

Question Source Comments: Q113075

Comment:

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

Question Topic RO 21

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.
- A 500KV grid disturbance results in lower than normal grid voltage.

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. 1100, 225.

b. 1100, 525.

c. 1150, 225.

d. 1150, 525.

Answer	c	**Exam Level**	R	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2	**ExamDate:**	12/15/2014			
KA:	000077A202	AA2.02	**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: Voltage outside 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

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

Question Topic RO 22

Given the following conditions:

- A Small Break LOCA has occurred.
- The crew is performing the actions of EOP-LOCA-2, POST LOCA COOLDOWN AND DEPRESSURIZATION.
- All SI pumps are running.
- All RCPs are running.
- RCS cooldown via Main Steam Dumps is ongoing.
- RCS Tave is 510°F and lowering at a rate of 90°F/Hr.
- PZR level indicates 26% and rising.
- The RCS depressurization has been secured and RCS pressure is 1310 psig and stable.

Which of the following describes the next major action to be implemented in the EOP to mitigate the current conditions?

a. Stop ALL RCPs due to pressure < 1350 psig and ECCS flow established.

b. Stop the cooldown. Energize all PZR heaters to collapse voids and stabilize PZR level.

c. Stop all but one RCP and begin the SI flow reduction process by stopping ECCS pumps.

d. Recommence the RCS depressurization using normal spray to collapse voids and refill the PZR.

Answer c **Exam Level** R **Cognitive Level** Comprehension **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 00WE03K102 EK1.2 **RO Value:** 3.6 **SRO Value:** 4.1 **Section:** EPE **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title LOCA Cooldown and Depressurization E03

KA Statement: Knowledge of the operational implications of the following concepts as they apply to LOCA Cooldown and Depressurization: Normal, abnormal and emergency operating procedures associated with (LOCA Cooldown and Depressurization).

Explanation of Answers: 55.41.B(10)The idea for depressurization is to refill the pressurizer. Since the pressurizer is already filled (>25%), go directly to flow reduction. There will be no voids if RCPs are running, and there is no CAS transition to TRIP-3.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loca Cooldown and Depressurization	2-EOP-LOCA-2			25

L.O. Number | Objectives

LOCA02E001

Material Required for Examination

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

Question Source Comments Q74666

Comment

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

Question Topic: RO 23

Given the following conditions:

- Unit 2 is operating at 100% power.
- 2PR2 is leaking, and 2PR7 is shut to comply with TSAS 3.4.5. action a.
- Both SGFPs trip.
- When the Main Generator breakers opened, 2B 4KV vital bus deenergized and remains deenergized.
- Only 23 AFW pump started, and it tripped 2 minutes after the Rx was tripped.
- No AFW pumps are in service or can be started.
- Operators have transitioned out of EOP-TRIP-1.

Which of the following identifies how Bleed and Feed of the RCS will be accomplished IAW 2-EOP-FRHS-1, Response to Loss of Secondary Heat Sink?

a. SI pump injection and bleed flow from 2PR1 only.

b. Charging pump injection and bleed flow from both PORVs.

c. SI pump injection and bleed flow from the reactor head vent valves.

d. Charging pump injection and bleed flow from 2PR1 and the reactor head vent valves.

Answer: d **Exam Level**: R **Cognitive Level**: Application **Facility**: Salem 1 & 2 **ExamDate**: 12/15/2014

KA: 00WE05K102 EK1.2 **RO Value**: 3.9 **SRO Value**: 4.5 **Section**: EPE **RO Group**: 1 **SRO Group**: 1 55.43

System/Evolution Title: Loss of Secondary Heat Sink E05

KA Statement: Knowledge of the operational implications of the following concepts as they apply to Loss of Secondary Heat Sink:
Normal, abnormal and emergency operating procedures associated with (Loss of Secondary Heat Sink).

Explanation of Answers: 55.41.b(10) The 2PR7 would be opened if it had power in this case to allow 2PR2 to be used as part of the Bleed path. With 2PR7 shut and B bus deenergized, both PORV block valves cannot be opened per step 26.1 of FRHS-1. Rx head vents are the next step. A single Charging pump will be supplying the feed portion, as step 25.1 asks if EITHER charging pump is running, and 22 will be after SI initiation at step 24.

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

L.O. Number
FRHS00E006

Objectives

Material Required for Examination:

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

Question Source Comments: Q122559

Comment

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

Question Topic: RO 24

Given the following conditions:

- Unit 2 is responding to a Saturated Core Cooling condition IAW 2-EOP-FRCC-3, due to a loss of subcooling following a Reactor Trip and Safety Injection.
- RCS pressure is 1600 psig and stable.
- Containment pressure is 2 psig.

Which of the following would be an indication that ECCS flow is injecting into the RCS IAW FRCC-3?

a. 21 SI pump flow meter reads 110 gpm.

b. All SI Accumulator pressures dropping slowly.

c. RHR pump discharge flow reads 500 gpm on 21SJ49 flow meter.

d. Charging flow reads 290 gpm on SI systems charging flow meter.

Answer	Exam Level	Cognitive Level	Facility:	ExamDate:
d	R	Comprehension	Salem 1 & 2	12/15/2014

KA:		RO Value:	SRO Value:	Section:	RO Group:	SRO Group:	
00WE07K202	EK2.2	3.5	3.9	EPE	2	2	55.43

System/Evolution Title: Saturated Core Cooling | E07

KA Statement: Knowledge of the interrelations between Saturated Core Cooling 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(8) Basis document for 2-EOP-FRCC-3 identifies the minimum charging flow of 100 gpm on SI systems charging flow meter as indicating injection to RCS. SI pump flow of >100 gpm also indicates injection to RCS, but procedure asks if RCS pressure is less than 1540, which it is not, and then skips the step to check SI flow since it is not expected to be present above the shutoff head of the SI pumps. RHR pumps shutoff head of 210 psid (with suction from the RWST at ~30 psig) would not allow injection until RCS pressure was much lower than 1550 psig, so distracter C is wrong. Accumulator normal pressure band is 600-650 psig, so they would not be able to inject until RCS pressure was below that of the accumulators, so distracter B is wrong.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Response to Saturated Core Cooling	2-EOP-FRCC-3			20

L.O. Number: FRCC00E005

Objectives

Material Required for Examination:

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

Question Source Comments: Q78017 changed RCS pressure in stem to ensure >1540, and changed charging flow from 315 to 290 to make question look different.

Comment

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

Question Topic: RO 25

Given the following conditions:

- Operators are performing actions in FRTS-1, Response to Imminent Pressurized Thermal Shock.
- When performing the SI Termination Criteria step, the following conditions are present:
  - RCS subcooling is 20°F.
  - All RCPs are stopped.
  - RVLIS Full Range is 99%.

Which of the following describes the RCP start strategy, and why?

a. Do NOT start a RCP because subcooling is not adequate.

b. Do NOT start a RCP because the Reactor Pressure Vessel contains voids.

c. Start a single RCP in ANY loop regardless of SG NR level to prevent thermal creep failure of SG U-tubes.

d. Start a single RCP ONLY in a loop which has SG NR level >9% to mix cold incoming ECCS water and the warm reactor coolant water.

Answer: d **Exam Level**: R **Cognitive Level**: Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 00WE08A202 EA2.2 **RO Value:** 3.5 **SRO Value:** 4.1 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title: Pressurized Thermal Shock E08

KA Statement: Ability to determine and interpret the following as they apply to Pressurized Thermal Shock:
Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Explanation of Answers: 55.41.b(10) FRTS Step 9 looks at subcooling of the RCS along with adequate vessel level to determine if a RCP is required, and if one can be started. The initial criteria are >50°F subcooling, and adequate vessel level as indicated by RVLIS. With less than 50°F subcooling, go straight to RCP start step, which requires all RCPs stopped and subcooling is >0°F. Then start the RCP IAW SO.RC-1, which has additional starting restrictions, one of which is 9% SG NR level. As per the bases document, the reason for starting a RCP under these conditions is to mix cold ECCS flow with warm RCS water.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Response to Imminent Pressurized Thermal Sh	EOP-FRTS-1	Bases Doc	12-13	25

L.O. Number: FRTS00E002

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 26

Given the following conditions:

- Unit 2 has tripped from 100% power due to a Loss of Off-Site Power.
- Operators are performing a cooldown IAW 2-EOP-TRIP-6 NATURAL CIRCULATION RAPID COOLDOWN WITH RVLIS.

Which choice identifies the MINIMUM RVLIS Full Range level required to be maintained during the cooldown, and its significance?

a. 74% to ensure positive level indication of RCS.

b. 100% to ensure positive level indication of RCS.

c. 74% to prevent steam from entering the RCS hot legs.

d. 100% to prevent steam from entering the RCS hot legs.

Answer c **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2015

KA: 00WE10A103 EA1.3 **RO Value:** 3.4 **SRO Value:** 3.7 **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 operate and / or monitor the following as they apply to Natural Circulation with Steam Void in Vessel with/without RVLIS: Desired operating results during abnormal and emergency situations.

Explanation of Answers: 55.41.b(10)74% is minimum allowed at step 10, and get into a do loop until it is satisfied. The Bases Document states that if steam enters the hot legs, there may be some potential for it to reach the top of the SG U tubes, thereby disrupting the natural circulation flow circuit. By monitoring RVLIS and limiting the void growth to the top of the hot legs, the potential for introducing voids into the SG Utubes is minimized.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Natural Circulation Rapid Cooldown with RVLIS	2-EOP-TRIP-6	Bases Document	22	23

L.O. Number

TRP004E004

Objectives

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 27

Given the following conditions on Unit 2:

- A LBLOCA has occurred.
- Operators are performing 2-EOP-LOCA-5, Loss of Emergency Recirculation.
- Containment pressure is 15.1 psig and is rising slowly.

Which of the following describes how the Containment Spray system will be operated, and why?

The Containment Spray System is operated as directed in…

a. 2-EOP-FRCE-1, Response to Excessive Containment Pressure, since restoration of the critical safety function takes precedence.

b. LOCA-5 because it establishes minimum required containment spray flow and conserves RWST inventory.

c. 2-EOP-FRCE-1 because actions concerning Containment Spray operation are more restrictive.

d. LOCA-5 since FRPs are NOT implemented during the performance of LOCA-5.

Answer	b	**Exam Level**	R	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2	**ExamDate:**	12/15/2015

KA:	00WE11A201	EA2.1	**RO Value:**	3.4	**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 determine and interpret the following as they apply to Loss of Emergency Coolant Recirculation:
Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Explanation of Answers: 55.41.b(10)Upon entering FRCE-1, step 3.1 asks if LOCA-5 is in effect. The yes path states that CS pumps are to be operated IAW LOCA-5. The basis document states that this is because in FRCE, maximum available heat removal system operability is warranted to reduce containment pressure, whereas in LOCA-5 a less restrictive criteria permits reduced spray pump operation depending on RWST level, containment pressure, and # of CFCU's operating. The less restrictive criteria in LOCA-5 is used because recirculation flow to the RCS is not available, and it is very important to conserve RWST water, if possible, by stopping containment spray pumps. So while the operator WILL enter FRCE-1 due to PURPLE path of containment pressure > 15 psig, the containment spray pumps will be operated IAW LOCA-5.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of Emergency Coolant Recirculation	2-EOP-LOCA-5			25
Response to Excessive Containment Pressure	2-EOP-FRCE-1			22

L.O. Number
LOCA05E005

Objectives

Material Required for Examination

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

Question Source Comments Q80995

Comment

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

Question Topic RO 28

Given the following conditions:

- Unit 1 is operating at 85% power steady state, MOL.
- Rod control is in AUTO.
- Control Bank D is at 185 steps.
- Control rods begin withdrawing with no demand signal present.
- Operators place rod control in MANUAL and rod motion stops.
- A Rx trip is not generated, nor is one required by plant conditions.
- Operators determine that Control Bank D rods have withdrawn a total of 10 steps.

Which of the following identifies the effect of the rod motion?

a. Overpower Delta Temperature trip (OPDT) setpoint has risen.

b. Axial Flux Difference (AFD) has become less negative.

c. Quadrant Power Tilt Ratio (QPTR) has risen.

d. Shutdown margin has lowered.

Answer b **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 001000K506 K5.06 **RO Value:** 3.8 **SRO Value:** 4.1 **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title Control Rod Drive System 001

KA Statement: Knowledge of the operational implications of the following concepts as they apply to the Control Rod Drive System:
Effects of control rod motion on axial offset

Explanation of Answers: 55.41.b(1) Salem normally operates with a negative AFD except for very late in core life. As rods move out, more power will be produced in the upper half of the core, and indicated AFD will become less negative. A is incorrect because the OP/DT setpoint is not dependent on rod position. QPTR should be unaffected because the change in power will be seen on all planes equally. D is incorrect because SDM is not affected by rod position, since the rods are still trippable.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
General Physics Lesson Plan Rx Theory		Chapter		4

L.O. Number
RXOPERE019

Objectives

Material Required for Examination

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

Question Source Comments Q83980

Comment

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

Question Topic RO 29

Given the following conditions:

- Unit 1 is operating at 100% power.
- Reactor Coolant flow measurements determine that 11 RC loop has experienced a 5% reduction in flow from its expected 100% flow.

Which of the following identifies how this 5% flow reduction in 11 loop has affected the primary plant in relation to the previous 100% flow conditions?

Assume the 3 other loop flows remain the same.

a. Delta T in the 11 RCS loop will be lower.

b. Steam pressure in 11 SG will be higher.

c. The reactor core will be operating closer to DNB.

d. Demand on the Pressurizer variable heaters at 2235 psig will be lower.

Answer c **Exam Level** R **Cognitive Level** Comprehension **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 002000A303 A3.03 **RO Value:** 4.4 **SRO Value:** 4.6 **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title Reactor Coolant System 002

KA Statement: Ability to monitor automatic operations of the Reactor Coolant System including:
Pressure, temperatures, and flows

Explanation of Answers: 55.41.b(2,3)A lower single loop flow will cause total flow through the core to lower. Using Q=mc(D/T) if mass flow rate lowers, then the D/T has to go up if power remains the same, which it will due to MT gov valve reaction. This will cause the core to be operating closer to DNB.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision

L.O. Number | **Objectives**

RCS000E006

RCS000E013

Material Required for Examination

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

Question Source Comments Q111914

Comment

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

Question Topic RO 30

Given the following conditions:

- Unit 2 is operating at 75% power.
- 21 CCW pump is C/T for maintenance.
- 21 charging pump is in service.

Which of the following would ALWAYS require entry into S2.OP-AB.RCP-0001, Reactor Coolant Pump Abnormality?

a. CCW Surge Tank level begins rising.

b. 2A 4KV vital bus locks out on Bus Differential.

c. 2C 4KV vital bus locks out on Bus Differential.

d. Any RCP Shaft vibration indicates 4 mils on RP3.

Answer c **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 003000K202 K2.02 **RO Value:** 2.5* **SRO Value:** 2.6* **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Reactor Coolant Pump System 003

KA Statement: Knowledge of bus power supplies to the following:
CCW pumps

Explanation of Answers: 55.41.b(7,8) A is incorrect because there are reasons other than Thermal Barrier rupture that can cause CCW surge tank rise. D is incorrect because normal shaft vibration is ~ 4 mils, but plausible because flange vibration >3 mils is entry condition. 2A supplies 23 charging pump, not 21. 2C bus supplies 23 CCW pump, and with 21 CCW pump C/T would cause OHA D20-23 to annunciate on low bearing water flow, which requires entry into AB.RCP.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Reactor Coolant Pump Abnormality	S2.OP-AB.RCP-0001		2	21

L.O. Number

RCPUMPE005

ABRCP1E004

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 31

Given the following conditions:

- Unit 2 is operating at 100% power.
- 2CC190, RCP THERM BAR CC OUTLET V, fails shut.

Which one of the following describes the effect on RCP temperatures, if any, as a result of this failure?

ALL RCP...

a. lower motor bearing temperatures will rise.

b. bearing temperatures will remain the same.

c. #1 seal leakoff temperatures will rise.

d. motor winding temperatures will rise.

Answer b **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 003000K604 K6.04 **RO Value:** 2.8 **SRO Value:** 3.1 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Reactor Coolant Pump System 003

KA Statement: Knowledge of the of the effect of a loss or malfunction on the following will have on the Reactor Coolant Pump System: Containment isolation valves affecting RCP operation

Explanation of Answers: 55.41(3) The CCW line supplying the RCPs is a single line supplying both bearing cooling and Thermal Barrier cooling. Once the line inside containment splits, the CCW from the Thermal Barriers has its own, separate return line, which is isolated by the 2CC190 (inside containment) and 2CC131 (outside containment.) The Thermal Barrier CCW flow acts to cool reactor coolant flowing upwards through the thermal barrier upon a loss of seal injection flow. With normal seal injection, the loss of CCW to the thermal barrier would not affect any RCP components.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Unit 2 Component Cooling	205331-3			35

L.O. Number
RCPUMPE004
RCPUMPE015
RCPUMPE016

Objectives

Material Required for Examination

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

Question Source Comments 9/2011 NRC RO Exam Q30

Comment

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

Question Topic RO 32

Unit 1 is operating at 100% power when the 1CC71, Letdown HX CC Control Valve fails to 50% open and remains 50% open.

