

Name: _____

1603 NRC SRO Exam

Form: 0

Version: 0

76. 007 EG2.2.37 176/BANK/WBN/HIGHER//SRO/SEQUOYAH/03/2016/NO

Given the following plant conditions:

- Unit 1 is at 50% RTP.
- Reactor Trip breaker RTB is closed.
- Bypass breaker BYA is racked in and closed.

Subsequently;

- An automatic Reactor trip signal is generated due to Low S/G level.
- RTB and BYA UV trip mechanisms fail to actuate.
- The remainder of the reactor protection circuitry (RPS) operates as designed.

Which ONE of the following completes the statements below?

In response to the automatic reactor trip signal, (1) will open.

The first notification to the NRC of the reactor trip breaker(s) opening is required within a maximum of (2) hours in accordance with NPG-SPP-03.5, "Regulatory Reporting Requirements."

Reference Provided

<u>(1)</u>	<u>(2)</u>
A✓ only RTB	4
B. only RTB	8
C. both BYA and RTB	4
D. both BYA and RTB	8

DISTRACTOR ANALYSIS:

- A. *Correct, The shunt trip coil (STB) in parallel with the UV coil on RTB will be energized to trip RTB. However BYA does not have the STB coil, so the SSPS trip functions only de-energize the UV relay for the BYA. Therefore, the BYA will not open to protect the reactor in the given condition. Also, in accordance with NPG-SPP-03.5, Section 3.1.3 this is a 4 hour report.*
- B. *Incorrect, Plausible since the first part is correct, only RTB will open and the BYA would open if the breakers had been equipped with the shunt trip coil contained on the RT breakers. The second part is plausible because an 8 hour report is required when to the reactor trip breakers open due to a trip during a condition when the reactor is not critical.*
- C. *Incorrect, Plausible since the RTB will open and the BYA would open if the breakers had been equipped with the shunt trip coil contained on the RT breakers. Also plausible since the second part is correct.*
- D. *Incorrect, Plausible since the RTB will open and the BYA would open if the breakers had been equipped with the shunt trip coil contained on the RT breakers. The second part is plausible because an 8 hour report is required when to the reactor trip breakers open due to a trip during a condition when the reactor is not critical.*

C. The following criteria require 4-hour notification:

- 1. §50.72(b)(2)(i) - The initiation of any nuclear plant shutdown required by the plant's Technical Specifications.
- 2. §50.72(b)(2)(iv)(A) - Any event that results or should have resulted in Emergency Core Cooling System (ECCS) discharge into the reactor coolant system as a result of a valid signal except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation.
- 3. §50.72(b)(2)(iv)(B) - Any event or condition that results in actuation of the reactor protection system (RPS) when the reactor is critical except when the actuation results from and is part of a pre-planned sequence during testing or reactor operation.

Question Number: 76

Tier: 1 **Group:** 1

K/A: 007 Reactor Trip
EG 2.2.37 Ability to determine operability and/or availability of safety related equipment.

Importance Rating: 3.6 / 4.6

10 CFR Part 55: 41.7

10CFR55.43.b: 5

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K/A Match: K/A is matched because the question requires the ability to determine the availability of safeguards equipment needed for a reactor trip given the equipment lineup in the stem. (BYA does not actuate to protect the reactor which is a significant safety significant factor) Also the reporting requirements due to a condition that caused a reactor trip while the reactor was critical.

SRO ONLY: The question is SRO because it requires the ability to apply the regulatory reporting requirements to a condition resulting in the operation of the reactor trip breakers. The applicant is required to assess plant conditions and then select the section of the NRC reporting requirement procedure which to proceed.

Technical Reference: NPG-SPP-03.5, Regulatory Reporting Requirements,
Revision 0006
45W600-99-1 R7

Proposed references to be provided: NPG-SPP-03.10 Appendix A (redacted)

Learning Objective: OPT200.RPS obj. 9
OPL271NPG-SPP-03.5 obj 4

Cognitive Level:

Higher	<u> X </u>
Lower	<u> </u>

Question Source:

New	<u> </u>
Modified Bank	<u> </u>
Bank	<u> X </u>

Question History: WBN bank question written for the WBN 03/2013 NRC exam

Comments:

77. 008 AG2.4.31 077/NEW//HIGHER//SRO/SQN/03/2016/NO

Given the following plant conditions:

1 April - Unit 1 is at 100% power.

0700 - The following alarms are received:

TS-68-331 PRESSURIZER POWER RELIEF LINE TEMP HIGH (1-M5-E2)

PS-68-301 PRESSURIZER RELIEF TANK PRESS HIGH (1-M5A-D1)

TS-68-328 PRESSURIZER SAFETY VALVE LINES TEMP HIGH (1-M5A-D2)

- PZR PORV 68-340 acoustic monitor indicates discharge

- The OATC places the PORV control switch in CLOSE

0701 - PZR pressure continues to lower with both Red and Green light indication for the PORV **extinguished**.

- The OATC closes the associated block valve and PZR pressure stops lowering.

0715 - Power is removed from the block valve for PORV 68-340.

0729 - PZR PORV 68-334 acoustic monitor indicates discharge

0730 - The OATC attempts to close PORV-68-334, the valve closes, however he breaks the handswitch OFF.

0900 - The control room handswitch for PORV-68 334 is successfully replaced.

In accordance with 1-AR-M5-A, which ONE of the following identifies the required actions?

The crew is to enter (1) ,

and

the latest time and date to restore both PORVs to OPERABLE status is (2).

Reference Provided

A✓ (1) AOP-I.04, "Pressurizer Instrument and Control Malfunctions"

(2) 0700 4 April

B. (1) AOP-I.04, "Pressurizer Instrument and Control Malfunctions"

(2) 0900 5 April

C. (1) AOP-R.05, "RCS Leak and Leak Source Identification"

(2) 0700 April

D. (1) AOP-R.05, "RCS Leak and Leak Source Identification"

(2) 0900 5 April

DISTRACTOR ANALYSIS:

- A. *Correct, In accordance with 1-AR-M5 response procedure the crew is to enter AOP-I.04 for PORVs that are open or partially open. Also, when evaluating TS 3.4.11, with one PORV inoperable and not capable of being operated, the SRO enters T.S. 3.4.11, Condition B which requires the PORV to be repaired within 72 hrs. (0700, 4 April). Even though a second PORV was Inoperable for a short period of time, the first PORV remains inoperable and thus the time clock remains in effect.*
- B. *Incorrect, Plausible since the first part is correct. Also both PORVs are inoperable for a short period which would cause the entry into condition E. Also by the rules of useage with both components would allow up to 24 hrs to restore the component to service, however this Tech Spec allows seperate actions for each component.*
- C. *Incorrect, Plausible since entering AOP-R.05 is mentioned in the alarm response procedure but the crew only enters if after a surveillance is run there appears to be excessive RCS leakage. Also plausible since the second part is correct.*
- D. *Incorrect, Plausible since entering AOP-R.05 is mentioned in the alarm response procedure but the crew only enters if after a surveillance is run there appears to be excessive RCS leakage. Also the second part is not correct.*

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Question Number: 77

Tier: 1 **Group** 1

K/A: 008 Pressurizer Vapor Space Accident
AG 2.4.31 Knowledge of annunciator alarms, indications or response procedures.

Importance Rating: 4.2 / 4.1

10 CFR Part 55: n/a

10CFR55.43.b: 2, 5

K/A Match: This question matches the K/A by having the candidate determine the action necessary for a leaking PORV based on the required procedure entry.
SRO only because it requires the candidate to assess plant conditions and select the appropriate procedure to correct or mitigate the event, also the required Tech Spec action for the event.

Technical Reference: 1-AR-M5-A window D-2 & D-1
Tech Spec 3.6.11

Proposed references to be provided: Tech Spec 3.6.11

Learning Objective: OPL271AOP-I.04 obj 2 & 8

Question Source:

New	<u>X</u>
Modified Bank	<u> </u>
Bank	<u> </u>

Question History: New question written for 1603 ILT exam

Comments:

78. 011 EA2.01 078/BANK/SQN/HIGHER//SRO/SEQUOYAH/1311/NO

Given the following plant conditions:

- Unit 1 was operating 100% RTP.
- The 1A-A CCP tagged for maintenance due to an oil leak.
- A LOCA occurred an hour ago.
- During the performance of ES-1.3, "Transfer to RHR Containment Sump," containment sump valves 1-FCV-63-72 and 1-FCV-63-73 could not be opened.
- The crew entered ECA-1.1, "Loss of RHR Sump Recirculation."
- While performing step 20 "Monitor if ECCS flow should be terminated," the crew observes the following parameters:
 - All RCPs are OFF
 - RVLIS Low Range is 70% and stable
 - Subcooling is 50°F and stable
 - RCS pressure is 150 psig and stable
 - RWST level is 20% and lowering
 - CTMT pressure is 3.0 psig and slowly lowering

Which ONE of the following identifies:

(1) an action, in accordance with ECA-1.1, that you will direct the crew to take

AND

(2) if the 1B-B CCP tripped immediately after the start of the accident, the Design Basis for this accident _____ being met?

- A. (1) Stop and Start ECCS pumps as necessary to establish minimum ECCS flow.
(2) is
- B. (1) Reset Phase A and Phase B, and stop RHR pumps, SI pumps and all but one CCP.
(2) is
- C✓ (1) Stop and Start ECCS pumps as necessary to establish minimum ECCS flow.
(2) is NOT
- D. (1) Reset Phase A and Phase B, and stop RHR pumps, SI pumps and all but one CCP.
(2) is NOT

DISTRACTOR ANALYSIS:

- A. *Incorrect, Plausible since the first part is correct. Within the guidance of ECA-1.1, the normal SI termination criteria is relaxed to allow for a reduction in ECCS flow to extend the time of depletion of the RWST. However, the criteria to terminate ECCS flow is 90°F verse the normal 40°F. With only 50°F subcooling given in the stem, the operators would be directed to either open and close CCPIT valves or start and stop ECCS pumps as necessary to maintain the minimum amount of SI flow to keep the core cooled. Also plausible however in accordance with EPM-3-ECA-1.1, Basis document for ECA-1.1, with a phase B initiated the only cooling being provided to the RCP seals is through seal injection flow. Thus if the only running CCP trips the RCP #1 seals could be adversely affected, so the plant is not meeting the Design Basis.*
- B. *Incorrect, Plausible if the candidate gets confused on the subcooling required, since there is more than enough RCS subcooling to terminate SI (normally 40°F), however for conditions of ECA-1.1 the minimum amount of subcooling is 90°F to reset phase A & B, and terminate ECCS flow. Also plausible however in accordance with EPM-3-ECA-1.1, Basis document for ECA-1.1, with a phase B initiated the only cooling being provided to the RCP seals is through seal injection flow. Thus if the only running CCP trips the RCP #1 seals could be adversely affected, so the plant is not meeting the Design Basis.*
- C. *Correct, Within the guidance of ECA-1.1, the normal SI termination criteria is relaxed to allow for a reduction in ECCS flow to extend the time of depletion of the RWST. However, the criteria to terminate ECCS flow is 90°F verse the normal 40°F. With only 50°F subcooling given in the stem, the operators would be directed to either open and close CCPIT valves or start and stop ECCS pumps as necessary to maintain the minimum amount of SI flow to keep the core cooled. Also if the CCP trips then the minimum assumed number of ECCS pumps that inject water into the core under all accidents is not being met. Also in accordance with EPM-3-ECA-1.1, Basis document for ECA-1.1, with a phase B initiated the only cooling being provided to the RCP seals is through seal injection flow. This puts the plant outside the Design Basis for all LOCAs.*
- D. *Incorrect, Plausible if the candidate gets confused on the subcooling required (normally 40°F), since there is more than enough RCS subcooling to terminate SI, however for conditions of ECA-1.1 the minimum amount of subcooling is 90°F to reset phase A & B, and terminate ECCS flow. Also plausible since the second part is correct.*

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Question Number: 78

Tier: 1 **Group** 1

K/A: 011 Large Break LOCA
EA2.01 Ability to determine or interpret the following as they apply to a Large Break LOCA:
Actions to be taken, based on RCS temperature and pressure saturated and superheated.

Importance Rating: 4.2 / 4.7

10 CFR Part 55: n/a

10CFR55.43.b: 5

K/A Match: This question matches the K/A by having the candidate assess the plant conditions and select the appropriate actions based on the determination of RCS temperature and pressure.
SRO by having the candidate recall specific basis information for a possible equipment failure. Also SRO by having the candidate recall specific information from the procedure basis document.

Technical Reference: ECA-1.1 Loss of RHR Sump Recirculation, rev 11
EPM-3-ECA-1.1, Basis Document for ECA-1.1, rev 5

Proposed references to be provided: None

Learning Objective: OPL271ECA-1.1 rev 3
obj. 6. Given the procedure and a set of initial conditions, determine actions required to mitigate the event in progress.

Question Source:

New	<u> </u>
Modified Bank	<u> </u>
Bank	<u> X </u>

Question History: SQN bank question written for 1311 ILT exam

Comments:

1603 NRC SRO Exam

79. 038 EG2.1.23 279/BANK/SQN/HIGHER//SRO/SEQUOYAH/03/2016/NO

Given the following plant conditions:

- Unit 1 is at 100% power.
- Subsequently, a Steam Generator Tube rupture occurs
- Off-site power is lost following the reactor trip.
- The crew is performing E-3, "Steam Generator Tube Rupture," and identified the Ruptured steam generator as SG #1.
- The ruptured SG MSIV is verified Closed.
- Just prior to determining the target temperature, the #1 SG pressure is 520 psig.

Which ONE of the following identifies the required operator actions?

While implementing E-3, the indication of ruptured SG loop Tcold (1) to be monitored for PTS status tree.

and

Given the current conditions, you would direct the crew to (2).

- A. (1) is
(2) remain in E-3
- B. (1) is
(2) transition to ECA-3.1, "SGTR and LOCA - Subcooled Recovery"
- C. (1) is **NOT**
(2) remain in E-3
- D✓ (1) is **NOT**
(2) transition to ECA-3.1, "SGTR and LOCA - Subcooled Recovery"

DISTRACTOR ANALYSIS:

- A. *Incorrect, Plausible that the candidate may miss the fact that the RCPs are not operating and thus they may think that the ruptured SG Tcold is to be monitored as usual when monitoring CSF status trees. Also plausible if the candidate does not recognize that the rupture SG pressure is less than 550 psig and would think that they would remain in E-3 as the correct recovery procedure.*
- B. *Incorrect, Plausible that the candidate may miss the fact that the RCPs are not operating and thus they may think that the ruptured SG Tcold is to be monitored as usual when monitoring CSF status trees. Also plausible since the second part is correct.*
- C. *Incorrect, Plausible since the first part is correct. Also plausible if the candidate does not recognize that the rupture SG pressure is less than 550 psig and would think that they would remain in E-3 as the correct recovery procedure.*
- D. *Correct, Given the stated conditions, with no RCPs operating the ruptured SG Tcold indication is to be suspended when monitoring CSF status trees for PTS. Also with SG pressure < 550 psig the guidance is to transition to ECA-3.1 for the correct recovery procedure.*

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Question Number: 79

Tier: 1 **Group** 1

K/A: 038 Steam Generator Tube Rupture (SGTR)
EG2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation.