Which of the following describes the impact of this failure?

a. RCS temperature will rise. Perform a boration of the RCS if required to restore Tavg to program.

b. RCS temperature will rise. Remove CVCS Demineralizers from service, then place Excess Letdown in service to restore demineralization capability.

c. The CVCS Letdown Demineralizers will be bypassed when letdown temp reaches 136°F. Lithium addition required to control RCS pH will be higher than normal.

d. The CVCS Letdown Demineralizers will be bypassed when letdown temp reaches 136°F. Lithium addition required to control RCS pH will be lower than normal.

Answer a **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 004000A230 A2.30 **RO Value:** 3.3 **SRO Value:** 3.6 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title Chemical and Volume Control System 004

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

Reduction of boron concentration in the letdown flow; its effects on reactor operation

Explanation of Answers: 55.41.b(5) Boron affinity of resin bed is affected by temperature of coolant passed through bed. a. At lower temperatures, borate ion bonding to exchange site contains three boron atoms. b. At higher temperatures, borate ion contains only one boron atom c. Result of this characteristic is that at lower temperatures resins are more efficient at removing boron from coolant than at higher temperatures. B is incorrect but plausible if it is thought that the Excess Letdown line contains demins that would restore boron concentration when placed in service. C and D are incorrect because temperature will be lowering in letdown line, not rising.

Lithium control would be affected during normal daily chemical additions.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
General Physics LP- Demineralizers and Ion Ex			31	

L.O. Number

CVCS00E015

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 33

Which of the following identifies the vital 4KV power supplies to the 11 and 12 RHR pumps, respectively?

a. A bus; B bus.

b. A bus; C bus.

c. B bus; C bus.

d. B bus; A bus.

Answer a **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:**

KA: 005000K201 K2.01 **RO Value:** 3.0 **SRO Value:** 3.2 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Residual Heat Removal System 005

KA Statement: Knowledge of bus power supplies to the following:
RHR pumps

Explanation of Answers: 55.41.b(8) 11 and 12 RHR pumps are powered from "A" and "B" 4KV vital busses respectively. Other ECCS pumps, (11 and 12 SI, and 11 and 12 CS) are powered from A and C. Unit 2 SW pumps are powered in reverse order, 21/22 from C, and 25/26 from A, when considering plausible distracters. Charging pumps 21 and 22 are powered from B and C busses, again when considering plausible distracters.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
No. 1 Unit 4160V Vital Busses One Line	203002			34

L.O. Number
RHR000E005

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 5/2010 NRC RO exam (3 exams ago,) developed from 2003 Fermi NRC Exam

Comment

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

Question Topic RO 34

Given the following conditions:

- Unit 1 is operating at 100% power.
- 11 CFCU is C/T.
- 1C EDG is paralleled to 1C 4KV Vital Bus for monthly run.
- A 1" line connected to RCS loop 11 shears off.
- Operators initiate a Rx trip and SI.
- 1A 4KV Vital bus locks out on Bus Differential.

Which of the following describes the difference in containment pressure response between this LOCA, and one with the same conditions except 1C EDG was initially aligned for normal standby operation, and why?

a. the same since all required pumps will be running.

b. higher since only ONE Containment Spray pump will be operating.

c. higher since NEITHER Containment Spray pump will be operating.

d. lower because ECCS will inject faster due to the EDG already being running.

Answer a **Exam Level** R **Cognitive Level** Comprehension **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 006000A401 A4.01 **RO Value:** 4.1 **SRO Value:** 3.9 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Emergency Core Cooling System 006

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

Explanation of Answers: 55.41.b(3,7) A is correct since a 1" break will be within the capability of the two high pressure injection pumps (11 and 12 CVCS pps) to prevent a major lowering of PZR pressure. The loss of 1A vital bus would affect 11 RHR, 11 CS, and 13 Charging pp, (and 11 CFCU which is C/T) none of which would be injecting for ECCS or for containment pressure control, since the small size of the leak would not cause RCS pressure to drop to their shutoff heads, or containment pressure to rise for CS requirement.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem UFSAR		Section 15.3		25

L.O. Number
ECCS00E016

Objectives

Material Required for Examination

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

Question Source Comments Q111916

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 experienced a LOCA while operating at 100% power.
- A Rx trip and SI initiation were successful.

During the response to the LOCA in the EOP network, which of the following overhead alarms would be UNEXPECTED if it were to occur?

Assume containment pressure peaks at 10 psig during the event.

a. D-41, BIT DISCH PRESS HI.

b. C-12, 22 CFCU AIRFLO TRBL.

c. C-10, CNTMT SUMP OVERFLO

d. D-48, SUBCLG CH B MARGIN LO

Answer a **Exam Level** R **Cognitive Level** Comprehension **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 006000G446 2.4.46 **RO Value:** 4.2 **SRO Value:** 4.2 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title Emergency Core Cooling System 006

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

Explanation of Answers: 55.41.b.7) OHA C-12 is expected whenever the CFCU is in slow speed, which it would be for SI initiation. OHA D-41 would NOT be expected, setpoint is 2610 psig, and charging pump discharge pressure would be much less than that, above the RCS pressure which would be lower due to the LOCA. C-10 would be expected as the containment sump would fill after the Phase A isolated containment and the leak filled up the sump. With a peak cont press of 10 psig, the LOCA, will definitely lose subcooling, and alarm is at 10°F margin to saturation.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Overhead Annunciator Window C	S2.OP-AR.ZZ-0003			17
Overhead Annunciator Window D	S2.OP-AR.ZZ-0004			26

L.O. Number ECCS00E008

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

With Unit 1 operating at 100% power, 1PR1 opens in automatic with no demand to open, and cannot be shut.

Which of the following describes the effect of this failure, and how the actions the crew should perform IAW S1.OP-AB.PZR-0001, Pressurizer Pressure Malfunction will affect this event?

a. The PRT rupture disk will rupture when pressure reaches 10 psig if the 1PR6 Block Valve is not shut.

b. The PRT rupture disk will rupture when pressure reaches 100 psig if the 1PR6 Block Valve is not shut.

c. If PZR heaters cannot restore pressure, the Rx will be manually tripped before an auto trip is generated on OT/DT at 2100 psig.

d. If PZR heaters cannot restore pressure, the Rx will be manually tripped before an auto trip is generated on low PZR pressure at 1985 psig.

Answer: b **Exam Level:** R **Cognitive Level:** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 007000A201 A2.01 **RO Value:** 3.9 **SRO Value:** 4.2 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43 ✔

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

KA Statement: Ability to (a) predict the impacts of the following on the Pressurizer Relief Tank/Quench Tank System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:
Stuck-open PORV or code safety

Explanation of Answers: 55.41.b(5,7,10) AB.PZR directs closing the PORV block valve if the PORV cannot be shut. If it is not shut the PRT rupture disk will rupture at 100 psig. 10 psig is the high pressure alarm setpoint. There are steps in AB.PZR for operating PZR heaters, but for a PORV failure the heaters will be unable to maintain PZR pressure. The 2 trip setpoints are incorrect. The OT/DT trip setpoint is not a psig value, but its equivalent value is ~ 2,000 psig. (Actual Salem data on actual Rx trip) The low PZR pressure Rx trip is at 1865 psig

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Pressurizer Pressure Malfunction	S1.OP-AB.PZR-0001			16
Control Console CC2	S1.OP-AR.ZZ-00012		53	36
#1 Unit Reactor Coolant	205201 Sht 1			64

L.O. Number: PZRPRTE009

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 37

Given the following conditions:

- Unit 2 is in MODE 3 @ NOT, NOP.
- 21 and 22 CCW pumps are in service.
- 23 CCW pump is in MANUAL.
- 2C 4KV Vital Bus senses an undervoltage condition, and loads in SEC MODE II*.

Which of the following identifies the Tech Spec consequence of this event on the CCW system?

TSAS 3.7.3, Component Cooling System is…

a. entered due to not having 2 loops of CCW operable.

b. NOT entered because ALL CCW pumps remain operable.

c. NOT entered because 2 of the 3 CCW pumps remain operable.

d. entered due to high system flow from 3 CCW pumps in service through 2 heat CCW HX's.

Answer: b | **Exam Level:** R | **Cognitive Level:** Application | **Facility:** Salem 1 & 2 | **ExamDate:** 12/15/2014

KA: 008000G237 | 2.2.37 | **RO Value:** 3.6 | **SRO Value:** 4.6 | **Section:** SYS | **RO Group:** 1 | **SRO Group:** 1 | 55.43 ☑

System/Evolution Title: Component Cooling Water System | 008

KA Statement:

Ability to determine operability and/or availability of safety related equipment.

Explanation of Answers:

55.41.b.(7) CCW TSAS 3.7.3 requires 2 independent loops of CCW. The bases for that states that in order to have 2 operable loops, ALL 3 CCW pumps must be operable along with HX's and valves, etc. When the 2C SEC senses the undervoltage condition, it will open the 2C bus infeed breakers, start the EDG, strip loads, close the EDG output breaker, the sequence on BLACKOUT loads. 23 CCW pump is a blackout load, but not an ACCIDENT load. Additionally, the SEC locks out AUTO/MAN function of the CCW pump start circuitry, so the initial status of 23 CCW pump being in MANUAL has no effect on pump start/

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem Tech Specs		3.7.3 and bases		

L.O. Number

CCW000E010

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

With both PZR Spray Valves 2PS1 and 2PS3 in AUTO, which of the following describes the effect, if any, of 2PS3 PZR Spray Valve demand failing to 50% demand?

a. No effect as the 2PS1 would close and transfer normal spray capability to 2PS3.

b. All PZR Backup heaters in auto will energize when PZR pressure lowers to 2210 psig.

c. All PZR Backup heaters in auto will energize when PZR pressure lowers to 2218 psig.

d. PZR pressure will initially lower, and the Control Group heaters will fire full time to restore pressure w/o auto B/U heaters required.

Answer: b **Exam Level:** R **Cognitive Level:** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 010000K301 K3.01 **RO Value:** 3.8 **SRO Value:** 3.9 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title: Pressurizer Pressure Control System 010

KA Statement: Knowledge of the effect that a loss or malfunction of the Pressurizer Pressure Control System will have on the following:
RCS

Explanation of Answers: 55.41.b(5) Normal PZR spray demand is ~13% on each PZR spray valve, as Salem runs with one set of B/U heaters in MANUAL ON. The failure to 50% effectively doubles the actual spray flow. The 2PS1 WILL shut, but more spray than needed is now present especially since 2PS3 is the dominant spray flow. PZR B/U heaters in auto will energize at 2210 psig, they turn off at 2218 psig. The control group heaters are for fine pressure control and do not have the capability to maintain pressure with 50% spray demand.

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-09			9

L.O. Number

PZRP&LE008

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

Given the following conditions:

- PZR safety valve PR3 is stuck slightly open.
- Charging pumps are maintaining RCS pressure at 1910 psig.
- PZR vapor space temperature is 630°F.
- The PRT level and pressure are 75% and 5 psig respectively.
- A NCO notes that the tail pipe temperature for PR3 indicates 310°F. He states that he believes that there is a problem with the indication since it is not reading as he expects for the current conditions.

What should the indication read?

a. 162°F.

b. 228°F.

c. 310°F.

d. 630°F.

Answer: b **Exam Level:** R **Cognitive Level:** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 010000K502 K5.02 **RO Value:** 2.6 **SRO Value:** 3.0 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title: Pressurizer Pressure Control System 010

KA Statement: Knowledge of the operational implications of the following concepts as they apply to the Pressurizer Pressure Control System: Constant enthalpy expansion through a valve

Explanation of Answers: 55.41.b.(5)With the PZR at 1910 and 630, the liquid is saturated (page 13 of steam tables). Since throttling is a constant enthalpy process, the downstream must be saturated for the pressure in the PRT. With 5 psig (20 psia), steam tables show a sat temp of 227.918 °F for 20 psia. (page 11). The 162 distracter is if psia is uded for PRT press vs psig. 310 is value given in stem, and 630 is what PZR is.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Steam Tables				

L.O. Number
PZRPRTE008

Objectives

Material Required for Examination: RO 39 Steam Tables

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

Question Source Comments: Q145885

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 is operating at 100% power.
- Console alarms SEAL WATER FLOW LO annunciate for ALL 4 RCPs.

Which of the following failures has led to these alarms?

a. 2CV71, CHG HDR PCV has failed shut.

b. PZR level program setpoint has failed high.

c. 2CV115, Seal Return Relief valve has lifted and failed to reseat.

d. Charging System Master Flow Controller demand has failed to 20%.

Answer d **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 011000K606 K6.06 **RO Value:** 2.5* **SRO Value:** 2.8 **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title Pressurizer Level Control System 011

KA Statement: Knowledge of the of the effect of a loss or malfunction on the following will have on the Pressurizer Level Control System:
Correlation of demand signal indication on charging pump flow valve controller to the valve position

Explanation of Answers: 55.41.b(5,6,7,8) The 2CV71 PCV is located on the charging line upstream of the tap to go to seal injection. Its closure would cause full pressure/flow to go to the RCP seals. PZR level program signal failing high would cause charging flow to remain the same (program is clipped at ~100% programmed level) or go up slightly, and also seal injection flow. The CV115 lifting on the return line should have no effect, or if any, it would cause seal inj flow to rise if it lowered seal return header pressure enough. The charging system master flow controller demand is normally ~40%, so 20% demand would give ~1/2 normal charging flow. Normal charging flow is ~90 gpm. This matches the intent of the KA, as there is no indication of CV55 flow control valve position (which controls charging flow when a centrifugal charging pump is in service) other than open/shut/ or indeterminate. The Master Flow controller controls the PDP charging pump speed, and hence its flow, when its in service, and controls the charging FCV CV-55 when centrifugal pump in service.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
S2.OP-SO.CVC-0002	Charging pump operation			40

L.O. Number

PZRP&LE008

Objectives

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

Question Topic: RO 41

Given the following conditions:

- Unit 1 is returning from a refueling outage.
- RCS heatup and pressurization is in progress IAW S1.OP-IO.ZZ-0002, Cold Shutdown to Hot Standby
- RCS pressure is 1850 psig.
- RCS Tave is 510°F.
- A 2,000 gpm RCS leak occurs in containment.

Which of the following identifies how the Reactor Protection System will respond with NO operator action?

a. An automatic Safety Injection will occur at 4 psig in containment.

b. An automatic Safety Injection will occur when PZR pressure lowers to 1765 psig.

c. NO automatic Safety Injection will occur because the RPS System Auto SI Block has not been Unblocked yet.

d. NO automatic Safety Injection will occur because the 2 running centrifugal charging pumps will respond in auto to the lowering PZR level.

Answer:	a	Exam Level:	R	Cognitive Level:	Application	Facility:	Salem 1 & 2	ExamDate:	12/15/2014

KA:	012000G409	2.4.9	RO Value:	3.8	SRO Value:	4.2	Section:	SYS	RO Group:	1	SRO Group:	1	55.43	☑

System/Evolution Title: Reactor Protection System | 012

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:

55.41.b(7) (Note: The choices say Safety Injction "will occur" vs "signal generated" to preclude anyone from saying that the Lo PZR Pressure SI signal WILL occur, its just blocked.) During the unit return to service, the Auto SI Block (from ANY auto SI signal) is UNBLOCKED at step 5.2.21 of IOP-2. At that point, the unit is preparing to enter MODE 4, (>200°-<350°F.) The Lo PZXR PRESSURE SI remain BLOCKED until after the RCS is pressurized >1915 at step 5.3.23. So with 1850 psig in stem, it will still be blocked. The leak size (2,000 gpm) equates to a 6" pipe break, and will cause RCS pressure to lower to ~1100 psig if a full complement of ECCS equipment were available. This leak size will cause containment pressure to rise well in excess of 4 psig, which is where the AUTO SI will occur. D is incorrect both because only a single centrifugal charging pump is allowed to be in service, and the runout flow of 550 gpm is insufficient to keep RCS pressure from degrading, and in any case containment pressure would still rise regardless.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Cold Shutdown to Hot Standby	S1.OP-IO.ZZ-0002			40

LO Number
RXPROTE012

Objectives

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

Question Topic RO 42

Given the following conditions:

- Unit 1 is operating at 80% power.
- A large quantity of river grass starts building up on the Circ water traveling screens and condenser waterboxes.
- A rapid power reduction is initiated IAW S1.OP-AB.LOAD-0001 RAPID LOAD REDUCTION, to maintain condenser backpressure.
- During the power reduction, the NCO places rod control in MANUAL and continues to drive rods in.
- The turbine is put on hold at 20%, with condenser backpressure at 4.8" Hg and stable.
- Reactor power and temperature continue to lower due to an excess amount of negative reactivity inserted with control rods and boration, and reactor power reaches 7% before stabilizing.
- The NCO starts to withdraw control rods in manual to restore RCS Tave which has dropped to 545°F.