Importance Rating: 4.3 / 4.4

10 CFR Part 55: 41.10

10CFR55.43.b: 5

K/A Match: This question matches the K/A by having the candidate determine the actions necessary during a SGTR event.
SRO only because it requires detailed knowledge of the procedure concerning monitoring of the CSF status trees (which is a SRO function) and the assessment of plant conditions and selection of appropriate procedures to mitigate the event.

Technical Reference: E-3, Steam Generator Tube Rupture rev 21

Proposed references to be provided: None

Learning Objective: OPL271E-3 obj. 7 & 13

Question Source:

New	<u>X</u>
Modified Bank	<u> </u>
Bank	<u> </u>

Question History: New question written for 1603 ILT exam

Comments:

1603 NRC SRO Exam

80. 040 AA2.04 080/BANK//HIGHER//SRO/SEQUOYAH/03/2013/NO

Given the following plant conditions:

- Unit 1 is operating at 100% power when the following occurs:
 - 1100 - Containment pressure begins to increase.
 - 1101 - Safety injection occurs due to containment pressure.
 - 1103 - Containment Phase B isolation occurs.
 - 1104 - CRO reports S/G #3 pressure is 575 psig and dropping and the other 3 S/G pressures are stable at 860 psig.
 - 1105 - Operating Crew enters E-2, "Faulted Steam Generator Isolation."

Which ONE of the following completes the statements below?

The 15 minute clock to make a required REP declaration is first initiated (1).

The correct classification is a(n) (2).

Reference Provided

	<u>(1)</u>	<u>(2)</u>
A.	1101	NOUE
B.	1101	ALERT
C✓	1104	NOUE
D.	1104	ALERT

DISTRACTOR ANALYSIS:

- A. *Incorrect, Plausible because the Safety Injection initiation is when the first of two requirements for an NOUE classification are met (but it takes both) and the second condition is not diagnosed until the CRO reports S/G #3 conditions and the correct classification is an NOUE.*
- B. *Incorrect, Plausible because the Safety Injection is when the first of two requirements for an NOUE classification are met (but it takes both) and the classification being an ALERT is plausible because if the rise in containment pressure resulting in a Safety Injection had been due to a LOCA, the required classification would be an ALERT. Additionally a containment pressure increase can result in the Potential Loss of Containment Barrier if the containment spray system fails and a potential loss of only one of the barriers requires an ALERT declaration if the one potential loss is either of the other 2 barriers (RCS or Fuel Clad).*
- C. *Correct, In accordance with EPIP-1, the conditions for an REP declaration are first met only after both the SI is actuated and the faulted S/G pressure has depressurized to less than 600 psig. The correct classification is an NOUE in accordance with EAL 2.7.*
- D. *Incorrect, Plausible because the conditions that required an REP declaration existing only after the SG #3 pressure drops to less than 600 psig is correct and the classification being an ALERT is plausible because if the rise in containment pressure resulting in a Safety Injection had been due to a LOCA the required classification would be an ALERT. Additionally a containment pressure increase can result in the Potential Loss of Containment Barrier if the containment spray system fails and a potential loss of only one of the barriers requires an ALERT declaration if the one potential loss is either of the other 2 barriers (RCS or Fuel Clad).*

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Question Number: 80

Tier: 1 **Group:** 1

K/A: 040 Steam Line Rupture
AA2.04 Ability to determine and interpret the following as they apply to
the Steam Line Rupture:
Conditions requiring ESFAS initiation.

Importance Rating: 4.5 / 4.7

10 CFR Part 55:

10CFR55.43.b: 5

K/A Match: K/A is matched because the question requires knowledge of the
threshold times and values for initiating the Radiological Emergency
Plan and then evaluating conditions to make the correct
classification.

SRO ONLY: The question assessing plant conditions (normal, abnormal, or
emergency) and then selecting which EPIP (Alert or NOUE) with
which to proceed. Also, because the classification of REP events
is an SRO task.

Technical Reference: 1-E-2, Faulted Steam Generator Isolation,
R14
EPIP-1, Emergency Plan Classification Logic,
Revision R15

**Proposed references
to be provided:** EPIP-1 (section 2) pages 13 - 19

Learning Objective:

Cognitive Level:

Higher	<u> X </u>
Lower	<u> </u>

Question Source:

New	<u> </u>
Modified Bank	<u> </u>
Bank	<u> X </u>

Question History: New question for the WBN 03/2013 NRC exam, SQN
ILT 1311 Audit

Comments:

1603 NRC SRO Exam

81. 056 AA2.45 081/NEW//HIGHER//SRO/SEQUOYAH/03/2016/NO

Given the following plant conditions:

- 0700 - Unit 2 has tripped due to a loss of off-site power.
- 0700 - Neither DG will start
- 0701 - The crew enters ECA-0.0, "Loss of All AC Power."
- 0715 - AUOs are dispatched to perform the following procedures:

EA-250-2, "Load Shed of 250V DC Loads After Station Blackout," and
EA-250-1, "Load Shed of Vital Loads After Station Blackout,"

- 0730 - The AUOs report that both EA-250-2 and EA-250-1 actions are complete.
- 0735 - While assessing plant conditions, the STA reports the following alarms are extinguished:

6900V SD BD 2A-A FAILURE OR BUS FEEDER UV (0-M26-C, C7)
6900V SD BD 2B-B FAILURE OR BUS FEEDER UV (0-M26-D, C7)

Based on current plant conditions, which ONE of the following completes the statement below?

The control room alarms associated with the DG 2A-A and 2B-B output breakers
__ (1) __ expected to be illuminated and the latest time that the State of Tennessee
is to be **notified** is __ (2) __.

- A. (1) are
(2) 0715
- B. (1) are **NOT**
(2) 0715
- C. (1) are
(2) 0730
- D✓ (1) are **NOT**
(2) 0730

DISTRACTOR ANALYSIS:

- A. *Incorrect, Plausible if the candidate does not recall the actions of EA-250-1 and EA-250-2, and thinks that the annunciators should remain illuminated. Also plausible to think that the SRO has 15 minutes to notify the State of Tennessee, however that time is from the time of declaration of an event not the time of the initiation of the event.*
- B. *Incorrect, Plausible since the first part is correct. Also plausible to think that the SRO has 15 minutes to notify the State of Tennessee, however that time is from the time of declaration of an event not the time of the initiation of the event.*
- C. *Incorrect, Plausible if the candidate does not recall the actions of EA-250-1 and EA-250-2, and thinks that the annunciators should remain illuminated. Also plausible since the second part is correct.*
- D. *Correct, During the execution of EA-250-1 and EA-250-2 the annunciator power is removed to help conserve station battery power, thus the annunciators would be expected to be extinguished. Also, during an emergency event the SRO has 15 minutes to assess the plant conditions from the start of the event and then they have 15 minutes to make the notification to the State of Tennessee emergency management, thus the maximum time to make the notification would be 30 minutes from the time of the initiation of the event.*

Question Number: 81

Tier: 1 **Group** 1

K/A: 056 Loss of Offsite Power
AA2.45 Ability to determine and interpret the following as they apply to the Loss of Offsite Power:
Indicators to assess the status of ESF breakers (tripped/ not-tripped) and validity of alarms (false/ not-false)

Importance Rating: 3.6* / 3.9

10 CFR Part 55: 43.5 / 45.13

10CFR55.43.b: 5

K/A Match: This question matches the K/A by asking the candidate to determine the status of annunciators in the main control room of ESF breakers during a loss of off-site power condition.
Also SRO since it requires detailed knowledge of the procedure actions and the results of those actions as well as the assessment of plant conditions and required times of notifications of off-site agencies.

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Technical Reference: ECA-0.0, rev 27
EA-250-1, rev 16
EA-250-2, rev 9
EPIP-1, rev 51

Proposed references to be provided: None

Learning Objective: OPL271ECA-0.0 obj 6
OPL271REP obj 2

Cognitive Level:

Higher	<u> X </u>
Lower	<u> </u>

Question Source:

New	<u> X </u>
Modified Bank	<u> </u>
Bank	<u> </u>

Question History: New question written for 1603 ILT exam

Comments:

82. 005 AG2.4.21 082/NEW//HIGHER//SRO/SEQUOYAH/03/2016/NO

Given the following plant conditions:

- While operating at 100% a situation arises requiring a reactor trip.
- Both manual trip switches have been operated.
- The following conditions exist:
 - Reactor Trip Breaker 'A' Red indication exists.
 - Reactor Trip Breaker 'B' Green indication exists.
 - Reactor Power is 4% and lowering.
 - Rod bottom lights are lit with the **exception** of the following bank D rods:
 - H-4 - Unknown
 - M-8 - 20 steps
 - H-8 - 10 steps
 - D-8 - 220 steps
 - H-12 - 8 steps

Which ONE of the following identifies the condition of the reactor, and the action that will be required?

- A. The reactor is tripped; perform normal RCS boration for two stuck rods as directed in ES-0.1, "Reactor Trip Response"
- B✓ The reactor is tripped; initiate emergency boration for three stuck rods in accordance with EA 68-4, "Emergency Boration," as directed in ES-0.1, "Reactor Trip Response"
- C. The reactor is **not** tripped; manually insert control bank D rods as directed in FR-S.1, "Nuclear Power Generation/ATWS"
- D. The reactor is **not** tripped; initiate emergency boration in accordance with EA 68-4, "Emergency Boration," as directed in FR-S.1, "Nuclear Power Generation/ATWS"

DISTRACTOR ANALYSIS:

- A. *Incorrect, Plausible since the first part is correct, however because there are three rods > 12 steps withdrawn (H-4, M-8, D-8), ES-0.1 will direct that emergency boration be performed in accordance with EA-68-4, not by specific steps within ES-0.1.*
- B. *Correct, In accordance with E-0, with Rx power decreasing and 1 RTB open the reactor is considered tripped. Also, ES-0.1 will direct emergency boration due to having three control rods that are not < 12 steps withdrawn and the procedure to be used is EA-68-4.*
- C. *Incorrect, Plausible if the candidate thinks that since reactor power is greater than 5% and multiple rods have not fully inserted, the Rx is not tripped. Also plausible since all of the control rods of concern are located in control bank D that the operators would drive the rods in manually (which is a direction in FR-S.1).*
- D. *Incorrect, Plausible if the candidate thinks that since reactor power is greater than 5% and multiple rods have not fully inserted, the Rx is not tripped. Also plausible since emergency boration will be directed but by ES-0.1 since FR-S.1 is not implemented.*

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Question Number: 82

Tier: 1 **Group** 2

K/A: 005 Inoperable/Stuck Rod
AG2.4.21 Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.

Importance Rating: 4.0 / 4.6

10 CFR Part 55: 41.7

10CFR55.43.b: 5

K/A Match: This question matches the K/A by having the candidate determine the number of stuck rods following a reactor trip and the status of reactivity control safety function for the given conditions.
SRO only because it requires the candidate to assess plant conditions and select or direct the appropriate plant procedure or section of procedure.

Technical Reference: E-0 rev 36
FR-S.1 rev 24

Proposed references to be provided: None

Learning Objective: OPL271E-0 Obj. 4
OPL271FR-S.1 obj.

Question Source:

New	<u>X</u>
Modified Bank	<u> </u>
Bank	<u> </u>

Question History: New question written for 1603 ILT exam

Comments:

1603 NRC SRO Exam

83. W/E15 EA2.1 083/BANK/WBN/HIGHER//SRO/SEQUOYAH/03/2016/NO

Given the following plant conditions:

- Unit 1 was operating at 100% power when a LOCA occurs.
- After the operating crew entered E-1, "Loss of Reactor or Secondary Coolant," the OAC reported the following:
 - Containment pressure 2.9 psig and rising.
 - Containment Spray Pump 1A-A started and tripped.
 - Containment Spray Pump 1B-B failed to start.
- The SRO enters FR-Z.1, "High Containment Pressure."
- During performance of FR-Z.1, the OAC reports:
 - Containment pressure is 1.8 psig and dropping.
 - Containment Spray Pump 1B-B has been started at the breaker and is delivering flow.
 - Containment Sump level at 86%.

Assuming all Status trees except CONTAINMENT are GREEN, which ONE of the following identifies the correct procedure usage by the Unit Supervisor?

- A. Remain in FR-Z.1 until a transition is directed, then return to E-1.
- B✓ Remain in FR-Z.1 until a transition is directed, then implement FR-Z.2, "Containment Flooding."
- C. Immediately transition to FR-Z.2, "Containment Flooding," and return to FR-Z.1 when a transition is directed from FR-Z.2.
- D. Immediately transition to FR-Z.2, "Containment Flooding," and return to E-1 when a transition is directed from FR-Z.2.

DISTRACTOR ANALYSIS:

- A. *Incorrect, Plausible because completing FR-Z.1 until a transition is directed is correct and if the containment sump level had been lower, the transition to E-1 would be correct.*
- B. *Correct, After entering an FR due to an ORANGE or RED path the procedure is required to be completed to a point of transition unless a higher priority FR develops. So while the ORANGE condition no longer exist, the FR-Z.1 would be continued even though there is a ORANGE challenge to Containment Flooding until a transition was reached in FR-Z.1 at which time the lower priority FR-Z.2 would be implemented.*
- C. *Incorrect, Plausible because it is a common misconception that you would deal with the most severe condition currently existing, which is the challenge to containment flooding due to the sump level since the immediate challenge to containment pressure no longer exists. However, a transition to FR-Z.2 will not be made until FR-Z.1 is completed. If the transition was made, it is also normal to transition back to the procedure that was left when the FR is complete which in this case would be FR-Z.1.*
- D. *Incorrect, Plausible because a common misconception that you would not need to go back to FR-Z.1 since its orange path is cleared and that you would deal with the most severe condition currently existing. This would incorrectly result in the immediate transition to FR-Z.2 and when FR-Z.2 is complete, with FR-Z.1 clear, the transition back to E-1, while incorrect, is plausible.*

TI12.04

- E. If an ORANGE path is diagnosed, then the remaining Status Trees will be checked. If no RED path exists, then the ORANGE path Function Restoration Instruction will be implemented.