As the NCO continues to withdraw control rods continuously, which of the following will terminate the power rise, and why, IAW Salem FSAR?

a. Rod Block at 20% power equivalent amps on 1/2 IR NI's to protect against DNB.

b. High power reactor trip (low range) at 25% on 2/4 PR NI's to protect against DNB.

c. Rod Block at 20% power equivalent amps on 1/2 IR NI's to ensure high RCS pressure will not result PZR Safety valve opening.

d. High power reactor trip (low range) at 25% on 2/4 PR NI's to ensure high RCS pressure will not result PZR Safety valve opening.

Answer b **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 012000K402 K4.02 **RO Value:** 3.9 **SRO Value:** 4.3 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Reactor Protection System 012

KA Statement: Knowledge of Reactor Protection System design feature(s) and or interlock(s) which provide for the following:
Automatic reactor trip when RPS setpoints are exceeded for each RPS function; basis for each

Explanation of Answers: 15.2.2.1. Uncontrolled rod withdrawal at power. Unless terminated by manual or automatic action, the power mismatch and resultant coolant temperature rise would eventually result in DNB. The high neutron flux, high pressurizer pressure, and overtemperature DT trip channels provide adequate protection over the entire range of possible reactivity insertion rates, i.e., the minimum value of DNBR is always larger than the limit value. While the rod block signal may be generated, it will not act quickly enough (See Salem April 7th event) to prevent a trip on high power, low range, nor is credit taken in the FSAR for a rod block to ensure DNB is avoided.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem FSAR		15		

L.O. Number
RXPROTE004

Objectives

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

Question Topic: RO 43

Which of the following identifies a 10 CFR 50.46, Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors, which may not be met if the ESF Actuation System fails to initiate ECCS components during a LOCA?

a. The peak fuel element cladding temperature may not be maintained below 1800° F.

b. Reactor vessel water level may initially lower below the top of the active fuel.

c. Cladding oxidation may exceed 17% of the total clad thickness at any location in the core.

d. The hydrogen generated from the Zirc-water reaction may exceed 10% of the hydrogen generated if all of the zirconium surrounding the fuel reacted.

Answer: c **Exam Level:** R **Cognitive Level:** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 013000K301 | K3.01 **RO Value:** 4.4? **SRO Value:** 4.7 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 **55.43:** ☐

System/Evolution Title: Engineered Safety Features Actuation System | 013

KA Statement: Knowledge of the effect that a loss or malfunction of the Engineered Safety Features Actuation System will have on the following: Fuel

Explanation of Answers: 55.41.b(7)ECCS is a system which ESFAS actuates. 10CFR50.46 paragraph b delineates the Acceptance Criteria for a LOCA. Also Salem FSAR contains the same criteria copied from 10CFR46 in section 15.4.1.1. Choice A is incorrect because the fuel cladding temperature criteria is 2200°F. B is not correct because the Accident Analysis for the blowdown phase of a LBLOCA states that the top half of core is uncovered for lengthy period

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Acceptance criteria for Emergency Core Coolin	10 CFR 50.46			
Salem FSAR		15.4.1.1		

L.O. Number | Objectives

ESF000E015

Material Required for Examination:

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

Question Source Comments: Q80570

Comment:

Question Topic: RO 44

Under which of the following conditions would ALL outward rod motion be blocked?

a. Rods are at ARO position.

b. PRNI Channel 2N43 fails high.

c. RCS loop 21 OT/DT is 64.7°F with an OT/DT trip setpoint of 69°F.

d. PT-505 Turbine Steamline Inlet Pressure Transmitter fails to 0 psig.

Answer	b	**Exam Level**	R	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2	**ExamDate:**	12/15/2014

KA:	015000K402	K4.02	**RO Value:**	3.7	**SRO Value:**	3.9	**Section:**	SYS	**RO Group:**	2	**SRO Group:**	2	55.43

System/Evolution Title: Nuclear Instrumentation System | 015

KA Statement: Knowledge of Nuclear Instrumentation System design feature(s) and or interlock(s) which provide for the following:
Rod motion inhibits

Explanation of Answers: 55.41.b(6,7) A is incorrect because at All Rods Out position (Control Grade Interlock C-11), all AUTO outward rod motion is blocked. This position is set for each fuel cycle, meaning ARO is a number, not a physical stop in the core. B is correct because 1/4 PR NI >103% is C-2 and blocks ALL outward rod movement. C is incorrect because the control grade interlock C-3 is actuated within 3% of the OT/DT Rx trip setpoint. 64.7/69=93.8%. D is incorrect because with steamline inlet pressure < 15%, (Permissive P-2) outward auto rod movement is blocked, manual still works.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Licensed Operator Fluency List	NOS05FLUNCY-09		11	9

L.O. Number
FLUNCYE002

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 45

Which of the following indications is the ONLY one allowed to be used as part of the steps performed to verify natural circulation is occurring if the Core Exit Thermocouple Processing System becomes de-energized IAW 2-EOP-CFST-1 Critical Safety Function Status Trees?

a. Plant Computer readings.

b. Subcooling Margin Monitor readings.

c. Installed Control Room Class 1E readings.

d. Safety Parameter Display System readings.

Answer c **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 017000K301 K3.01 **RO Value:** 3.5* **SRO Value:** 3.7 **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title In-Core Temperature Monitor System 017

KA Statement: Knowledge of the effect that a loss or malfunction of the In-Core Temperature Monitor System will have on the following: Natural circulation indications

Explanation of Answers: 55.41.b(7) CET's are the primary indication of RCS temperature. The CET Processing system takes the input from all CET's, coverts it to a digital signal, and sends them to various places, including the Subcooling Margin Monitor, SPDS, and the eP-250 Computer. With the system (2 trains) deenergized, there is no CET indication to send anywhere. The only remaining indications for RCS temperature are provided via the Class 1E control console indications. The CET temperature indications normally provided on SPDS and Plant Computer are the one exception to those systems being used as primary indications, and are exempt from 1E requirements.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Critical Safety Function Status Trees	2-EOP-CFST-1		2	25
In Core Nuclear Instrumentation Lesson Plan	NOS05INCORE-04		28	4

L.O. Number

INCOREE007

INCOREE011

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

21 CFCU is running in Low speed during its weekly exercise and flush.

Which of the following identifies how steady state service water flow through 21 CFCU would be affected when the CFCU is transferred from Low Speed to High Speed?

Service water flow will…

a. rise.

b. lower.

c. remain the same.

d. rise or lower based on initial SW header pressure.

Answer c **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 022000A104 A1.04 **RO Value:** 3.2 **SRO Value:** 3.3 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Containment Cooling System 022

KA Statement: Ability to predict and/or monitor changes in parameters associated with operating the Containment Cooling System controls including:

Cooling water flow

Explanation of Answers: 55.41.b(9,8) The CFCU SW flow control valve SW223 has a position limiter on it, typically 50% travel. The SW223 opens on a start signal from either low speed or high speed. With a mechanical stop employed, SW flow will be the same for high speed or low speed operation. The stem states "steady state SW flow" because the CFCU is normally stopped for 30 seconds when transferring speed. Distracter D is plausible if it is thought that SW header pressure would change, which would affect SW system flows, but in steady state to steady state comparisons it would not

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
IST CFCU SW Valves	S2.OP-ST.SW-0010		18	20

L.O. Number

CONTMTE007

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 47

Given the following conditions:

- Salem Unit 2 is operating at 100% power.
- An electrical fault causes 22SW20, Nuclear Header Supply valve to shut, and it cannot be opened.

Which of the following identifies how many CFCU's will lose all cooling water availability, and which action would restore cooling water to all CFCU's?

a. 2, open 21SW23 and 22SW23 - Nuclear Header X-over valves.

b. 3, open 21SW23 and 22SW23 - Nuclear Header X-over valves.

c. 2, open 21SW17 and 22SW17 - SW Discharge Header X-over valves.

d. 3, open 21SW17 and 22SW17 - SW Discharge Header X-over valves.

Answer a **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 022000A204 A2.04 **RO Value:** 2.9* **SRO Value:** 3.2 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title Containment Cooling System 022

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

Loss of service water

Explanation of Answers: 55.41.b(4,7,9) The CFCUs are supplied cooling water from the Nuclear headers, with 21 and 22 supplies from 21 nuc header, and 24 and 25 supplied from 22 nuc header. 23 CFCU is supplied from BOTH nuc headers via a check valve arrangement, so the loss of flow to 21 nuc header will not affect cooling to 23,24, or 25 CFCUs. The SW Bay x-connect valves are normally open, and even if closed would not restore SW flow, since it could not flow past the shut 22SW20. The SW23s are located downstream of the nuc header supply valve 22SW20 and 24SW20, and when opened would restore SW flow to both nuc headers, including the CFCU's

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Service Water - Simplified	205342-SIMP	Sheets 1 and 2		3

L.O. Number

SW0NUCE016

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 48

Which of the following contains ONLY the action(s) and/or conditions REQUIRED to electrically reset an AUTOMATIC Containment Spray initiation?

a. Depress BOTH Reset Phase B PBs, then depress BOTH Reset Spray Actuation PBs at ANY containment pressure.

b. Containment pressure <15 psig. Depress BOTH Reset SI PBs, depress BOTH Reset Spray Actuation PBs.

c. Containment pressure <15 psig. Depress BOTH Reset Spray Actuation PBs.

d. Depress BOTH Reset Spray Actuation PBs at ANY containment pressure.

Answer d **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 026000A405 A4.05 **RO Value:** 3.5 **SRO Value:** 3.5 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Containment Spray System 026

KA Statement: Ability to manually operate and/or monitor in the control room:
Containment spray reset switches

Explanation of Answers: 55.41(9,7)Containment Spray actuation relays have retentive memory, which allows relays to be manually reset with an actuation signal still present. For this reason, B and C are incorrect because containment pressure is not required to be less than 15 psig. A is incorrect because Phase B is not required to be reset to reset Cont Spray. D is correct because BOTH trains of CS have to be reset, and electrically can be reset regardless of cont pressure.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
RPS Safeguards Initiation Signal	221057- NOTE 10			23

L.O. Number
CSPRAYE008

Objectives

Material Required for Examination

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

Question Source Comments Q147704

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 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 Hydrogen Recombiners can be started when directed by procedure if required?

a. 11 ONLY.

b. 12 ONLY.

c. 11 AND 12.

d. Neither Hydrogen Recombiner is available.

Answer b **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 028000K201 K2.01 **RO Value:** 2.5* **SRO Value:** 2.8* **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title Hydrogen Recombiner and Purge Control System 028

KA Statement: Knowledge of bus power supplies to the following:
Hydrogen recombiners

Explanation of Answers: 55.41.b(9). Hyd recomb are powered from 1A and 1B 460 volt vital buses, which are powered from their respective 4KV vital buses. With 1A bus locked out on diff, 1A 460 will not have power. Only 12 is available.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
1A Aux Building 460V Bus One line	601231			16
1B Aux Building 460V Bus One line	601232			18

L.O. Number Objectives

CONTMTE004

Material Required for Examination

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

Question Source Comments Q125691 and Q147705 combined

Comment

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

Question Topic RO 50

Which of the following addresses items 1 and 2 below:

1. A reason for maintaining Unit 2 Cycle 21 SFP boron concentration at 2127 ppm or greater in Mode 6 IAW Salem Unit 2 COLR
2. The preferred water source to establish or restore that boron concentration level if less than required IAW S2.OP-SO.SF-0001, Fill and Transfer of the Spent Fuel Pool.

a. Ensures SFP boron concentration is always > RCS and Refueling Cavity boron concentration. CVCS Holdup Tanks.

b. Ensures SFP boron concentration is always > RCS and Refueling Cavity boron concentration. Refueling Water Storage Tank

c. Ensures Keff of 0.95 or less at All Rods In, Cold Zero Power conditions with a 1% delta k / k uncertainty added. CVCS Holdup Tanks.

d. Ensures Keff of 0.95 or less at All Rods In, Cold Zero Power conditions with a 1% delta k / k uncertainty added. Refueling Water Storage Tank.

Answer c **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 033000A201 A2.01 **RO Value:** 3.0 **SRO Value:** 3.5 **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43 ✓

System/Evolution Title Spent Fuel Pool Cooling System 033

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

Inadequate SDM

Explanation of Answers: 55.51.b(13,4) Salem COLR, page 9 , Section 2.6 states the 3 criteria for maintaining 2127 ppm, which ensures the most restrictive of those 3 is met. One of those is the Keff<0.95 as listed in choices c and d. A and B are incorrect because while the boron concentration is MAY be higher than that in RCS, it is not the reason for the 2127 limit. D is incorrect but plausible because Demineralized water is the preferred makeup source to the SFP under normal circumstances, but would NOT be used to raise boron concentration because it has no boron in it

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Core operating Limits Report for Salem Unit 2 C	COLR Salem 2			5
Fill and Transfer of the Spent Fuel Pool.	S2.OP-SO.SF-0001			20

L.O. Number SFP000E009

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

Which of the following would cause an automatic Main Steamline Isolation signal to occur with NO operator action?

a. An automatic Safety Injection signal occurs on Steamline D/P.

b. All Main Steam Dumps fail full open while operating at 20% power.

c. NR level on a single SG rises above 67% with the Unit operating at 75% power.

d. A Phase B Isolation signal is generated during SSPS testing with the Unit operating at 100% power.

Answer b **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 039000A302 A3.02 **RO Value:** 3.1 **SRO Value:** 3.5 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Main and Reheat Steam System 039

KA Statement: Ability to monitor automatic operations of the Main and Reheat Steam System including:
Isolation of the MRSS

Explanation of Answers: Steam dumps will pass 52% total steam flow. From 0-20% power, the steamflow setpoint is 40%. It also requires Tavg <543°F or steam pressure <600 psig. With 50% load, Tavg would rapidly lower from where it was at 15-18% power (where we normally synch gen) to < 543. The steam dumps will turn off at 543°, but not before generating the isolation signal.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Licensed Operator Fluency List	NOS05FLUNCY-09			9

L.O. Number

MSTEAME015

Objectives

Material Required for Examination

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

Question Source Comments Q40425 made into conditions, not just setpoints

Comment

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

Question Topic RO 52

Given the following conditions:

- A Unit 2 plant startup is in progress.
- Reactor power is stable at 18%.
- The Main Generator is rolling unloaded at 1800 rpm.
- Main Steam Dumps are controlling in AUTO in MS Pressure control.

MS Dump Pressure setpoint is raised 5 psig.

With no other operator action, several minutes later you will notice:

a. Reactor Power is <18%.

b. Reactor power is > 18%.

c. Control rods have stepped in.

d. Control rods have stepped out.

Answer a **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 039000K508 K5.08 **RO Value:** 3.6 **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: Knowledge of the operational implications of the following concepts as they apply to the Main and Reheat Steam System: Effect of steam removal on reactivity

Explanation of Answers: 55.41.b(5)With steam dumps open in MS pressure control auto, raising the setpoint will cause steam dumps to shut to increase steam header pressure to setpoint pressure This will cause a lower steam flow and higher temperature, which causes lower Rx power. Control rods are not placed in auto until >P-2, which is 15% Turbine power, which is not online yet, so rods will be in manual and no operator action stated in stem.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision

L.O. Number

RXOPERE021

Objectives

Material Required for Examination

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

Question Source Comments Changed stem from lowered 5 psig to raised 5 psig which changes answer from >18% to <18%.

Comment

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

Question Topic RO 53

Which of the following parameters will change in the direction indicated following a Main Turbine trip from 90% power, once new steady state conditions have been reached?

a. TAC system D/P will be lower.

b. TAC system supply temp will be lower.

c. TGA SW header pressure will be higher.

d. Main Condenser Hotwell levels will be higher.

Answer d **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 045000A106 A1.06 **RO Value:** 3.3 **SRO Value:** 3.7 **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title Main Turbine Generator System 045

KA Statement: Ability to predict and/or monitor changes in parameters associated with operating the Main Turbine Generator System controls including:
Expected response of secondary plant parameters following T/G trip

Explanation of Answers: Turbine aux cooling system D/P is maintained at pre-set setpoint, and automatic valve will operate to maintain it, so actual D/P will not change based on heat load or flow. TGA SW header pressure is regulated by ST1, which maintains downstream pressure of 80 psig, so it will modulate to maintain pressure stable. TAC system HX outlet is controlled at setpoint automatically. Hotwell levels will rise as the turb trip initiates a Rx trip >P-9, and the BF19s and 40's will shut on FW interlock. There will be no "goes out" from the hotwells, but it will still be receiving "goes in" from the Steam dump system from the Main steam system, and the SGs will be fed from the AFW pumps.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
TGA SW system Lesson Plan	NOS05SWTURB-04			04

L.O. Number

MNTURBE013

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 54

Given the following conditions:

- Unit 1 is operating at 85% power.
- All Condensate and Heater Drain Tank pumps are in service.
- The Condensate Polisher is in service.
- 11 Condensate Pump trips.