2.4.4 Status Tree Rules of Usage (continued)

- F. Once implemented because of any RED or ORANGE path, that Function Restoration Instruction will be performed to completion or to a point of transition UNLESS a higher priority condition develops.
 - 1. As a Function Restoration Instruction is performed, the status of that tree may change. This change does **NOT** change the priority of an instruction in progress.
 - 2. If a higher priority condition develops, the instruction in effect should be suspended and the higher priority condition addressed.
- G. When no RED or ORANGE path exists, a YELLOW path Function Restoration Instruction can be implemented at the operator's discretion.

Question Number: 83

1603 NRC SRO Exam

Tier: 1 **Group:** 2

K/A: W/E15 Containment Flooding
EA2.1 Ability to determine and interpret the following as they apply to the (Containment Flooding):
Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Importance Rating: 2.7 / 3.2

10 CFR Part 55: n/a

10CFR55.43.b: 5

K/A Match: K/A is matched because the question requires the ability to determine facility conditions and select the appropriate procedure during emergency operations.

SRO ONLY: The question requires the applicant to assess plant conditions (normal, abnormal, or emergency) and then selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed. To do this the applicant must know the requirements for procedure transitions contained in the users guide for EOPs and to evaluate a how a transition from a procedure required to be entered due to an ORANGE path would be made if the ORANGE path was cleared and additional ORANGE paths to other procedures were present. The question is more than just knowing RED and ORANGE path entry conditions.

Technical Reference: FR-0, Status Trees, Revision 0014
EPM-4, User's Guide For Abnormal And Emergency
Operating Instructions, Revision 0012

Proposed references to be provided: None

Learning Objective: OPL271.FR-Z.1 obj.

Cognitive Level:

Higher	<u>X</u>
Lower	<u> </u>

Question Source:

New	<u> </u>
Modified Bank	<u> </u>
Bank	<u>X</u>

Question History: Bank question written for the WBN 03/2013 NRC exam.

Comments:

84. 051 AG2.1.34 284/NEW//HIGHER//SRO/SEQUOYAH/03/2016/NO

Given the following plant conditions:

- Unit 2 is returning to 100% power and is currently at 60% reactor power.
- Condenser pressure is 1.9 psia and rising at 0.1 psia/minute.
- Operators have entered AOP-S.02, "Loss of Condenser Vacuum."
- Operators have stabilized condenser pressure at 2.1 psia.
- Subsequently, Chemistry reports secondary chemistry action level 2 is in effect due to SG chloride chemistry results.

Which ONE of the following action(s) is the crew required to implement?

- A. Trip the Reactor and enter E-0, "Reactor Trip or Safety Injection."
- B. Increase SG blowdown flow rate and maintain reactor power at 60%.
- C✓ Initiate power reduction to < 50% using 0-GO-5, "Normal Power Operation."
- D. Initiate an emergency shutdown to Mode 3 using AOP-C.03, "Rapid Shutdown or Load Reduction."

DISTRACTOR ANALYSIS:

- A. *Incorrect, Plausible since the trip criteria given in AOP-S.02 has been exceeded, (>1.7psia) however this is for conditions of less than 30% power, thus it does not apply to current plant conditions.*
- B. *Incorrect, Plausible since increasing blowdown rate would be direction that chemistry would recommend, however power must be reduced to less than 50% it cannot remain at 60% with an action level 2 condition.*
- C. *Correct, In accordance with AOP-S.07, for chemistry action level 2 events, the plant is required to be reduced to less than 50% within 8 hrs, thus a normal, controlled power reduction would be used for the power reduction.*
- D. *Incorrect, Plausible if the candidate gets the required actions confused since this is an action required if the chemistry action level was a 3, however the chemistry recommendation is for action 2.*

1603 NRC SRO Exam

Question Number: 84

Tier: 1 **Group** 2

K/A: 051 Loss of Condenser Vacuum
AG2.1.34 Knowledge of primary and secondary chemistry limits.

Importance Rating: 2.7 / 3.5

10 CFR Part 55:

10CFR55.43.b: 5

K/A Match: This question matches the K/A by having the candidate determine the actions necessary for a lower condenser vacuum and high secondary chemistry conditions.
SRO only because it requires the candidate to analysis the current plant conditions and select the appropriate actions (procedure guidance) based on the analysis of those conditions.

Technical Reference: AOP-S.02
AOP-S.07
AOP-C.03

Proposed references to be provided: None

Learning Objective: OPL271AOP-S.07, Obj 7.b

Question Source:

New	<u>X</u>
Modified Bank	<u> </u>
Bank	<u> </u>

Question History: New question written for 1603 ILT exam.

Comments:

1603 NRC SRO Exam

85. W/E16 EA2.1 085/NEW//HIGHER//SRO/SEQUOYAH/03/2016/NO

Given the following plant conditions:

- Unit 1 is at 100% power.
- Subsequently, a LOCA occurs inside containment.
- The crew has just implemented E-1, "Loss of Reactor or Secondary Coolant".
- The STA has completed the initial performance of the status trees and reports the highest priority path exists on the CONTAINMENT status tree.
- Plant conditions are as follows:
 - RCS pressure is 1200 psig and slowly lowering
 - core exit T/Cs are 540°F and slowly lowering
 - Containment pressure is 2.6 psig and lowering after peaking at 4.6 psig
 - Upper containment Rad Monitors read 85 R/hr
 - Lower containment Rad Monitors read 125 R/hr
 - Containment Sump Level is 58% and slowly rising

Based on the above conditions, which ONE of the following completes the statement below?

The Unit Supervisor (1) required to implement FR-Z.3, "High Containment Radiation" and in accordance with EPIP-1 the event classification is (2).

REFERENCE PROVIDED

- A. (1) is
(2) FA1 Alert
- B✓ (1) is **NOT**
(2) FA1 Alert
- C. (1) is
(2) FS1 Site Area Emergency
- D. (1) is **NOT**
(2) FS1 Site Area Emergency

DISTRACTOR ANALYSIS:

- A. *Incorrect, Plausible since containment radiation is greater than 100 R/hr which is entry conditions for FR-Z.3, High Containment Radiation, however this procedure is a yellow path procedure which can be entered at the Unit Supervisor's discretion but entry is not required. Also the second part is correct, the RCS barrier has been lost.*
- B. *Correct, Containment radiation is greater than 100 R/hr which is entry conditions for FR-Z.3, High Containment Radiation, however this procedure is a yellow path procedure which can be entered at the Unit Supervisor's discretion but entry is not required. Also in accordance with EPIP-1, the RCS barrier has been lost, but no other barriers are lost or have a potential loss, thus FA1 Alert is the emergency event classification for this event.*
- C. *Incorrect, Plausible since containment radiation is greater than 100 R/hr which is entry conditions for FR-Z.3, High Containment Radiation, however this procedure is a yellow path procedure which can be entered at the Unit Supervisor's discretion but entry is not required. Also plausible if the candidate thinks that since there is elevated radiation in containment that the containment barrier has a potential loss, however the values for a potential loss of containment are 100 times more than the values given. Also the fact that containment pressure was at 4.6 psig put the containment safety function in an Orange path condition, and the candidate may think that the containment barrier has a potential loss, however the containment pressure never reached a Red path condition, thus only the RCS barrier has been lost.*
- D. *Incorrect, Plausible since the first part is correct. Also plausible if the candidate thinks that since there is elevated radiation in containment that the containment barrier has a potential loss, however the values for a potential loss of containment are 100 times more than the values given. Also the fact that containment pressure was at 4.6 psig put the containment safety function in an Orange path condition, and the candidate may think that the containment barrier has a potential loss, however the containment pressure never reached a Red path condition, thus only the RCS barrier has been lost.*

1603 NRC SRO Exam

Question Number: 85

Tier: 1 **Group** 2

K/A: WE16 High Containment Radiation
EA2.1 Ability to determine and interpret the following as they apply to the
(High Containment Radiation):
Facility conditions and selection of appropriate procedures during
abnormal and emergency operations.

Importance Rating: 2.9 / 3.3

10 CFR Part 55: na

10CFR55.43.b: 5

K/A Match: This question matches the K/A by having the candidate evaluate plant
conditions of high radiation and select the appropriate plant
procedures to mitigate the event
SRO only because of assessing plant conditions and selecting the
appropriate plant procedures during abnormal plant events.

Technical Reference: EPM-4, User's Guide, Rev. 20
1-FR-0, Status trees, Rev. 1
EPIP-1 rev 50

**Proposed references
to be provided:** EPIP-1 pg 11 and 12 rev 50

Learning Objective: OPL271EPM-4 B.11
OPL271FR-0 B.6

Question Source:

New	<u>X</u>
Modified Bank	<u> </u>
Bank	<u> </u>

Question History: New question written for 1603 ILT exam.

Comments:

86. 003 A2.05 086/NEW//HIGHER//SRO/SQN/03/2016/NO

Given the following plant conditions:

- Unit 1 is in Mode 3 at normal temperature and pressure.
- All RCPs are running
- VCT pressure is 15 psig
- A-A and C-A Lower Compartment Cooling Units (LCCUs) are running
- Subsequently D-B LCCU is started
- 30 minutes after D-B LCCU is started the following alarms are actuated:

FS-62-11 REAC COOL PMPS SEAL LEAKOFF HIGH FLOW (1-M5-B-B3)
LS-62-45A REAC COOL PMP 4 STANDPIPE LVL HIGH-LOW (1-M5-B-D2)

- Seal leakoff flow for RCP #4 is ~ 7gpm
- RCDT level is verified to be rising
- RCP #4 bearing temperatures are within normal range

Based on the above conditions, which ONE of the following identifies the actions the crew are required to take?

- A. Trip #4 RCP as directed by AOP-R.04, "Reactor Coolant Pump Malfunctions."
- B. Lower seal injection flow to 6 gpm to #4 RCP as directed by AOP-R.04, "Reactor Coolant Pump Malfunctions."
- C✓ Raise VCT pressure to 17 psig as directed by 1-SO-62-1, "Chemical Volume and Control System."
- D. Start the 1B-B LCCU and stop the D-B LCCU as directed by 0-SO-30-5, "Lower Compartment Cooling Units."

DISTRACTOR ANALYSIS:

- A. *Incorrect, Plausible if the candidate thinks that indications in the stem are indicative of a RCP seal failure and determines that the #4 RCP should be tripped.*
- B. *Incorrect, Plausible if the candidate gets the seal injection flow and seal return flow confused and thinks the seal injection should be lowered to its lower limit to correct the indications.*
- C. *Correct, With no change in RCS pressure or seal injection flow an increase in seal return flow and a high level in the RCP standpipe would indicate that the VCT pressure is low (15 psig) and needs to be raised to the minimum procedure required pressure of at least 17 psig. This will increase the backpressure on #1 seal and reduce the leakoff rate. It will also cause less flow to the #2 seal thus stand pipe level will also go down.*
- D. *Incorrect, Plausible since according to a note in 1-AR-M5-B; D-2 "Operating experience has shown that standpipe level can be impacted by CRDM fan alignment," and thinks that the LCCU cooler alignment has affected the RCP standpipe level indication and decides that a change in operating LCCU is needed to correct the indications.*

1603 NRC SRO Exam

Question Number: 86

Tier: 2 **Group** 1

K/A: 003 Reactor Coolant Pump System (RCPS)
A2.05 Ability to (a) predict the impacts of the following malfunctions or operations on the RCPS and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations:
Effects of VCT pressure on RCP seal leakoff flows

Importance Rating: 2.5 / 2.8

10 CFR Part 55: 41.5

10CFR55.43.b: 5

K/A Match: This question matches the K/A by having the candidate determine how VCT pressure will effect the RCP seals given the conditions in the stem.
SRO only because it requires the candidate to evaluate plant conditions and select the appropriate procedure to mitigate the event.

Technical Reference: 1-AR-M5-B; D-2 rev 41
AOP-R.04 rev

Proposed references to be provided: None

Learning Objective: OPT200.RCP obj 9.c
OPR200.CVCS obj 9.c. 11.g

Question Source:

New	<u>X</u>
Modified Bank	<u> </u>
Bank	<u> </u>

Question History: New question written for the 1603 NRC Exam.

Comments:

87. 010 G2.1.32 187/NEW//LOWER//SRO/SQN/03/2016/NO

Given the following plant conditions:

- Unit 1 is in Mode 3
- Subsequently, a plant transient occurs which causes RCS pressure to rapidly rise to 2740 psig
- The PZR pressure control system fails to maintain RCS pressure

Which ONE of the following completes the statement below?

In accordance with Tech Spec bases this transient is (1) severe than if in Mode 1 and the action to reduce RCS pressure (2) require a reduction in plant operating mode.

- A. (1) less
(2) does
- B. (1) less
(2) does **NOT**
- C. (1) more
(2) does
- D✓ (1) more
(2) does **NOT**

DISTRACTOR ANALYSIS:

- A. *Incorrect, Plausible since most accidents are most severe when they occur from conditions of either Mode 1 or Mode 2, however based on tech spec bases this condition is considered more severe if it occurs in Mode 3, 4, or 5. Also plausible since most Tech Spec required actions also require a reduction in plant mode and the candidate could get this direction confused.*
- B. *Incorrect, Plausible since most accidents are most severe when they occur from conditions of either Mode 1 or Mode 2, however based on tech spec bases this condition is considered more severe if it occurs in Mode 3, 4, or 5. Also plausible since the second part is correct.*
- C. *Incorrect, Plausible since the first part is correct. Also plausible since most Tech Spec required actions also require a reduction in plant mode and the candidate could get this direction confused.*
- D. *Correct, In accordance with tech Spec bases for violation of RCS pressure safety limit, an overpressure condition is more severe if it occurs in Mode 3, 4, or 5 due to the Rx vessel temperature may be lower and thus less ductile. Also a reduction in plant Mode is not to be done as part of reduction in pressure because it would entail a reduction in temperature and thus would compound the problem of tensile stress on the Rx vessel.*

1603 NRC SRO Exam

Question Number: 87

Tier: 2 **Group** 1

K/A: 010 Pressurizer Pressure Control
G2.1.32 Ability to explain and apply system limits and precautions.

Importance Rating: 3.8 / 4.0

10 CFR Part 55: 41.10

10CFR55.43.b: 2

K/A Match: This question matches the K/A by having the candidate explain and apply RCS system limits for pressure.
SRO only because it requires the candidate to have knowledge of Tech Spec bases for an over pressure transient which causes the RCS pressure to exceed a safety limit.