Which of the following describes the effect that this pump trip has on the Main Feedwater system?

a. SGFP suction pressure will lower.

b. The 11-13CN108s, Polisher Bypass valves will open.

c. 1CN47, 13/14/15 Heater Strings Bypass valve will open.

d. Main Feedwater temperature entering the SGs will lower.

Answer a **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 056000K103 K1.03 **RO Value:** 2.6* **SRO Value:** 2.6 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Condensate System 056

KA Statement: Knowledge of the physical connections and/or cause-effect relationships between Condensate System and the following: MFW .

Explanation of Answers: 55.41.b(4) B is incorrect because the CN108s open on a SGFP trip, not a condensate pump trip. C is incorrect because the 1CN47 auto opens at 265 psig, which won't be reached. A is correct because the loss of flow from the condensate pump will cause SGFP suction pressure to lower. D is incorrect because the reduced feed flow initially would cause feed temp to rise, not lower based on Q=m▲T

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Main Feedwater / Condensate System abnormal	S1.OP-AB.CN-0001			20

L.O. Number

CN&FDWE016

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 55

Given the following conditions:

- Unit 1 is in MODE 1.
- Rx power is 8.1%.
- Power is being raised slowly in preparation for rolling the Main Turbine.
- 11 SGFP is in service supplying FW to SGs.
- ALL AFW pumps are aligned for normal standby operation.
- A spurious MSLI actuates.

Which of the following describes the effect this will have on feed to the SGs with NO operator action?

a. The MDAFW pumps and the TDAFW pump will start when SG level(s) drop(s) to the lo lo level setpoint.

b. The MDAFW pumps will start when 11 SGFP trips. The TDAFW pump will start when SG levels shrink following the Rx trip.

c. ALL AFW pumps will remain in standby. Sufficient steam will be supplied through the 11-14MS18s, MS STOP BYP VALVES to supply 11 SGFP.

d. ALL AFW pumps will remain in standby. 11 SGFP will remain in service since at this power level it is being supplied with steam from the Heating Steam System.

Answer a **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 059000A403 A4.03 **RO Value:** 2.9* **SRO Value:** 2.9 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Main Feedwater System 059

KA Statement: Ability to manually operate and/or monitor in the control room:
Feedwater control during power increase and decrease

Explanation of Answers: 55.43.b(5,4)D is incorrect because the operating SGFP(s) will be placed on Main steam supply prior to exceeding 5% power (IOP-3, step 5.4.10), and will lose their steam supply when the MSLI signal closes the MSIVs AND the MS18 bypass valves. A is correct because the MDAFW pumps and TDAFW will start on lo lo level in SGs as the SGFP coasts down after losing its steam supply.. C is incorrect because the MS18s shut on the MSLI also. B is incorrect because the SGFP will not trip. KA is applicable since knowledge of how Main Feedwater system is used during plant startup, when its steam supply is transferred, and the effect of the MSLI as it applies to that steam supply. Additionally, this question when used in requal typically results in an ~25% miss rate, on an open book exam, based on when certain actions are taken in the IOP, the status of the MS valves, etc. 2008 Annual was classified as high miss (>30% miss) 2009 Seg. 1 (25%), 2010 Annual (25%), 2011 Seg 1 (8.3%)

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Hot Standby to Minimum load	S1.OP-IO.ZZ-0003		37	32

L.O. Number CN&FDWE013 **Objectives**

Material Required for Examination

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

Question Source Comments Q85462

Comment

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

Question Topic RO 56

Given the following conditions:

- Unit 2 has experienced a reactor trip from 100% power.
- 22 AFP Pressure Override Protection circuit has malfunctioned, causing the AF21's (Auxiliary Feedwater Isolation Valve) supplied from this pump to remain shut.

With NO operator action, choose the indications which would be present 2 minutes after the reactor trip.

a. AFW flow indication reading 0 gpm for 21 and 22 SGs.

b. AFW flow indication reading 0 gpm for 23 and 24 SGs.

c. 21and 22 SG levels rising slower than 23 and 24 SG levels.

d. 23 and 24 SG levels rising slower than 21 and 22 SG levels.

Answer c **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

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)With the 22 AFP Pressure override protection controlling 21 and 22 AF21s, c would be the correct answer because 23 AFP would still be supplying AFW to 21 and 22 SGs through the AF11s, but there would be more flow going to 23 and 24 SGs since they are being supplied flow from 21 MD AFW pp plus the TD AFW pump. Distracters a and b are incorrect because TOTAL AFW flow (from MDAFW pps and TDAFW pps combined) is indicated on 2CC2. Distracter d is incorrect because 23 and 24 WR levels would be rising faster than 21 and 22 SG WR levels because of the combination of MD and TD AFW pps supplying feed to those generators.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
AFW Simplified drawing	205336-SIMP			1
AFW System LP	NOS05AFW000		28-29	13

L.O. Number Objectives

AFW000E008

Material Required for Examination

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

Question Source Comments Q80206

Comment

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

Question Topic RO 57

Given the following conditions:

- Unit 2 is operating at 100% power.
- B 4KV Vital bus Undervoltage (UV) testing is in progress.
- A problem results in the "B" SEC loading 2B 4KV bus in the II* Mode.

With NO operator action, choose the conditions below which will be observed 3 minutes following the SEC actuation.

I. Rx power >100%
II. 22 RHR Pp running
III. Steam dump demand signal of 100%
IV. 22 CC Pp running
V. 22 CS Pp running
VI MTLO outlet temp rising
VII. SGBD flows = 0 gpm
VIII. 22 CCHX outlet temp rising

a. I, II, III, VIII

b. I, IV VI, VII

c. II, V, VI, VIII

d. III, IV, V, VII

Answer	b	**Exam Level**	R	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2	**ExamDate:**	12/15/2014

KA:	062000K301	K3.01	**RO Value:**	3.5	**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:
Major system loads

Explanation of Answers: 55.41.b(7,8)Reactor power will rise due the auto start of 22 AFP on SEC mode II*. 22 CC pump is powered off 2B vital and starts on II*. SGBD isolation occurs on auto AFW pp start. 22SW122 does not close on blackout . 2SW26 closes, causing cooling water to MTLO cooler to lower to none.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Safeguards Equipment Cabinet Lesson Plan	NOS05SEC000-06		12,13,17	6
2RP4 Status Panel	218489			26

L.O. Number

4KVAC0E008

Objectives

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

Question Topic RO 58

When in Modes 1-4, which of the following describes a condition which would ALWAYS require entering TSAS 3.8.2.3, 125-Volt DC Distribution-Operating, for less than the three required 125 VDC Bus Trains being OPERABLE?

a. Battery current for any 125 VDC Bus is 0 amps.

b. Placing ANY of the backup 125 VDC battery chargers in service.

c. ANY of the six 125 VDC battery chargers loses its power supply.

d. Discovery during operator rounds that any battery room temperature is 90°F.

Answer b **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 063000K103 K1.03 **RO Value:** 2.9 **SRO Value:** 3.5 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title D.C. Electrical Distribution 063

KA Statement: Knowledge of the physical connections and/or cause-effect relationships between D.C. Electrical Distribution and the following: Battery charger and battery

Explanation of Answers: 55.41.b(8) A is incorrect because during normal operation, the Battery Charger is supplying normal system loads, not the battery, and battery cutrrent is expected to be zero. B is correct as described in LCO 3.8.2.3. C is incorrect because loss of power to a B/U charger does NOT cause entry, and choice says ANY. D is incorrect but plausible based on operators knowing normal room temperature, and not necessarily memorizing battery electrolyte max temp (110 and 120 for 2 different types of batteries.)

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
125 VDC electrical One Line	203007			30

L.O. Number | **Objectives**

DCELECE003

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

Given the following conditions:

- 2B EDG is paralleled to 2B 4KV vital bus for a normal surveillance run IAW S2.OP-ST.DG-0002, 2B Diesel Generator Surveillance Test.
- 2B EDG is operating with 2525 KW load.

Which of the following identifies the consequence, if any, if the operator attempts to place the 2B-DF-GCP-1, 2B Diesel Gen Loading Switch in AUTO (ISOCR)?

The 2B EDG will…

a. be unaffected.

b. speed up and trip on overspeed.

c. slow down and stall when speed is < 800 rpm.

d. trip on either reverse power or output breaker over-current.

Answer d **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 064000A305 A3.05 **RO Value:** 2.8 **SRO Value:** 2.9 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Emergency Diesel Generators 064

KA Statement: Ability to monitor automatic operations of the Emergency Diesel Generators including:
Operation of the governor control of frequency and voltage control in parallel operation

Explanation of Answers: If the Generator Loading switch is in the Auto Mode in parallel operation the generator will attempt to pickup large +/- VAR loading because it is attempting to control grid voltage. There is no SPT to EDG control interlock. The EDG will not speed up.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
EDG Lesson Plan	NOS05EDG000-11		68	11

L.O. Number | Objectives

EDG000E004

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

Unit 2 is releasing 22 CVCS Monitor Tank through the cross-connect line to Unit 1 SW, then to Unit 2 CW system.

If a high radiation condition occurs, how will the release will be terminated?

a. 1WL115 Waste Discharge Hdr x-conn valve will be manually shut.

b. 2WL115 Waste Discharge Hdr x-conn valve will automatically shut.

c. 1WL51 Liquid Radwaste Overboard Stop Valve will automatically shut.

d. 2WL51 Liquid Radwaste Overboard Stop Valve will automatically shut.

Answer d **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 068000A404 A4.04 **RO Value:** 3.8 **SRO Value:** 3.7 **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43

System/Evolution Title Liquid Radwaste System 068

KA Statement: Ability to manually operate and/or monitor in the control room:
Automatic isolation

Explanation of Answers: 55.41.b(11,12) The unit initiating the release will have the flow through its own R18 radiation monitor, and it will auto close on high radiation. Use of the cross connect line does not put flow through the opposite units R18 rad monitor, nor will its isolation valve 1WL51 be opened or in the flowpath. The 2WL115 is a remotely operated valve but does not have an auto close function. The 1WL115 is a normal locked shut manual valve.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Units 1 and 2 Radioactive Liquid Waste	205239-SIMP			2

L.O. Number
WASLIQE005
WASLIQE007

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 61

Given the following conditions:

- Unit 2 is operating at 100% power with an identified small fuel pin leak.
- A 5 gpm tube leak occurs on 22 SG.

Of the following, which is the only radiation monitor that will NOT show a change from this tube leak?

Deleted

a. 2R19B, 22 SG Blowdown.

b. 2R46A- 22 Main Steam Line.

c. 2R15-Condenser Air Ejector.

d. 2R41D-Plant Vent Release Rate.

Answer: b | **Exam Level:** R | **Cognitive Level:** Application | **Facility:** Salem 1 & 2 | **ExamDate:** 12/15/2014

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(4) The R46A-D monitors provide continuous monitoring of high-level, post-accident releases of radioactive noble gases via the atmospheric steam relief and / or safety valves. R19 blowdown monitors and R15 condenser air ejector monitors will respond first, then R41D as it makes its way into plant vent.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Radiation Monitoring Systems	S2.OP-SO.RM-0001			38
Radiation Monitoring Lesson plan	NOS05RMS000-16		19	16

L.O. Number: RMS000E007

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 62

While removing a source, RP personnel drop it on the floor 10 ft. from a process monitor. If this process monitor is reading 2R/hr, what is the approximate dose rate 1 ft from the dropped source?

a. 20 R/hr.

b. 40 R/hr.

c. 200 R/hr.

d. 400 R/hr.

Answer: c **Exam Level:** R **Cognitive Level:** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 073000K502 K5.02 **RO Value:** 2.5 **SRO Value:** 3.1 **Section:** SYS **RO Group:** 1 **SRO Group:** 1

System/Evolution Title: Process Radiation Monitoring System 073

KA Statement: Knowledge of the operational implications of the following concepts as they apply to the Process Radiation Monitoring System: Radiation intensity changes with source distance

Explanation of Answers: 55.41.b(12) The formula for a point source is Dose Rate 1 = Dose Rate 2 times the product of distance 2 squared divided by distance 1 squared. DR1= 2R/h times 100/1 DR1 = 200 R/hr.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Equation Useful for Radiation Safety	http://energy.gov/sites/prod/files/2			

L.O. Number | **Objectives**

RADCONE006

Material Required for Examination

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

Question Source Comments: 07-01 NRC exam (4 NRC exams ago)

Comment

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

Question Topic RO 63

Given the following conditions:

- Unit 2 is operating at 100% power.
- A large earthquake 5 miles from the site causes a loss of off-site power.
- The reactor trips, and a MANUAL Safety Injection is initiated.
- 2B EDG output breaker does NOT close.

With NO other operator action, which choice contains the system lineup for the Service Water System 5 minutes after the SI?

a. 2SW26-TURB AREA SW MOV STOP VLV OPEN, 22SW122-CC HX SW INLET VALVE SHUT, 23SW223-CV FANS SW OUTLET V OPEN.

b. 2SW26 -TURB AREA SW MOV STOP VLV OPEN, 21SW122-CC HX SW INLET VALVE OPEN, 22SW223-CV FANS SW OUTLET V SHUT.

c. 2SW26 -TURB AREA SW MOV STOP VLV SHUT, 22SW122-CC HX SW INLET VALVE SHUT, 25SW223-CV FANS SW OUTLET V OPEN.

d. 2SW26 -TURB AREA SW MOV STOP VLV SHUT, 21SW122-CC HX SW INLET VALVE SHUT, 24SW223-CV FANS SW OUTLET V SHUT.

Answer: a | **Exam Level:** R | **Cognitive Level:** Application | **Facility:** Salem 1 & 2 | **ExamDate:** 12/15/2014

KA: 076000K401 | K4.01 | **RO Value:** 2.5* | **SRO Value:** 2.9* | **Section:** SYS | **RO Group:** 1 | **SRO Group:** 1 | 55.43

System/Evolution Title: Service Water System | 076

KA Statement: Knowledge of Service Water System design feature(s) and or interlock(s) which provide for the following:
Conditions initiating automatic closure of closed cooling water auxiliary building header supply and return valves

Explanation of Answers: 55.41.b(7) Losing power to B 4KV, 460, and 230V bus will result in loss of power to 2SW26. 2SW26 is always open at 100% power, so loss of power to it will prevent it from closing. 21 and 22SW 122s are AOV's whose control circuits will not lose power as long as 115VAC is available. They will CLOSE on a MODE 3. CFCU 223 valves will open on MODE 3. 22 and 24 CFCU's will not start in slow speed due to loss of 460 volt power. D is the only answer that has the correct combination of valves.
Tier/Group 2/1

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Service Water System	NOS05SW0NUC-12			12
Safeguards Equipment Controller	NOS05SEC000-06		13,17	6

L.O. Number: SW0NUCE006

Objectives

Material Required for Examination:

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

Question Source Comments: Q80618, added valve noun names.

Comment

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

Question Topic RO 64

Given the following conditions:

- Both Salem Units are operating at 100% power.
- The operating Station Air Compressor (SAC) trips, and none of the remaining SAC's can be started.
- Unit 2 Emergency Control Air Compressor trips immediately after starting.

Which of the following describes how Rx operation will be affected, if at all, during performance of S1/S2.OP-AB.CA-0001, Loss of Control Air?

a. Neither Rx will be required to be tripped.

b. BOTH Rx's will be tripped based on impending BF19 closures.

c. ONLY Unit 1 Rx will be tripped based on impending BF19 closures.

d. ONLY Unit 2 Rx will be tripped based on impending BF19 closures.

Answer b **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 078000K102 K1.02 **RO Value:** 2.7* **SRO Value:** 2.8 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title Instrument Air System 078

KA Statement: Knowledge of the physical connections and/or cause-effect relationships between Instrument Air System and the following: Service air

Explanation of Answers: 55.41.b(7,10) A CAS action in both units AB.CA procedure states that if BOTH CA header pressure are <80 psig, then trip the Rx. If all station air is lost, then the BF19s (Feed Reg Valves) will go shut when their air runs out. The FRV's are NOT supplied backup air from the ECAC's there is a check valve which prevents control air from going to the BF19s. Unit 1 ECAC feeds the 1B and 2B headers, Unit 2 ECAC feeds the 1A and 2A header. Page 38 of AB.CA-2 has note showing SA only supplies BF19s.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of Control Air	S1/S2.OP-AB.CA-0001			18/20

L.O. Number ABCA01E001

Objectives

Material Required for Examination

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

Question Source Comments Q83875. Changed info in stem to remove CA header pressures. Changed all choices

Comment

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

Question Topic RO 65

Which of the following events will result in ALL containment penetrations not supporting ECCS functions being isolated?

a. Failure of a RCP #1 seal.

b. Main Steamline rupture in containment with failure of MSLI.

c. PZR PORV fails open with its Block Valve unable to be shut.

d. R11A Containment Particulate Monitor fails high with the Unit at 100% power.