Technical Reference: Tech Spec 2.1.2 bases

Proposed references to be provided: None

Learning Objective: OPT200.Tech Specs

Question Source:

New	<u>X</u>
Modified Bank	<u> </u>
Bank	<u> </u>

Question History: New question written for 1603 ILT Exam

Comments:

88. 012 A2.04 088/NEW//HIGHER//SRO/SQN/03/2016/NO

Given the following plant conditions:

- Mar 1 - Unit 2 is at 100% power
- 0800 - The following alarm is received:

PROTECTION SYSTEM TRAIN B TROUBLE (2-M6-A, E-3)

- 0900 - MIG personnel reports the 48Vdc power supply in the "B" train of SSPS is performing erratically and it has caused the UV coil of RTB to fail and will **NOT** actuate.
- 1100 - The power supply has been repaired, however the UV coil has to be ordered and will take several days to be delivered.

Which ONE of the following identifies is the latest time before U2 is required to be in Mode 3?

REFERENCE PROVIDED

- A. 1600, Mar 1
- B. 1500, Mar 2
- C✓ 1500, Mar 3
- D. 1900, Mar 3

DISTRACTOR ANALYSIS:

- A. *Incorrect, Plausible if the candidate thinks that there are 2 conditions and that Tech Spec 3.0.3 would be required to be entered.*
- B. *Incorrect, Plausible if the candidate thinks that the RTB is INOPERABLE and applies condition N for the one reactor trip breaker train being inoperable.*
- C. *Correct, The UV coil places the plant in condition Q which if not repaired requires the plant to be in mode 3 within 54 hours.*
- D. *Incorrect, Plausible if the candidate misapplies the note which allows the reactor trip breaker train to be bypassed for up to 4 hrs and adds that to the allowed 54 hrs before the unit is to be in Mode 3.*

1603 NRC SRO Exam

Question Number: 88

Tier: 2 **Group** 1

K/A: 012 Reactor Protection System (RPS)
A2.04 Ability to (a) predict the impacts of the following malfunctions or operations on the RPS and (b) based on those predictions use procedures to correct, control or mitigate the consequences of those malfunctions or operations:
Erratic power supply operation.

Importance Rating: 3.1 / 3.2

10 CFR Part 55: 41.5

10CFR55.43.b: 5

K/A Match: This question matches the K/A by having the candidate determine the impact of an erratic power supply on the RPS and select the appropriate section of the Tech Spec for the conditions.
SRO only because it requires the candidate to select the appropriate Tech Spec section and the required completion time from Tech Spec which allows continued plant operation.

Technical Reference: U2 ITS, RTS Instrumentation 3.3.1

Proposed references to be provided: U2 RTS Instrumentation pages 3.3.1-1 - 8 and 3.3.1-14 -19 Ammend 327

Learning Objective: OPT200.TECHSPEC

Question Source:

New	<u>X</u>
Modified Bank	<u> </u>
Bank	<u> </u>

Question History: New question written for 1603 ILT exam

Comments:

89. 059 G2.1.43 089/NEW//HIGHER//SRO/SQN/03/2016/NO

Given the following plant conditions:

- Unit 1 is operating at 10% power
- Power is being raised in accordance with 0-GO-4, "Power Ascension From Less Than 5% Reactor Power to 30% Reactor Power."
- Main Feedwater header temperature is 225°F

In accordance with 0-GO-4, which ONE of the following identifies;

(1) the indication that the crew is to use to monitor core thermal power

and

(2) additional action(s), if any, that the crew will be required to take at this time.

A✓ (1) average loop delta T (ICS point U0485)
(2) no additional actions

B. (1) average loop delta T (ICS point U0485)
(2) raise rod insertion limits by 3 steps

C. (1) LEFM core thermal power (ICS point U2118)
(2) no additional actions

D. (1) LEFM core thermal power (ICS point U2118)
(2) raise rod insertion limits by 3 steps

DISTRACTOR ANALYSIS:

- A. *Correct, In accordance with 0-GO-4, when power is less than 15% and MFW temp is less than 250°F, the crew is not supposed to use LEFM indication for core thermal power, since according to the surveillance, LEFM is not considered accurate and average loop delta T is to be used. Also when less than 15% power and not using LEFM to monitor core thermal power then TRM 8.3.4 actions do not apply.*
- B. *Incorrect, Plausible since the first part is correct. Also plausible if the candidate does not recognize that TRM 8.3.4 actions do not apply and thinks the direction from the COLR is to be applied which will required the rod insertion limits to be increased by 3 steps.*
- C. *Incorrect, Plausible since LEFM is expected to be used to monitor core thermal power , however this applies when Reactor power is >15% power and MFW temperature is greater than 250°F. Also plausible since using the LEFM is expected at this point then no further actions would be required.*
- D. *Incorrect, Plausible since LEFM is expected to be used to monitor core thermal power , however this applies when Reactor power is >15% power and MFW temperature is greater than 250°F. Also plausible if the candidate gets the actions of TRM 8.3.4 confused with not having LEFM available and accurate.*

1603 NRC SRO Exam

Question Number: 89

Tier: 2 **Group** 1

K/A: 059 Main Feedwater System (MFW)
G2.1.43 Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant system temperature, secondary plant, fuel depletion, etc.

Importance Rating: 4.1 / 4.3

10 CFR Part 55: 41.10

10CFR55.43.b: 6

K/A Match: This question matches the K/A by having the candidate determine the effects of reduced secondary temperatures on the reactor core thermal power monitoring required.
SRO only because it requires detailed knowledge of procedure steps in plant startup procedure and knowledge of Tech Spec surveillance data to determine the required actions necessary for safe plant operation.

Technical Reference: 0-GO-4,
TRM 8.3.4

Proposed references to be provided: None

Learning Objective: OPT200.TRM obj.

Question Source:

New	<u>X</u>
Modified Bank	<u> </u>
Bank	<u> </u>

Question History: New question written for 1603 ILT exam

Comments:

1603 NRC SRO Exam

90. 062 G2.2.38 190/BANK/SQN/HIGHER//SRO/SQN/03/2016/NO

Given the following plant conditions:

- Unit 1 is operating at 100% power

Sun 1200 - The 2A-A D/G is out of service due to an electrical control problem
Mon 0600 - The 1B-B D/G was declared INOPERABLE

- Engineering can **NOT** rule out a D/G common mode failure for 2A-A or 1B-B D/Gs
- It is estimated that 1B-B D/G will **NOT** be returned to OPERABLE status for 7 days

Other than demonstrating operability of the remaining AC sources per SR 3.8.1.1, which ONE of the following completes the statement below?

In order to prevent entering a Tech Spec condition which requires Unit 1 shutdown, the maximum time allowed to restore either the 2A-A or 1B-B D/G is before _____.

REFERENCE PROVIDED

- A. 0700 Monday
- B✓ 0800 Monday
- C. 1800 Monday
- D. 0600 Tuesday

DISTRACTOR ANALYSIS:

- A. *Incorrect, Plausible if the candidate determines that entry into Tech Spec 3.0.3 due to condition L if the candidate thinks that an inoperable D/G also caused an Off-site circuit to be inoperable, thus with 1 D/G from unit 1 and 1 D/G from unit 2 inoperable condition L would apply.*
- B. *Correct, Per condition J of ITS 3.8.1, with one train A D/G inoperable and one train B D/G inoperable, one must be restored within 2 hrs or 0800 today.*
- C. *Incorrect, Plausible if the candidate determines that condition F applies since D/G operability used to also effect off-site power operability the could choose this condition and determine that 1B-B D/G must be restored within 12 hrs.*
- D. *Incorrect, Plausible if the candidate determines that condition B applies due to common mode failure analysis not being performed wihtin 24 hrs.*

1603 NRC SRO Exam

Question Number: 90

Tier: 2 **Group** 1

K/A: 062 A.C. Electrical Distribution
G 2.2.38 Knowledge on conditions and limitations in the facility license.