Answer		Exam Level		Cognitive Level		Facility:		ExamDate:	
Answer	b	Exam Level	R	Cognitive Level	Application	Facility:	Salem 1 & 2	ExamDate:	12/15/2014

KA:			RO Value:		SRO Value:		Section:		RO Group:		SRO Group:		
KA:	103000K406	K4.06	RO Value:	3.1	SRO Value:	3.7	Section:	SYS	RO Group:	1	SRO Group:	1	55.43

System/Evolution Title Containment System 103

KA Statement: Knowledge of Containment System design feature(s) and or interlock(s) which provide for the following:
Containment isolation system

Explanation of Answers: 55.41.b(9) Phase A containment isolation signal occurs at 4 psig containment pressure, and isolates non-essential containment penetrations. Phase B containment isolation signal isolates all remaining non-ECCS penetrations. A is incorrect because the seal failure leakage would be directed to the seal return system, and its size would not cause a SI. The R11A failing high will cause a Containment Vent Isolation, which is part of the non-essential isolation, but not all of it. The MS rupture with MSLI failure will cause ALL SGs to blow down and cont pressure to rise above 15 psig. The PORV failure will eventually cause the PRT rupture disc to fail but the amount of flow is insufficient to cause containment pressure to rise to 15 psig.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Licensed Operator Fluency List	NOS05FLUNCY-09		13	09

L.O. Number

FLUNCYE002

CONTMTE007

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

During a Unit 2 plant shutdown for refueling, which of the following is the EARLIEST point at which only ONE NCO is required to be in the Unit 2 control room IAW Salem Tech Specs Table 6.2-1, Minimum Shift Crew Composition, Salem Unit 2?

a. Mode 3.

b. Mode 4.

c. Mode 5.

d. Mode 6.

Answer c **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 194001G102 2.1.2 **RO Value:** 4.1 **SRO Value:** 4.4 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 **55.43** ☐

System/Evolution Title GENERI

KA Statement: Knowledge of operator responsibilities during all modes of plant operation.

Explanation of Answers: 55.41.b(10) Salem Tech Specs, Section 6.0, Admin Controls, page 6-5, Table 6.2-1. The requirements are the same regardless of Unit 1 Mode

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem Tech Specs		6.0	6-5	112

L.O. Number TECHSPE017 **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 67

The purpose of the ATWS Mitigation System Actuation Circuitry (AMSAC) is to prevent excessive ______________________ should the reactor trip breakers fail to open on demand.

a. feed flow

b. reactor power

c. RCS pressure

d. SG tube differential pressure

Answer c **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 194001G127 2.1.27 **RO Value:** 3.9 **SRO Value:** 4.0 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title GENERI

KA Statement: Knowledge of system purpose and/or function.

Explanation of Answers: 55.41.b(7) Lesson plan, page 11.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
AMSAC Lesson Plan	NOS05AMSAC0-02		11	2
Salem FSAR		7.8		25

L.O. Number

AMSAC0E001

Objectives

Material Required for Examination

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

Question Source Comments Q41886, replaced implausible distracter with choice b above

Comment

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

Question Topic RO 68

Which of the following events would require the transfer of spent fuel elements to the Spent Fuel Pool to be suspended during MODE 6 refueling operations?

a. 21 Spent Fuel Pool Cooling pump is discovered to have no oil in its bearing oil reservoir with 22 Spent Fuel Pool Cooling Pump in service.

b. An SRO over-seeing Spent Fuel Pool manipulations leaves the area under supervision of a qualified Reactor Engineer.

c. Only one FHB Supply Fan and 2 FHB Exhaust Fans are running.

d. Fuel Handling Area Rad monitor 2R5 fails low.

Answer a **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

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)Distracter D is incorrect because only one of the two FHB area rad monitors are required to be OPERABLE IAW TSAS 3.3.1.1, Table 3.3-6. Distracter C is the complement of fans required to be running to have an OPERABLE FHB ventilation system. Distracter B is incorrect because the requirement for supervision of loads in the Spent Fuel Pool is a SRO OR a Qualified RE. A is correct because in S2.OP-SO.SF-0009, REFUELING OPERATIONS, P&L 3.13 specifically requires suspension of transfer of fuel into the SFP when either 21 or 22 SFP pump becomes INOPERABLE. The loss of all oil in the pump bubbler renders the pump INOPERABLE.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Refueling Operations	S2.OP-SO.SF-0009			18

L.O. Number REFUELE012

Objectives

Material Required for Examination

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

Question Source Comments Q70229

Comment

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

Question Topic RO 69

Of the following, which is the ONLY choice which identifies when a Bezel Red Blocking Tag (RBT) may be used as the sole isolation point?

a. When the tagged position of the component is in the fail-safe position.

b. When the component being tagged is inside the boundary of another tagging request.

c. When the location of the component being tagged ensures it won't be operated locally.

d. When no other means to isolate are practical to establish a Test Boundary, as long as a hazard to personnel or equipment does not exist due to energized sources.

Answer d **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 194001G213 2.2.13 **RO Value:** 4.1 **SRO Value:** 4.3 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title GENERI

KA Statement: Knowledge of tagging and clearance procedures.

Explanation of Answers: 55.41.b(10)The specific conditions under which a bezel RBT may be used as the sole isolation point are listed in procedure A, B, and C are not allowed. C is incorrect because, for example, a component which would be considered inaccessible, i.e.,nn overhead enviornment, while normally inaccessible, could still be accessed.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Safety Tagging Operations	OP-AA-109-115		72	7

L.O. Number | **Objectives**

NA0015E006

Material Required for Examination

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

Question Source Comments Q127101, replaced poor distracter C with new more realistic choice. Correct answer remains the same.

Comment

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

Question Topic RO 70

Given the following conditions:

- Unit 2 has experienced an inadvertent Safety Injection, which resulted in a Reactor Trip.
- Following the trip, the Pressurizer becomes water solid, numerous failures occur, and RCS pressure rises.

Which of the following identifies the LOWEST RCS pressure at which a Tech Spec Safety Limit is exceeded, and the required time allowed for pressure to be reduced below that value IAW Salem Tech Specs?

a. 2440 psig, 5 minutes.

b. 2440 psig, 1 hour.

c. 2735 psig, 5 minutes.

d. 2735 psig, 1 hour.

Answer	c	Exam Level	R	Cognitive Level	Memory	Facility:	Salem 1 & 2	ExamDate:	12/15/2014

KA:	194001G222	2.2.22	RO Value:	4.0	SRO Value:	4.7	Section:	PWG	RO Group:	1	SRO Group:	1	55.43

System/Evolution Title GENERI

KA Statement: Knowledge of limiting conditions for operations and safety limits.

Explanation of Answers: 55.41.b(5,10) Tech Spec 2.1, Safety limits, for Mode 3 (which is the mode in after a Rx trip) 2.1.2, states RCS pressure shall not exceed 2,735 psig, and allows 5 minutes to restore. 2440 psig is top line of figure 2.1-1, 1 hour time frame is if in Modes 1 or 2.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem Tech Specs	Section 2.0		2-3	197

L.O. Number

TECHSPE006

Objectives

Material Required for Examination

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

Question Source Comments Q75215 modified from just the time to what pressure exceeds the safety limit, and how long to restore below.

Comment

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

Question Topic RO 71

Which of the following Unit 2 situations has the LEAST amount of time to respond to the Tech Spec LCO before a power reduction or action to move to lower MODE would be REQUIRED by the associated action of the Tech Spec?

a. MODE 1, 75% power, AFD is -26%.

b. MODE 2, a single Reactor Coolant Pump trips.

c. MODE 2, RCS Tavg lowered to 542.5°F, and has been at that temperature for 15 minutes.

d. MODE 3, the weekly Containment Air Lock surveillance of the 100' elevation airlock is UNSAT.

Answer a **Exam Level** R **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 194001G240 2.2.40 **RO Value:** 3.4 **SRO Value:** 4.7 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title GENERI

KA Statement: Ability to apply Technical Specifications for a system.

Explanation of Answers: 55.41.b(10,5) A is correct because with the parameters given, the AFD is outside the "doghouse" shown in COLR Figure 2. This requires implementation of TSAS 3.2.1, Action 2.a.2, which states that power operation may continue if the indicated AFD is within the limits as specified in the COLR. They are not, and the action further states that if not then reduce thermal power to <50% within the next 30 minutes. B is incorrect because the action time for 3.4.1.1 not having all 4 RCPs running in MODE 2 is one hour. C is incorrect because the setpoint for implementing 2.1.2 (within 5 minutes) is 2735 psig. D is incorrect because 3.6.1.1 Primary Containment Integrity gives an hour to restore, then in this case CSD within the next 30 hours.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem Tech Specs			3/4 2-1	
Salem COLR	COLR Salem 2		12	5

L.O. Number

EXCOREE012

Objectives

Material Required for Examination RO 71 Core Operating Limits Report Unit 2 rev 5

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

Question Source Comments Q118999 replaced RCS pressure distracter (since used on previous question on this exam) with RCS Tavg < 543, which does not meet the min temp for criticality limit of <541, which would require action in 15 minutes

Comment

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

Question Topic RO 72

All of the following are items found on a "Radiation Worker Pocket RWP Data Sheet" as shown in RP-AA-4000, Personnel Conduct in Radiological Controlled Areas EXCEPT:

a. Dress Requirements.

b. Task and Work Order.

c. Year-to-date Accumulated dose.

d. Electronic Dosimeter Dose Rate Alarm setpoint.

Answer c **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 194001G307 2.3.7 **RO Value:** 3.5 **SRO Value:** 3.6 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title GENERI

KA Statement: Ability to comply with radiation work permit requirements during normal or abnormal conditions.

Explanation of Answers: 55.41.b(12) All of the choices are found on RP-AA-4000 except c. Meeting the K/A for this question requires the ability to do something, so without giving a RWP and asking what you would do, it requires knowledge of how the RWP requirements are checked prior to entry into the RCS, that is, in order to fill out the pocket RWP dtat sheet, you have to know what is on it, then get info from RWP to ensure you comply with its requirements.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Personnel Conduct in Radiological Controlled Ar	RP-AA-4000		10	4

L.O. Number

RADCONE005

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 73

Which of the following identifies who must approve issuing a key which will unlock a Very High Radiation Area?

a. Shift Radiation Protection Technician (SRPT) AND Radiation Protection Manager (RPM).

b. RPM AND Plant Manager / Shift Manager.

c. Shift Manager AND Plant Manager.

d. SRPT AND Shift Manager.

Answer b **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 194001G313 2.3.13 **RO Value:** 3.4 **SRO Value:** 3.8 **Section:** PWG **RO Group:** 1 **SRO Group:** 1

System/Evolution Title GENERI

KA Statement:

Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.

Explanation of Answers: 55.41.b(12) Attachment 1, High Radiation Area Key Approval Authority, states that BOTH the RPM and Plant Manager/Shift Manager must approve issuing the key.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
High Radiation Area Key Controls	RP-AA-463			4

L.O. Number RADCONE002

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 74

Given the following:

- Unit 2 has tripped and experienced a loss of all AFW
- The crew has just transitioned from step 20.1 of EOP-TRIP-1 to EOP-FRHS-1, Response to Loss of Secondary Heat Sink.
- The STA has just completed his first pass through the CFST's and reports the following Status Tree conditions:

Shutdown Margin - GREEN
Core Cooling - GREEN
Heat Sink - RED
Thermal Shock - GREEN
Containment Environment - GREEN
Coolant Inventory - GREEN

Assuming conditions do not change, what is the required monitoring frequency for the CFST's IAW OP-AA-101-111-1003, Use of Procedures?

CFST monitoring...

a. must be continuous.

b. is required every 30 minutes.

c. is required every 10-20 minutes.

d. may be suspended with CRS concurrence until FHRS-1 is completed.

Answer a **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 194001G414 2.4.14 **RO Value:** 3.8 **SRO Value:** 4.5 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43

System/Evolution Title GENERI

KA Statement: Knowledge of general guidelines for EOP usage.

Explanation of Answers: 55.41.b(10) Justification: Step 4.2.11, page 22 of OP-AA-101-111-1003, USE OF PROCEDURES, requires continuous monitoring of CFST's when there is any RED or PURPLE path indicated. The STA is not required to be in the control room area at all times. In cases where an event ocurred and the STA was not readily available to monitor CFSTs, it would fall to the Plant Operator (Licensed RO) to initiate and conduct CFSTs. For example, a situation wher a Rx trip occurred, and operators transitioned out of TRIP-1 to TRIP-2 based on no SI would mean CFST's were in effect ~3 minutes after the Rx trip. Then ROs are required to perform CFST's and monitor as required. An example would be a condition which results in no SI but Heat Sink RED path occurs shortly after entering TRIP-2.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
USE OF PROCEDURES	OP-AA-101-111-1003		22-23	4

L.O. Number | **Objectives**

PROCEDE003

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

Question Topic RO 75

A problem has occurred at Salem Unit 1 which results in the declaration of an ALERT.

Which of the following actions is required to be performed by the Secondary Communicator at Salem?

Assume the ALERT is the first emergency classification made.

a. Complete the Operational Status Board (OSB) Form, and update it every 60 minutes.

b. Complete the Major Equipment and Electrical Status (MEES) Form and update it every 15 minutes.

c. The Emergency Response Data System (ERDS) must be activated within 15 minutes of the Alert declaration.

d. The Emergency Response Data System (ERDS) must be activated within 60 minutes of the Alert declaration.

Answer d **Exam Level** R **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

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.b(10) C is incorrect and D is correct because ERDS must be activated within 60 minutes of ALERT declaration. B is incorrect because it is updated after significant plant change or classification change. A is incorrect because the OSB is updated every 15 minutes if requested by the TSC.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Secondary Communicator Log	EP-SA-111-F8	Attachment 8	2	2

L.O. Number | Objectives

GENISSE013

Material Required for Examination

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

Question Source Comments Q60033

Comment

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

Applicant Information

Name:	Region: I
Date: 12/15/2014	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 ___

Question Topic: SRO 1

Given the following conditions:

- Unit 1 is operating at 85% power.
- Control Bank D rods are in auto at 180 steps withdrawn.
- AFD is -1.0 with a Target AFD of -1.5.
- A power reduction from 100% to 85% was completed 24 hours ago when 21 Condensate Pump tripped.

Rods begin stepping out at 8 spm.
Tavg is below program and rising slowly.
PZR spray demand has lowered and is now rising slowly.

Of the following, which correctly identifies what is causing these indications and how should the crew respond?

a. A small steam leak has developed. Enter S1.OP-AB.STM-0001 Excessive Steam Flow, place rods in manual to limit the power rise, initiate actions to locate the leak.

b. A Xenon transient is in occurring. Leave rods in auto to control the oscillation, while manually diluting to dampen oscillation IAW S1.OP-IO.ZZ-0004, Attachment 1, Dampening Xenon Oscillations.

c. The 1CV185, Makeup to Charging Pump Suction Valve has opened. Enter S1.OP-AB.ROD-0003, Continuous Rod Motion, place control rods in manual, and terminate the boration.

d. PRNI 1N44 has failed low. Enter S1.OP-AB.NIS-0001, Nuclear Instrumentation Malfunction, place control rods in manual, and remove the failed channel from service.

Answer	c	**Exam Level**	S	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2
ExamDate:	12/15/2014						

KA:	000001A205	AA2.05	**RO Value:**	4.4	**SRO Value:**	4.6	**Section:**	EPE	**RO Group:**	2	**SRO Group:**	2	55.43 ✓

System/Evolution Title: Continuous Rod Withdrawal | 001

KA Statement: Ability to determine and interpret the following as they apply to Continuous Rod Withdrawal:
Uncontrolled rod withdrawal, from available indications

Explanation of Answers: 55.43.b.(5). The indications given in the stem reflect outward rod movement caused by an unwanted boration of the RCS. The boration would initially cause a lowering of RCS temp/pressure, which would be corrected as rods withdrew, hence the rising demand on PZR spray as pressure rises and Tavg being below program and rising. A steam leak would also cause these indications, but control rods would not be placed in manual. A Xenon transient large enough to cause outward rod movement would be indicated by a large change in AFD from normal, as shown on IOP-4 Attachment 1. With conditions in stem of normal AFD, the xenon oscillation is not occurring, though the action is correct if it were. The CV185 opening would cause a boration of the RCS to occur. The PRNI failing low would cause a short duration rod withdrawal signal (during the time it is failing), but the OverPower Rod Block at 109% on 1/4 PRNI>109% power would prevent rod withdrawal, and the indications in stem also don't support something in which only outward rod motion has occurred.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Continuous Rod Motion	S1.OP-AB.ROD-0003			19
Power Operation	S1.OP-IO.ZZ-0004		27	58

L.O. Number
ABROD3E002

Objectives

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

Question Topic: SRO 2

Given the following conditions:

- Unit 2 was operating at 100% power when a single Control Bank B Group 1 control rod dropped into the core, and OHA E-48, ROD BOTTOM annunciated.
- The reactor did not trip, and operators responded IAW S2.OP-AB.ROD-0002, Dropped Rod.
- Rx Engineering has determined the dropped rod can be recovered.
- The condition which caused the dropped rod has been identified and corrected.
- While preparing to recover the rod, the RO reports that both the IRPI indication and Plant Computer indication for the dropped rod show 15 steps withdrawn.

Which of the following identifies how the CRS should proceed and the bases for that decision?

a. Remain in S2.OP-AB.ROD-0002, Dropped Rod, because the rod meets the definition of fully inserted.

b. Remain in S2.OP-AB.ROD-0002, Dropped Rod, because the rod recovery steps specifically address whether the affected rod is partially or fully dropped.

c. Enter S2.OP-AB.ROD-0001, Immovable/Misaligned Control Rod, because the affected control rod is known to be untrippable since it indicates not fully inserted.

d. Enter S2.OP-AB.ROD-0001, Immovable/Misaligned Control Rod, because with the affected control rod not fully inserted, the steps for Group Step Counter manipulations for maintaining proper rod group stepping is significantly different for a partially inserted rod vs a fully inserted rod.

Answer: d | **Exam Level:** S | **Cognitive Level:** Application | **Facility:** Salem 1 & 2 | **ExamDate:** 12/15/2014

KA: 000003A201 | AA2.01 | **RO Value:** 3.7 | **SRO Value:** 3.9 | **Section:** EPE | **RO Group:** 2 | **SRO Group:** 2 | ☑

System/Evolution Title: Dropped Control Rod | 003

KA Statement: Ability to determine and interpret the following as they apply to Dropped Control Rod:
Rod position indication to actual rod position

Explanation of Answers: 55.43.b(5) UNIT TWO, the control rods can be considered fully inserted if they indicate 10 steps withdrawn IAW the evaluation results published in Nuclear Fuels Engineering Letter,NFS 99-098, April 13, 1999, as stated in OP-AA-101-111-1003. At step 3.23, AB.ROD-2 asks if the affected rod is fully inserted. As per above, neither rod position indication available indicates 10 steps or less. The procedure then directs GO TO AB.ROD-1. The Bases Document states that...."the procedure for rod realignment differs from this procedure to recover a rod, in that the necessary steps for Group Step Counter manipulations for maintaining proper rod group stepping logic is significantly different. The Rod Bottom E-48 alarm comes in at 20 steps withdrawn with Group Demand >35 steps.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Dropped Rod	S2.OP-AB.ROD-0002			10
Immovable/Misaligned Control Rod	S2.OP-AB.ROD-0001			8
Use of Procedures	OP-AA-101-111-1003			4

LO 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 3

Given the following conditions:

- Unit 2 is performing a normal shutdown to enter a refueling outage.
- Power was reduced from 80% to 20% and the Rx was tripped at 20% power as planned to enter the outage.

All of the following will be directly informed over the next 24 hours that Salem Unit 2 is now off-line EXCEPT:

a. Nuclear Regulatory Commission (NRC).

b. PSEG Energy Resources & Trade (ER&T).

c. Electric System Operations Center (ESOC).

d. North American Electric Reliability Corporation. (NERC).

Answer d **Exam Level** S **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000007G430 2.4.30 **RO Value:** 2.7 **SRO Value:** 4.1 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title Reactor Trip 007

KA Statement:

Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.

Explanation of Answers:

55.43.b(1) Following the planned Rx trip to enter the outage, the NRC will be notified via the morning phone call if not sooner. PSEG ERT will be informed, as PSEG Nuclear informs them of plant status 2 times per day. OP-AA-108-107-1001, step 2.3.2.2. ESOC will be informed OP-AA-108-107-1001 Step 2.2.1. NERC is not informed, but is plausible based on Salem ECG, RAL 11.11, NERC Reporting. Question is not considered LOD 1 based on Annual Integrity Training which company employees are required to perform each year which specifically points out what PSEG Power employees can and cannot tell other companies under the PSEG umbrella.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
OP-AA-108-107-1001	ELECTRIC SYSTEM EMERGENC	Exhibit 3	18,20	3
Salem ECG				

L.O. Number ELO_11.b

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 4

Which of the following sets of conditions would result in the highest (most severe) ECG classification?

Use only the conditions currently present in each choice.

a. A leak in the SFP liner which results in lowering SFP level with all available SFP makeup in service.

b. The Rx fails to trip when demanded, does not trip from the control room, and is tripped locally by opening the RTBs.

c. An earthquake activates the Hope Creek Seismic Switch and is felt in the Control Room, and causes a trip of 2 of the 3 operating SW pumps.

d. The Main Turbine has oversped during a functional test causing turbine blade disintegration, with reports of visible impact damage to the containment outside wall.

Answer b **Exam Level** S **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000029G441 2.4.41 **RO Value:** 2.9 **SRO Value:** 4.6 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43 ✔

System/Evolution Title Anticipated Transient Without Scram 029

KA Statement:

Knowledge of the emergency action level thresholds and classifications.

Explanation of Answers:

55.43.b(5) Lowering SFP level with all available makeup will result in an ALERT under RA2.2, which can only be escalated by means of a different RAL, probably radiation levels rising. RA2.2 says "lowering SFP level that will result in irradiated fuel becoming uncovered." An ATWT in which all attempts to trip the Rx from the control room fail is a SAE (SS3.1). An ATWT in which the Rx can be tripped from the control room is an ALERT. (SA3.1) An earthquake as described above is an ALERT (HA1.1) The turbine becoming a missile and causing visible damage to containment is ALERT (HA1.2). This happened at Salem, and an ALERT was declared, even though at the time it was only a UE. Salem operators should be familiar with this.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem ECG	EP-SA-111-115		1	0
Salem ECG	EP-SA-111-104		2	0
Salem ECG	EP-SA-111-107		1,3	0

L.O. Number

FRSM00E009

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 2 is in Mode 6, with refueling actively in progress.
- Emergency core position P-10 is full.
- The fuel transfer cart is at the Spent Fuel Pool.
- The manipulator crane has an irradiated fuel assembly in the mast, and is near the lower internals stand, moving toward the core.
- Gas bubbles are observed in the vicinity of the fuel assembly last placed in the core, which had experienced difficulties getting placed into the vessel.
- The refueling SRO orders all non-essential personnel to evacuate containment.

Which of the following describes how the CRS should respond IAW S2.OP-AB.FUEL-0001, Fuel Handling Incident?

Place the fuel assembly in the mast into...

a. the first available position, send the Fuel Transfer Cart to containment, shut the fuel transfer canal gate valve.

b. the first available position, shut the fuel transfer canal gate valve, start at least one Iodine Removal Unit.

c. its designated core position, shut the fuel transfer canal gate valve, start at least one Iodine Removal Unit.

d. its designated core position, send the Fuel Transfer Cart to containment, shut the fuel transfer canal gate valve.

Answer d **Exam Level** S **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000036G411 2.4.11 **RO Value:** 4.0 **SRO Value:** 4.2 **Section:** EPE **RO Group:** 2 **SRO Group:** 2 55.43 ✔

System/Evolution Title Fuel Handling Incidents 036

KA Statement: Knowledge of abnormal condition procedures.

Explanation of Answers: 55.43.b(7) With a fuel assembly in the mast tube, it is placed into its position in the core. WHEN AVAILABLE, it could be placed in emergency position P-10, but the stem states that position P-10 is not available.(because it may have already been filled during reload) Fuel loading considerations preclude putting it willy-nilly into any available position. The Fuel transfer cart must be sent to containment before the gate valve is shut. The IRU is not started unless specifically requested by Rad Pro when iodine is present in containment, an no indication of that condition is presented in stem. Trying to ask what procedure would make 2 distracters implausible, since "Fuel Handling Incident" is the title of the procedure, and a Fuel Handling Incident is what has occurred, with very little leeway to think it would be anything else.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Fuel Handling Incident	S2.OP-AB.FUEL-0001			5

L.O. Number
ABFUEL01E002

Objectives

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

Question Topic SRO 6

Given the following conditions:

- Unit 1 is operating at 100% power.
- A breaker fault occurs on the 2-6 500 KV breaker.
- The 2-6 500 KV breaker does NOT trip, but should have.
- 15 seconds after the breaker failure, Unit 1 has NOT tripped.

Which of the following identifies how the Unit 1 CRS should proceed?

C or D. accepted as a correct response

a. Direct the RO to manually trip the reactor and go to EOP-TRIP-1, Reactor Trip or Safety Injection. Concurrently with EOP implementation, initiate S1.OP-AB.LOOP-0001, Loss of Offsite Power, and perform Attachment 2, Loss of Group Buses, Part A, Loss of 1E and 1H 4KV Group Buses.

b. Direct the RO to manually trip the reactor and go to EOP-TRIP-1. Concurrently with EOP implementation, initiate S1.OP-AB.LOOP-0001, and perform Attachment 2, Loss of Group Buses, Part B, Loss of 1F and 1G 4KV Group Buses.

c. Enter S1.OP-AB.LOOP-0003, Partial Loss of Off-Site Power, then enter S1.OP-AB.CW-0001 Circulating Water System Malfunction, and perform a power reduction to 83% power or less.

d. Enter S1.OP-AB.LOOP-0003, then enter S1.OP-AB.CW-0001 and open the Hood Spray Bypass valves 11-13MC62s.

~~Answer: d~~ ~~Exam Level: S~~ ~~Cognitive Level: Application~~ **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000056G107 2.1.7 **RO Value:** 4.4 **SRO Value:** 4.7 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43 ✔

System/Evolution Title Loss of Off-Site Power 056

KA Statement:

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

Explanation of Answers:

The breaker failure of 2-6 will cause the 5-6, 2-8, and 2-10 500 KV breakers to open, causing a loss of 500 KV bus section 2. The failure will not cause a loss of RCPs since the Group Buses will be powered from generator output through the Aux Power Transformer vs station power transformer, so there will not be a demand for a rx trip. There will be a loss of 3 circulators when 13KV ring bus south Section A loses power, but there will be at least one circulator running on each waterbox so the power reduction is not required to be performed. The hood spray bypass valves are opened on affected condensers, which would be all of them. AB-LOOP-1 is for a total loss of offsite power and will not be entered.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Partial Loss of Offsite Power	S1.OP-AB.LOOP-0003			5
Loss of Offsite Power	S1.OP-AB.LOOP-0001			29
S1.OP-AB.CW-0001	Circulating Water System Malfunct			37

L.O. Number

ABLOP3E002

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

Unit 1 is releasing 11 Gas Decay Tank (GDT) IAW S1.OP-SO.WG-0008, Discharge of 11 Gas Decay Tank to Plant Vent.

Which of the following identifies a condition which would require termination of the release, and why?

a. The Auxiliary Building pressure turns positive. This could result in an unmonitored release of radiation from the Aux Building atmosphere.

b. A transfer of waste gas from 13 GDT to 14 GDT is performed. This would result in the actual release rate exceeding the 32 scfm maximum allowed.

c. A valve lineup to place 12 GDT in holdup is performed. This would result in an unmonitored release of radiation from the tank being put in holdup into the normal tank release path.

d. The pressure downstream of 1WG38, Gas Decay Tank Vent Pressure Control Valve, is 7.5 psig once the gas release has stabilized following the initial start. This could result in the actual release rate exceeding the 32 scfm maximum allowed.

Answer: a | **Exam Level:** S | **Cognitive Level:** Memory | **Facility:** Salem 1 & 2 | **ExamDate:** 12/15/2014

KA: 000060G132 | 2.1.32 | **RO Value:** 3.8 | **SRO Value:** 4.0 | **Section:** EPE | **RO Group:** 2 | **SRO Group:** 2 | 55.43 ☑

System/Evolution Title: Accidental Gaseous Radwaste Release | 060

KA Statement: Ability to explain and apply all system limits and precautions.

Explanation of Answers: 55.43.b.(4) A is correct per P&L 3.9, and TSAS 3.7.7 action e, which requires negative aux building pressure or suspend all operations involving radioactive gaseous release via the aux building immediately. The procedure further identifies that "radioactive gas releases" is defined as Waste Gas Decay Tank releases. B is incorrect because the reason is wrong. Transfer of Waste Gas between tanks would result in an unapproved release, as the transfer path puts gas in the release header. The WG8 would react to maintain pressure <8.0 psig which is what maintains the release rate <32 scfm. C is incorrect because aligning a tank to holdup isolates the tank from input and output, and would not put any of its contents into the release path. D is incorrect because the downstream pressure <8.0 psig maintains release rate < max allowed of 32 scfm.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Discharge of 11 Gas Decay Tank to Plant Vent.	S1.OP-SO.WG-0008		3	32

L.O. Number: WASGASE011

Objectives

Material Required for Examination:

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

Question Source Comments: Q80529- original question contained list of evolutions and asked which of them could be performed during release.

Comment:

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

Question Topic SRO 8

Given the following conditions:

- Unit 2 is operating at 100% power.
- Operators receive the following alarms:
- OHA B-13 21 SW HDR PRESS LO
- OHA B-14 22 SW HDR PRESS LO
- SW header pressure indication in the control room reads 98 psig for both headers.

Deleted

No other OHA's have annunciated.

Which of the following describes both the possible location of a Service Water System leak which would cause these indication, and how the CRS should respond?

Assume each of the leaks is large enough to cause the indications present in the control room.

a. 4 Service Water Bay. Split SW Bays by closing 21SW17 and 22SW17 IAW S2.OP-AB.SW-0003, Service Water Bay Leak.

b. Nuclear header x-over line between the 21SW23 and the 22SW23. Shut EITHER SW23 using Attachment 6, Service Water Valve Malfunctions, of S2.OP-AB.SW-0001.

c. 2B EDG Lube Oil Cooler. Isolate BOTH SW supply header isolation valves and BOTH return header isolation valves to 2B EDG IAW S2.OP-AB.SW-0001 Loss of Service Water Header Pressure.

d. 21 CCW HX end bell. Ensure 22 CC HX controller set lower than 21 CCW HX, and isolate 21 Service Water Header using Attachment 4, Service Water Header Isolation, of S2.OP-AB.SW-0001.

Answer c **Exam Level** S **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 000062A202 AA2.02 **RO Value:** 2.9 **SRO Value:** 3.6 **Section:** EPE **RO Group:** 1 **SRO Group:** 1 55.43 ✔

System/Evolution Title Loss of Nuclear Service Water 062

KA Statement: Ability to determine and interpret the following as they apply to Loss of Nuclear Service Water:
The cause of possible SWS loss

Explanation of Answers: 55.43.b(5) The TGA SW header pressure is maintained at 80 psig by 2ST1. The low pressure alarm (which is not present) is 70 psig. In order for a leak to be large enough to cause both SW Nuc headers to lower to 99.5%, the TGA low pressure alarm would be in also. A leak in the Service Water Bay would also cause the bay sump high level alarm, as well as the TGA lo pressure alarm. The cross over line is normally isolated by the shut SW23's. 21 ccw hx CAN BE MANUALLY ISOLATED WITH MANUAL VALVES, AND DOES NOT REQUIRE ISOLATING THE WHOLE NUC HEADER. The EDG's each have 2 supply isolation valves one form each header, and 2 return header isolation valves, going to 11 or 12 discharge path.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of Service Water Header Pressure	S2.OP-AB.SW-0001			16
Service Water Simplified.	205342-SIMP Sheets 1 and 2			

L.O. Number

ABSW01E005

Objectives

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

Question Topic: SRO 9

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-5, Loss of Emergency Coolant Recirculation. Check for subsequent failure and conserve makeup inventory.

b. EOP-LOCA-1, Loss of Reactor Coolant. Check for subsequent failure and conserve makeup inventory.

c. EOP-LOCA-1. Add makeup to RWST, initiate a cooldown, and minimize injection flow.

d. EOP-LOCA-5. Add makeup to RWST, initiate a cooldown, and minimize injection flow.

Answer: d **Exam Level:** S **Cognitive Level:** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 00WE04A202 EA2.2 **RO Value:** 3.6 **SRO Value:** 4.2 **Section:** EPE **RO Group:** 1 **SRO Group:** 1

System/Evolution Title: LOCA Outside Containment E04

KA Statement: Ability to determine and interpret the following as they apply to LOCA Outside Containment:
Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Explanation of Answers: 55.43.b(5) D 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			5
LOCA Outside Containment	2-EOP-LOCA-6			21

L.O. Number: LOCA06E008

Objectives

Material Required for Examination:

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

Question Source Comments: Q60930. Did not consider it significantly modified because correct answer stayed correct, just made into a 2 and 2. changed order of items in c,d to match order in procedure.

Comment:

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

Question Topic: SRO 10

Given the following conditions:

- Unit 2 has experienced a MSLB at the Main Turbine inlet steam piping.
- All attempts at Main Steamline Isolation have failed.
- Operators have just transitioned out of EOP-TRIP-1.
- 22 and 23 AFW pump are in service.
- RCS cooldown rate is 105°/hr.
- RCS pressure is 1300 psig and dropping.
- Charging system SI flowmeter indicates 290 gpm.
- The RCS cooldown is NOT being controlled.

Which choice identifies a subsequent action that must be performed, and why?

a. Isolate AFW in LOSC-2, Multiple Steam Generator Depressurization, to any SG with NR level >9% to minimize cooldown while still ensuring the SG tubes remain wet.

b. Reset SGBD Sample Isolation in LOSC-2, Multiple Steam Generator Depressurization, to allow sampling of SGs and transition to SGTR series if required.

c. Trip all RCP's in LOSC-1, Loss of Secondary Coolant, to prevent seal package damage if RCS pressure continues to lower.

d. Trip 23 AFW pump in LOSC-1, Loss of Secondary Coolant, as part of isolating all steam flow paths from faulted SGs.

Answer: b **Exam Level:** S **Cognitive Level:** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 00WE12A201 EA2.1 **RO Value:** 3.2 **SRO Value:** 4.0 **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: Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Explanation of Answers: 55.43.(b)5 A is incorrect because LOSC-2 step 5 states to maintain no less than 1.0E4 lbm/hr to each SG. The CAS 3 which talks about SGs with NR levels >9% does not apply to a CD > 100°/hr. That CAS would allow isolating AFW to any SG is the CD rate was less than 100°F/hr, and all SG NR levels were >33%. B is correct because it is performed at step 10, and if a SGTR were identified here, the CRS would transition to SGTR-1 and not stay in LOSC-2. C is incorrect because RCPs are tripped less than 1350 psig ONLY when a CD is NOT in progress.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of Secondary Coolant	2-EOP-LOSC-1			23
Multiple Steam Generator Depressurization	2-EOP-LOSC-2			26

LO Number: LOSC02E002 | Objectives

Material Required for Examination:

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

Question Source Comments: Q59885 used stem. Changed to add which procedure used. Replaced 2 distracters. Modified previous correct answer to make wrong. Made one of the new choices the correct answer.

Comment:

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

Question Topic SRO 11

Given the following conditions:

- Operators are performing S2.OP-IO.ZZ-0002, Cold Shutdown to Hot Standby in preparation for returning the unit to service following a forced outage.
- With the unit otherwise ready to enter Mode 4, the STA reports that a RCS Water Inventory Balance has not been performed with the last 72 hours, and is required in Modes 1-4 IAW Tech Spec Surveillance 4.4.7.2.1.d.

Which of the following identifies how the CRS should proceed?

a. Continue to Mode 4 without performing the RCS Water Inventory Balance. The provisions of Tech Spec 4.0.4 are not applicable.

b. Continue to Mode 4 without performing the RCS Water Inventory Balance. Apply Tech Spec 4.0.3 and ensure the RCS leak rate is performed within the next 24 hours.

c. Direct the RO to perform S2.OP-ST.RC-0008, Reactor Coolant System Water Inventory Balance, for the normal 2 hour duration and obtain acceptable results prior to proceeding to Mode 4.

d. Direct the RO to perform S2.OP-ST.RC-0008, Reactor Coolant System Water Inventory Balance, for an abbreviated duration as detemined by the SM/CRS and obtain acceptable results prior to proceeding to Mode 4.

Answer a **Exam Level** S **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 002000G120 2.1.20 **RO Value:** 4.6 **SRO Value:** 4.6 **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43 ☑

System/Evolution Title Reactor Coolant System 002

KA Statement:

Ability to interpret and execute procedure steps.

Explanation of Answers:

55.43.b(2) IOP-2 P&L 3.8 states...."Performance of S2.OP-ST.RC-0008(Q), RCS Water Inventory Balance, required by T/S 4.4.7.2.1.d, is NOT required to enter Mode 4. The surveillance is NOT required to be completed until 12 hours after establishment of steady state operation." Additionally, TS Surveillance 4.4.7.2.1.d specifically says the provisions of Tech Spec 4.0.4 are not applicable for entry into MODE 4. B is incorrect because 4.0.3 is applied for missed or overdue surveillances, which is not the case here. The C and D distracters are incorrect because the RCS leakrate won't be determined until after 12 hours of steady state operation, but they are plausible because of the following procedural direction: (P&L 3.15) A routine RCS Water Inventory Balance that is performed to satisfy T/S Surveillance Requirement 4.4.7.2.1.d should normally be performed over a two hour duration. (P&L 3.16) IF an RCS Water Inventory Balance is to be performed for reasons other than to satisfy the requirements of T/S Surveillance Requirement 4.4.7.2.1.d, THEN the time interval of the RCS Water Inventory Balance may be determined at the discretion of the SM/CRS.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Cold Shutdown to Hot Standby	S2.OP-IO.ZZ-0002		3	59
Reactor Coolant System Water Inventory Balan	S2.OP-ST.RC-0008		7	37

L.O. Number
RCS000E008
RCS000E011
RCS000E001

Objectives

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

Question Topic: SRO 12

Given the following conditions:

- Unit 1 is in MODE 5 during a plant startup.
- 11 RHR loop is in service.
- 12 RHR loop is aligned for ECCS.
- 13 RCP is in service.
- 11 charging pump is in service.
- RCS Tavg is 175°.
- RCS pressure is 310 psig.
- PZR level is 60%.

When placing the second RCP in service, RCS pressure momentarily rises to 390 psig.

Which of the following describes the RHR system response, and how the CRS should proceed?

a. The 1RH3, RHR SAF RLF VLV TO CONTAINMENT SUMP opens. Enter S2.OP-AB.PZR-0001, PZR Pressure Malfunction, and ensure that any PZR PORV that opened in response to the RCS pressure has shut.

b. The 1RH2, RHR COMMON SUCT MOV automatically shuts. Enter S2.OP-AB.PZR-0001 and ensure that any PZR PORV that opened in response to the RCS pressure has shut.

c. The 1RH3 RHR SAF RLF VLV TO CONTAINMENT SUMP opens. Enter S2.OP-AB.LOCA-0001, Shutdown LOCA, and isolate letdown to minimize RCS inventory loss.

d. The 1RH2 RHR COMMON SUCT MOV automatically shuts. Enter S2.OP-AB.LOCA-0001 and isolate letdown to minimize RCS inventory loss.

Answer: a | **Exam Level:** S | **Cognitive Level:** Application | **Facility:** Salem 1 & 2 | **ExamDate:** 12/15/2014

KA: 005000A202 | A2.02 | **RO Value:** 3.5 | **SRO Value:** 3.7 | **Section:** SYS | **RO Group:** 1 | **SRO Group:** 1 | 55.43 ☑

System/Evolution Title: Residual Heat Removal System | 005

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

Pressure transient protection during cold shutdown

Explanation of Answers: 55.43(5) With RHR in service both the PZR PORVs and the 1RH3 will open at their 375 psig setpoints. The RH3 opening will not be apparent to the control room, but the PORV opening will. AB.PZR, Attachment 3, will ensure the PORV has shut. The 1RH2 has an OPENING interlock that requires RCS pressure to be <375 psig, then a keyswitch opens the valve. There is no automatic closure associated with this valve on high pressure. AB.LOCA is used in MODE 3 and MODE 4 with the accumulators isolated, and with the unit in MODE 5 as described in the stem, would not be entered.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
PZR Pressure Malfunction	S1.OP-AB.PZR-0001			16
Shutdown LOCA	S1.OP-AB.LOCA-0001			6
Residual Heat Removal Simplified	205232-SIMP			02

LO Number
RHR000E004

Objectives

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 performing a cooldown from NOP/NOT IAW EOP-TRIP-4 Natural Circulation Cooldown.
- The RCS has been depressurized to 1245 psig.
- PZR level is 16% and stable.
- RCS cooldown rate is 22°F/hr.
- CETs are 445°F.
- 21 and 22 CRDM vent fans are running.

Which of the following describes how the CRS should proceed, and why?

a. Stop cooldown and depressurization and perform an 8 hour soak to prevent upper head void formation while performing additional shutdown activities as directed in S2.OP-IO.ZZ-0006, Hot Standby to Cold Shutdown.

b. Continue depressurization in TRIP-4 until <1000 psig, then close 21-24 SJ54, Accumulator Isolation Valves, to prevent injecting accumulator contents into the RCS.

c. Initiate SI and go to EOP-TRIP-1, Reactor Trip or Safety Injection, due to the loss of subcooling.

d. Start ECCS pumps as necessary to raise PZR level and go to TRIP-1.

Answer b **Exam Level** S **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 006000G406 2.4.6 **RO Value:** 3.7 **SRO Value:** 4.7 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43 ✔

System/Evolution Title Emergency Core Cooling System 006

KA Statement: Knowledge of EOP mitigation strategies.

Explanation of Answers: 55.43.b(5) A is incorrect because the 8 hour soak is only required if RCS pressure is < 1250 and < 2 CRDM vent fans are running. IOP-6 actions have already been directed to be performed earlier in the procedure so could be continued here. B is correct because the soak is not required. Continue RCS depress until < 1,000 psig and isolate ECCS Accumulators per step 25, and correct reason. C is incorrect because the CAS action in TRIP-4 to initiate SI is if subcooling cannot be maintained >0, and using CFST Table A its 107°F. D is incorrect because PZR level is being maintained >11% per CAS action, and action would be to initiate SI, not just start ECCS pumps, since full SI actuation would be wanted vs just starting ECCS pumps.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Natural Circulation Cooldown	2-EOP-TRIP-4			23

L.O. Number TRP004E001

Objectives

Material Required for Examination SRO 12 CFST Table A Subcooling Table Normal Containment

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

Question Source Comments Q50353. Modified to include what procedure to use in all choices. Replaced 2 distracters with the ECCS and SI distracters.

Comment

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

Question Topic SRO 14

Given the following conditions:

- A LOCA has occurred on Unit 2.
- Operators are performing 2-EOP-LOCA-3, Transfer to Cold Leg Recirculation with all equipment and off site power available.
- The crew has isolated the charging pump and SI pump suction from the RWST.
- RWST level is 3.5' and lowering slowly when debris in containment clogs the containment sump, causing all pumps taking suction from it to begin cavitating severely.

What affect will this have on Containment Spray flow, and how will the CRS proceed?

Containment Spray flow will....

a. remain above 0 gpm due to one CS pump still taking suction from the RWST. GO TO EOP-LOCA-5, Loss of Emergency Coolant Recirculation, add makeup to the RWST, stop any safeguards pump which has lost its suction source.

b. remain above 0 gpm due to one CS pump still taking suction from the RWST. GO TO EOP-APPX-7, Containment Sump Blockage Guideline, and stop all operating Charging, SI, and RHR pumps.

c. lower to 0 gpm due to CS flow being supplied solely from RHR pump discharge. GO TO EOP-LOCA-5 and add makeup to the RWST, stop any safeguards pump which has lost its suction source.

d. lower to 0 gpm due to CS flow being supplied solely from RHR pump discharge. GO TO EOP-APPX-7 and stop all operating Charging, SI, RHR, and CS pumps.

Answer: b **Exam Level:** S **Cognitive Level:** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 026000A207 A2.07 **RO Value:** 3.6 **SRO Value:** 3.9 **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:

Loss of containment spray pump suction when in recirculation mode, possibly caused by clogged sump screen, pump inlet high temperature exceeded cavitation, voiding), or sump level below cutoff (interlock) limit

Explanation of Answers: 55.43.b(5) The correct transition from LOCA-3 when containment sump blockage is causing a loss of ECCS flow is to APPX-7. There is a CAS item in LOCA-3 to go to LOCA-5 if emergency recirculation cannot be established or maintained ONLY if the reason is OTHER than containment sump blockage. With RWST level above 1.2' as stated in stem, 22 CS pump will have been stopped at step 8. the stem states that charging and SI pump suction has been isolated, which occurs at step 14. The crew will be waiting at step 21 until RWST level lowers to 1.2' at which time they would stop the remaining CS pump. (21)

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Containment Sump Blockage Guideline	2-EOP-APPX-7			0
Transfer to Cold Leg Recirculation	2-EOP-LOCA-3			29

L.O. Number

CSPRAYE012

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 7 days into a refueling outage on June 15th.
- The core is partially offloaded with 7 bundles remaining in the Rx.
- Spent Fuel Pool (SFP) temperature is 124°F.
- SFP level is 5" above normal.
- 21 SFP trips on motor OL, and can NOT be restarted.
- 22 SFP pump is placed in service with SFP temperature at 138°F.

Which of the following contains both an expected plant response to this failure, and a condition which must be met prior to transferring the remaining fuel bundles into the spent fuel pool?

The SFP…

a. High level OHA annunciates. 21 SFP cooling pump must be restore to operable status.

b. High Level OHA annunciates. The 22 SFP must have normal and emergency power supply availability verified.

c. Demineralizer automatically bypassed flow when 22 SFP was placed in service and demin inlet temp reached 136°F. 21 SFP cooling pump must be restore to operable status.

d. Demineralizer automatically bypassed flow when 22 SFP was placed in service and demin inlet temp reached 136°F. The 22 SFP must have normal and emergency power supply availability verified.

Answer a **Exam Level** S **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 033000A202 A2.02 **RO Value:** 2.7 **SRO Value:** 3.0 **Section:** SYS **RO Group:** 2 **SRO Group:** 2 55.43 ✔

System/Evolution Title Spent Fuel Pool Cooling System 033

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

Loss of SFPCS

Explanation of Answers: 55.43(5) IOP-10, Spent Fuel Pool Manipulations, states (P&L 3.4) that transfer of spent fuel into the SFP is to be suspended until BOTH SFP pumps are OPERABLE. If in service, the demin was removed from service IAW CAS 2.0. OHA C-27 SFP Lvl hi will occur at 6" above normal, and would be expected to occur with a pool heatup of 14 degrees, as noted in CAUTION in AB.SF on top of page 2. The SFP demin does not auto bypass, but is plausible because the CVCS demin does, at 136°F. The SFP demin would have been manually removed from service IAW AB.SF CAS item 2.0 when actual or projected SFP temp is 130°F. This question satifies the requirement for SRO only based on required knowledge of the section of the procedure being used to allow fuel handling to recommence. This is the first bullet of the last block of the Clarification Guidance for SRO-Only Questions.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Spent Fuel Pool Manipulations	S2.OP-IO.ZZ-0010			32
Loss of Spent Fuel Pool Cooling	S2.OP-AB.SF-0001			11
Overhead Window C	S2.OP-AR.ZZ-0003		32	17

L.O. Number

SFP000E013

Objectives

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

Question Topic SRO 16

Given the following conditions:

- Unit 2 is performing a Rx startup.
- Rx power is currently stable at 6%.
- 22 SGFP is supplying Main Feed to all S/G's.
- Steam dumps are controlling Tave in MS Pressure control - Manual set at 980 psig.
- All MS10's are closed in AUTO at 1015 psig.
- 23TB40 fails 50% open.
- Auctioneered high RCS Tavg is 540.9°F and slowly lowering.
- PZR pressure is 1984 psig and slowly lowering.

Which of the following describes how the CRS should apply Tech Specs, and why?

Assume no auto Rx trip setpoints are reached.

a. Restore RCS Tave to at least 541°F within 15 minutes, or Rx trip breakers must be opened within the next 15 minutes because adequate SDM cannot be assured.

b. Restore RCS Tave to at least 541°F within 15 minutes, or Rx trip breakers must be opened within the next 15 minutes because protective instrumentation is not within its normal operating range.

c. Restore PZR pressure to at least 1985 psig within 1 hour, or lower Rx thermal power to <5% rated thermal power in the next 4 hours because initial FSAR analysis for minimum DNBR is not met.

d. Restore PZR pressure to at least 1985 psig within 1 hour, or lower Rx thermal power to <5% rated thermal power in the next 4 hours because the margin to trip for DNB related protective actions is below the minimum assumed value.

Answer	b	**Exam Level**	S	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2	**ExamDate:**	12/15/2014

KA:	041000A202	A2.02	**RO Value:**	3.6	**SRO Value:**	3.9	**Section:**	SYS	**RO Group:**	2	**SRO Group:**	2	55.43 ✔

System/Evolution Title Steam Dump System and Turbine Bypass Control 041

KA Statement: Ability to (a) predict the impacts of the following on the Steam Dump System and Turbine Bypass Control and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:

Steam valve stuck open

Explanation of Answers: 55.43.b(2) RCS Tavg is required to be maintained at 541°F or greater in Modes 1 and 2 IAW TSAS 3.1.1.4. If not restored within 15 minutes, the plant must be in Hot Standby in the next 15 minutes, which would be accomplished by opening the RTB's. The bases for this temp is to ensure 5 different things, one of which is that protective instrumentation within its normal range. A is incorrect because SDM margin is not one of the 5 listed bases for minimum temp for criticality. C and D are both incorrect because of the time requirement, which is 2 hours to reach HSB, additionally D is further incorrect because its bases is incorrect.

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

L.O. Number
RCS000E009

Objectives

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 operating at 100% power EOL.
- A failed Current Transformer in the Main Generator metering circuit causes a Main Generator trip, causing a Main Turbine trip, resulting in an automatic Rx trip.
- The Feedwater Interlock (FWI) fails to actuate when expected, and has not actuated.

Which of the following identifies a consequence of the FWI failure, and how will it be addressed?

a. Excessive cooldown of the SGs. Initiate SI in TRIP-1 based on degrading board parameters.

b. Cavitation of the Condensate Pumps. Initiate SI in TRIP-1 based on degrading board parameters.

c. Excessive cooldown of the SGs. Trip both SGFP's in TRIP-2 after verifying adequate AFW flow.

d. Cavitation of the Condensate Pumps. Trip both SGFP's in TRIP-2 after verifying adequate AFW flow.

Answer	Exam Level	Cognitive Level	Facility	ExamDate
c	S	Application	Salem 1 & 2	12/15/2014

KA		RO Value	SRO Value	Section	RO Group	SRO Group	
059000A203	A2.03	2.7	3.1*	SYS	1	1	☑

System/Evolution Title: Main Feedwater System | 059

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

Overfeeding event

Explanation of Answers: 55.43.b(5) The FWI is a 2/2 interlock using RCS Auct Hi Tave <554°F and the Rx Trip Breakers open (P-4) which shuts all BF19's and BF40's, isolating Main Feed flow to the SGs. With SGFPs still running, they will continue to supply Main Feed to SG's since SG NR level will be low following the Rx trip from 100% power. As excessive feedwater flow continues, SG pressure will lower causing Main Steam dumps to shut, so there will be no steam flow from SG's (into condenser) which, when coupled with excessive flow out of condenser, could cause the Cond Pump cavitation to be plausible. The magnitude of the overfeeding event on RCS pressure would be steady but slow, so SI initiation would not be warranted during immediate actions. Knowledge of the SGFP trip step early in TRIP-2 would prevent the CRS from making a decision to initiate a SI, when it is known that an action in the next procedure to be implemented will preclude having to impose that huge plant stress. Running this in simulator with max AFW flow resulted in PZR pressure lowering to 1980 psig, which is only slightly lower than normal PZR pressure following a Rx trip from full power. Initiating SI when its not required in this case will lead to plant complications if the PZR is filled water solid.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Reactor Trip Response	2-EOP-TRIP-2			28

L.O. Number
CN&FDWE009
TRP002E002
TRP001E013

Objectives

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 in Mode 3, NOP, NOT.
- 2A EDG is being run for a monthly surveillance, and is currently loaded to 2550 KW.
- 21 CCW pump trips.
- 5 minutes after the CCW pump trip, the field NEO reports the breaker for 21 Diesel Fuel Oil Transfer Pump is tripped.

Which of the following describes the Tech Spec entry required and its Bases?

a. Enter Tech Spec 3.8.1.1.b.2 for EDG Fuel Oil Modes 1-4 since BOTH Fuel Oil Transfer pumps are required to be operable. This ensures that sufficient power would be available for the safe shutdown of the plant and for the mitigation and control of accident conditions.

b. Enter Tech Spec 3.0.3 because all redundant equipment in the CCW system is not available, making both loops of CCW inoperable. This ensures that sufficient safety related CCW would be available for the safe shutdown of the plant and for the mitigation and control of accident conditions.

c. Enter Tech Spec 3.8.1.1.b.2 for EDG Fuel Oil Modes 1-4 since BOTH Fuel Oil Transfer pumps are required to be operable. This is to ensure a timely unit shutdown is performed when the plant operation cannot be maintained within the limits of safe operation defined by the Limiting Conditions for Operation and its action requirements.

d. Enter Tech Spec 3.0.3 because all redundant equipment in the CCW system is not available, making both loops of CCW inoperable. This is to ensure a timely unit shutdown is performed when the plant operation cannot be maintained within the limits of safe operation defined by the Limiting Conditions for Operation and its action requirements.

Answer a **Exam Level** S **Cognitive Level** Application **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 064000G222 2.2.22 **RO Value:** 4.0 **SRO Value:** 4.7 **Section:** SYS **RO Group:** 1 **SRO Group:** 1 55.43 ☑

System/Evolution Title Emergency Diesel Generators 064

KA Statement:

Knowledge of limiting conditions for operations and safety limits.

Explanation of Answers:

55.43.b(2) A is correct because it is gleaned from TS bases section for elec power sources. The bases in choice b is from the ac power sources. C is incorrect because even thought TS is correct, the reason is the 3.0.3 bases. D is incorrect because both the TS and bases are incorrect.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem Tech Specs			3/4/8-1	
Salem Tech Specs Bases			B 3/4 8-2	

L.O. Number

EDG000E011

Objectives

Material Required for Examination

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

Question Source Comments

Comment

Question Topic: SRO 19

Given the following conditions:

- Unit 1 is performing a Rx startup.
- Rx power is 3E4 cps.
- SUR is .2 dpm.
- During the refueling outage, BOTH IR NI detectors were replaced.
- IR NI indication for both N35 and N36 is flashing at 1x10-11A.

Which of the following describes the status of the IR instrumentation, and the required action(s) that will be performed?

Both IR NI's...

a. should be reading ~1x10-10A. Declare BOTH NI's INOPERABLE and enter TS 3.0.3.

b. should be reading ~1x10-10A. Declare BOTH NI's INOPERABLE and enter TSAS 3.3.1.1.

c. are under compensated. Stabilize power, block SR Hi Flux trip, and correct compensating voltage problem for BOTH IR NI's prior to exceeding 5% Rx power.

d. are overcompensated. Stabilize power <P-6 and correct compensating voltage problem for at least ONE IR NI within the next 4 hours or open Rx Trip Breakers within the next 4 hours.

Answer	Exam Level	Cognitive Level	Facility:	ExamDate:
a	S	Application	Salem 1 & 2	12/15/2014

KA:		RO Value:	SRO Value:	Section:	RO Group:	SRO Group:	55.43
194001G120	2.1.20	4.6	4.6	PWG	1	1	✔

System/Evolution Title: GENERI

KA Statement: Ability to interpret and execute procedure steps.

Explanation of Answers: 55.43(2)There is at least a one decade overlap required between the SR and IR NI's when raising power. (Step 5.2.33) With the SR indication at 30,000 counts, the decade of overlap should already be present. With the Hi Flux Trip at 100,000 counts, there can't be proper overlap. With no other information in the stem to provide inference of any other problems with the NI's EXCEPT that both IR detectors were replaced, the IR NI's should be declared INOPERABLE. A is correct, and b incorrect, because there is only an action in 3.3.1.1 for ONE INOPERABLE IR NI, with BOTH INOPERABLE TS 3.0.3 is entered. D is incorrect because even if the candidate thought they were reading low due to overcompensation, the P-6 block would not be manually performed without the power above P-6 interlock to allow P-6 to be blocked. C is incorrect because under compensation would cause a higher than expected reading.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Hot Standby to Minimum Load	S1.OP-IO.ZZ-0003		24	32
Salem Tech Specs				

L.O. Number: EXCOREE009

Objectives

Material Required for Examination:

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

Question Source Comments: Used on Salem 8/2008 NRC SRO Written exam (4 NRC exams ago)

Comment

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

Question Topic SRO 20

Given the following conditions:

- Unit 2 is performing a cooldown IAW S2.OP-IO.ZZ-0006, Hot Standby to Cold Shutdown.
- Mode 5 has just been entered.
- PZR temperature is 400° F.
- The board NCO reports that PZR hot calibrated level on all 3 channels indicates 95% and is stable.

Which of the following identifies what the Cold Calibrated channel will be reading, and how charging flow should operated?

a. 57%. Raise charging flow.

b. 57%. Lower charging flow.

c. 81%. Raise charging flow.

d. 81%. Lower charging flow.

Answer	a	**Exam Level**	S	**Cognitive Level**	Application	**Facility:**	Salem 1 & 2	**ExamDate:**	12/15/2014

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: 55.43(5)Using Exhibit 1 of IOP-6, page 2, shows that with hot cal level at 95% at 400 deg., the ACTUAL level in PZR is ~66%. Using Page 1 and the ACTUAL PZR level of 66% and going across to the 400 deg line, cold cal level will be ~56-57%. After the cooldown rate has been reduced as per stem, IOP-6 has operators raise charging flow to establish 80% cold cal level. Prior to the 80% requirement, the procedure requires 25-53% (5.1.5 and 5.1.16) The distracters either have the incorrect level or to lower charging flow. Salem experienced a PZR drain-down event in 2008 due to less than adequate procedural direction and operator understanding of the hot cal/cold cal correlation in PZR level, and heightened emphasis on this relationship and better procedure direction has been applied. This is not direct lookup due to the changes in required Cooldown rate, PZR level, and the transition between hot calibrated and cold calibrated level.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Hot Standby to Cold Shutdown	S2.OP-IO.ZZ-0006			44

L.O. Number
IOP006E009
PZRP&LE008

Objectives

Material Required for Examination SRO 20 S2.OP-IO.ZZ-0006 Rev. 44

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

Question Source Comments 08-01 NRC SRO (3 exams ago)

Comment

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

Question Topic SRO 21

A Temporary Configuration Change Package (TCCP) will be converted to a Permanent Configuration Change IAW CC-AA-112 Temporary Configuration Changes, and CC-AA-103 Configuration Change Control for Permanent Physical Plant Changes.

Of the following choices, determine the only one which is NOT performed as part of the Design Change Process to convert the TCCP into a Permanent Configuration Change.

a. The implemented permanent configuration change must be accepted by Operations prior to closing the TCCP.

b. The permanent configuration change Ops Acceptance date will be used as the TCCP removal date.

c. Administrative controls associated with the TCCP will be removed.

d. The Work Order to remove the TCCP will be cancelled.

Answer d **Exam Level** S **Cognitive Level** Memory **Facility** Salem 1 & 2 **ExamDate** 12/15/2014

KA 194001G211 2.2.11 **RO Value** 2.3 **SRO Value** 3.3 **Section** PWG **RO Group** 1 **SRO Group** 1 **55.43** ☑

System/Evolution Title GENERI

KA Statement: Knowledge of the process for controlling temporary design changes.

Explanation of Answers: 55.43.b(3) When implementing a Design Change Package (DCP) to make a TCCP permanent, the removal work order for the TCCP must be completed, even if the only task is the removal of the TCCP tags, update of Operations TCC Tracking Log, and completion of referenced administrative controls and OWDs. This may be done in the DCP work order and the completion of the removal work order would reference the DCP work order but the removal work order for the TCCP should not be cancelled. B is plausible if it is thought that administrative controls would be transferred to the DCP. C is plausible if it is thought that the TCCP must be removed before the DCP is accepted.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Temporary Configuration Changes	CC-AA-112		36-37	14

L.O. Number MISCAPE001

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 22

Which of the following describes the bases for maintaining an OPERABLE Auxiliary Feedwater System in Modes 1-3 IAW Tech Spec 3.7.1.2?

a. Ensures the capability to cooldown and maintain the RCS at <500 °F for 8 hours following a SGTR assuming failed fuel.

b. Remove decay heat and maintain the RCS at HSB conditions for 24 hours following a complete loss of off-site power.

c. Ensures that the RCS can be cooled down to <350 deg F from normal conditions following a complete loss of off-site power.

d. Provide the RCS heat removal capability necessary to prevent a challenge to the pressurizer safety valves during a full power ATWT.

Answer: c **Exam Level:** S **Cognitive Level:** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 194001G225 | 2.2.25 **RO Value:** 3.2 **SRO Value:** 4.2 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 **55.43** ☑

System/Evolution Title: GENERI

KA Statement: Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.

Explanation of Answers: 55.43(2) All of the distracters are incorrect because the Tech Spec Bases document does not contain those reasons. Additionally: B is plausible because the operability of the AFWST is for 8 hours maintaining HSB with steam discharge to the atmosphere. A is plausible because the RCS cooldown during a SGTR to <500 degrees is to limit the potential off-site dose. C is correct per Bases. D is plausible because the ATWT bases document for AFW flow is for decay heat removal.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem Tech Specs Bases		3.7.1.2	B3/4 7-2	258

L.O. Number: AFW000E011

Objectives

Material Required for Examination:

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

Question Source Comments: Vision Q60263. Last used 3 NRC exams ago at Salem.

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 performing a Tech Spec required shutdown from 100% power IAW Tech Spec 3.0.3., at 20% / hr.
- Current Rx power is 85%.
- A containment entry is being planned in an effort correct the condition which has caused 3.0.3 entry.
- The personnel entering containment will be going ONLY to the 78' elevation outside the bioshield.

Which of the following identifies the Rx power limitation, if any, IAW SC.SA-ST.ZZ-0001, Salem Containment Entries in Modes 1-4, which must be met for this containment entry, AND a Salem position who is REQUIRED to authorize this containment entry?

a. No power limitation. Radiation Protection Supervisor.

b. Rx power <50%. Radiation Protection Supervisor.

c. No power limitation. Operations Manager.

d. Rx power <50%. Operations Manager.

Answer: a **Exam Level:** S **Cognitive Level:** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

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: 55.43(4) Normal Containment entries at power are governed by both of the below listed procedures. Authorization to access containment is provided by the SM/CRS/Designee. However, when power is being changed >5%/hr, the Radiation Protection Supervisor (RPS) approval is required. Since the SM/CRS/Designee is not one of the available choices, the only correct answer is the RPS. Since the stem asked whose specific approval is required, the Operations Manager is not correct, even though he/she signs the approval of all ops procedures. Additionally, there is no power limitation associated with containment entries. The RPM approves access to certain areas of containment, but the stem states they are not going into those.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Salem Containment Entries in Modes 1-4	SC.SA-ST.ZZ-0001			5
Containment Entries at Power	RP-SA-102			0

L.O. Number: CONTMTE012

Objectives

Material Required for Examination:

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

Question Source Comments: Corrected from RPM to RPS.

Comment:

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

Question Topic SRO 24

Which of the following identifies a condition which will ALWAYS require suspending any Functional Restoration Procedure (FRP) in use prior to completion, and why?

a. A new CFST condition occurs on a status tree different from the one which directed the current procedure implementation. This ensures the most recent plant conditions are used when assessing critical safety functions.

b. A Continuous Action Summary item directs transition. This ensures a transition out to the proper procedure is made regardless of what step the operator is in the procedure.

c. RWST level lowers to the low level setpoint. Establishing Cold Leg Recirculation ensures both long term cooling of the core and ECCS Acceptance Criteria are maintained.

d. A loss of all three vital buses occurs. FRPs assume at least one 4KV vital bus is available for mitigative actions.

Answer d **Exam Level** S **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

KA: 194001G418 2.4.18 **RO Value:** 3.3 **SRO Value:** 4.0 **Section:** PWG **RO Group:** 1 **SRO Group:** 1 55.43 ✔

System/Evolution Title GENERI

KA Statement:

Knowledge of the specific bases for EOPs.

Explanation of Answers:

55.43.b(5) d is correct because EOP-LOPA-1 Bases document says…"this EOP is also entered anytime, from anywhere, on the symptom of a loss of all AC power." A is incorrect because only a HIGHER RED or PURPLE path than the one directing current procedure entry would require suspending. B is incorrect because FRPs don't have Continuous Action Summary like EOPs do. C is incorrect because RWST lo level would only go to LOCA-3 when directed in whatever FRP you were in. Automatically going to LOCA-3 on lo RWST lvl does NOT always occur no matter where in any procedure you are.

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Loss of All AC Power	2-EOP-LOPA-1	Bases Document	1	27

L.O. Number

LOPA00E014

Objectives

Material Required for Examination

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

Question Source Comments Q57948 modified to remove "none of the above" choice, and added bases to meet K/A.

Comment

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

Question Topic SRO 25

Given the following conditions:

- Unit 2 is at 100% power.
- An Unusual Event is declared due to a loss of all overhead annunciators for greater than 15 minutes.
- Prior to the Primary Communicator making any of the 15 minute notifications for an Unusual Event (UE), the problem is corrected and the annunciators are restored to operable.

Which of the following identifies how the Emergency Coordinator should proceed?

a. Terminate making the 15 minute notifications and ensure the 1 hour After-the-Fact report is made.

b. Direct the Primary Communicator to make all required 15 minute notifications, then retract the UE IAW the proper attachments.

c. Direct the Primary Communicator to make all required 15 minute notifications, then terminate the UE IAW the proper attachments.

d. Terminate making the 15 minute notifications and ensure the 8 hour report for Major Loss of Emergency Assessment Capability is made.

Answer c **Exam Level** S **Cognitive Level** Memory **Facility:** Salem 1 & 2 **ExamDate:** 12/15/2014

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: 55.43.b(1)The following discusses Short Duration Events which are corrected before declaration. This requires declaration then termination, so the actual declaration in question above should be no less restrictive. "For some events, the condition may be corrected before a declaration has been made. The key consideration in this situation is to determine whether or not further plant damage occurred while the corrective actions were being taken. In some situations, this can be readily determined, in other situations, further analyses (e.g., coolant radiochemistry sampling, may be necessary). Classify the event as indicated and terminate the emergency once assessment shows that there were no consequences from the event and other termination criteria are met."

Reference Title	Facility Reference Number	Reference Section	Page No.	Revision
Event Classification Guide – Introduction & Usa	EP-SA-111-101		13	0

L.O. Number

ELO_11.b

Objectives

Material Required for Examination

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

Question Source Comments Q44525

Comment