Importance Rating: 3.4 / 4.5

10 CFR Part 55: 41.7, 41.10

10CFR55.43.b: 1, 2

K/A Match: This question matches the K/A by having the candidate apply the conditions given to determine how those conditions apply to Tech Specs which are part of the Facility License SRO only because it requires the candidate to apply Tech Spec actions which are below the line and are greater than 1 hr action times.

Technical Reference: U1 ITS 3.8.1

Proposed references to be provided: U1 ITS 3.8.1 LCO

Learning Objective: OPT200.AC6.9KV obj 13.c
OPT200.TS-APP obj. 5

Question Source:

New	<u> </u>
Modified Bank	<u> </u>
Bank	<u> X </u>

Question History: SQN bank question updated from CTS to ITS for 1603
ILT Exam.

Comments:

1603 NRC SRO Exam

91. 001 G2.4.6 091/BANK/SQN/HIGHER//SRO/SEQUOYAH/03/2016/NO

Given the following plant conditions:

- Unit 1 was operating at 86% power
- Subsequently, MFP 1A trips.
- As the rods are inserting, the OATC observes the following:
Bank D Group 1 remains at 190 steps while the Bank D Group 2 rods are inserting as indicated by RPIs and step counters.
- The OATC places the rod control to MANUAL stopping rod motion with Bank D Group 2 rods at 148 steps.

Which ONE of the following identifies the required response to the above condition?

- A. Make repairs then realign the Group 1 rods to the Group 2 rods per AOP-C.01, "Rod Control System Malfunctions."
- B. Make repairs then realign the Group 2 rods to the Group 1 rods per AOP-C.01, "Rod Control System Malfunctions."
- C. Remove the Unit from service within 6 hours in accordance with Tech Specs using 0-GO-5, "Normal System Operation," and 0-GO-6, "Power Reduction From 30% Reactor Power to Hot Standby."
- D. Trip the Reactor and Go to E-0, "Reactor Trip or Safety Injection" per AOP-C.01, "Rod Control System Malfunctions."

DISTRACTOR ANALYSIS:

- A. *Incorrect, Plausible due to AOP-C.01 contains steps to realign a misaligned rod to the bank but not with the conditions stated in the question.*
- B. *Incorrect, Plausible due to AOP-C.01 contains steps to realign a misaligned rod to the bank but not with the conditions stated in the question.*
- C. *Incorrect, with the rods >12 and <50 steps out of alignment, Plausible due to this could be correct if the rods were in a bank other than D.*
- D. *Correct, AOP- C.01 directs - If multiple rods misaligned greater than 12 steps but no more than 50 steps each from respective banks (with the misaligned rods in Control Bank D) then TRIP the reactor and GO TO E-0, Reactor Trip or Safety Injection.*

1603 NRC SRO Exam

Question Number: 91

Tier: 2 **Group** 1

K/A: 001 Control Rod Drive System (CRDS)
G 2.4.6 Knowledge of EOP mitigation strategies.

Importance Rating: 3.7 / 4.7

10 CFR Part 55: 41.10

10CFR55.43.b: 5

K/A Match: This question matches the K/A by having the candidate determine the mitigation strategy for the malfunction of the CRD system which results in the misalignment of a bank of control rods.
SRO only because requires the knowledge of the procedure contents to determine the correct procedure to use to mitigate the conditions that are presented.

Technical Reference: AOP-C.01

**Proposed references
to be provided:** None

Learning Objective: OPL271AOP-C.01 obj. B8

Question Source:

New	<u> </u>
Modified Bank	<u> </u>
Bank	<u> X </u>

Question History: SQN bank question from 1/2008 ILT exam

Comments:

1603 NRC SRO Exam

92. 011 A2.03 092/NEW//HIGHER//SRO/SQN/03/2016/NO

Given the following plant conditions:

- Mar 1 - Unit 1 is performing a Plant startup in accordance with 0-GO-4, "Power Ascension From Less Than 5% Reactor Power to 30% Reactor Power"
- 0800 - Current reactor power is 7% and stable
 - Pressurizer level transmitter 1-LT-68-320 fails
 - The crew has entered AOP-I.04, "Pressurizer Instrument and Control Malfunctions"
- 1000 - Subsequently, while performing trouble shooting activities, 1-LT-68-339 output becomes erratic.

In accordance with Tech Specs, which ONE of the following identifies the latest time that the Unit is required to be in Mode 3?

REFERENCE PROVIDED

- A. today 1500 hrs
- B. today 1700 hrs
- C. Mar 4th 1000
- ☒ D. Mar 8th 1600

DISTRACTOR ANALYSIS:

- A. *Incorrect, Plausible if the candidate determined that entry into Tech Spec 3.0.3 is required for two RTS instruments. This would be from the time of the first instrument failure. However PZR level instruments are not required and action not applicable below P-7 (10% power).*
- B. *Incorrect, Plausible if the candidate determined that entry into Tech Spec 3.0.3 is required for two RTS instruments. This time is 7 hrs from the failure of the second instrument.*
- C. *Incorrect, Plausible if the candidate thought that the maximum time would be until the 72 hrs has elapsed and the second channel is placed in the tripped condition. If they do not recall that the High PZR Level trip is blocked below P-7 they would think that the plant would go to Mode 3 (trip) when second channel is removed from service.*
- D. *Correct, With the Reactor in Mode 1 the PAM Instrumentation spec applies, and at 1000, specifically condition C. Thus one of the instruments are not repaired with 7 days then condition H applies and it requires the plant to be in mode 3 within an additional 6 hrs. Thus the unit would be required to be in Mode 3 by 1600 on Feb 8th.*

1603 NRC SRO Exam

Question Number: 92

Tier: 2 **Group** 2

K/A: 011 Pressurizer Level Control
A2.03 Ability to (a) predict the impacts of the following malfunctions or operations on the PZR LCS and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations:
Loss of PZR Level.

Importance Rating: 3.8 / 3.9

10 CFR Part 55: 41.5

10CFR55.43.b: 2, 5

K/A Match: This question matches the K/A by having the candidate determine the tech spec required actions for a failure of the PZR level control system.
SRO only because the question requires the candidate to determine the required Tech Spec action for a failure of the PZR Level control system.

Technical Reference: ITS Tech Spec 3.3.1
Tech Spec 3.3.3

Proposed references to be provided: Tech Spec 3.3.1 pgs 3.3.1 1-8 & 3.3.14-19
Tech Spec 3.3.3 pgs 3.3.3 1-5 with surveillance on page 3 redacted

Learning Objective: OPT200.PZRLEVELCONT

Question Source:

New	<u>X</u>
Modified Bank	<u> </u>
Bank	<u> </u>

Question History: New question for 1603 NRC exam

Comments:

1603 NRC SRO Exam

93. 014 G2.1.45 193/NEW//HIGHER//SRO/SEQUOYAH/03/2016/NO

Given the following plant conditions:

- Unit 1 is at 100% power.
- Mar 10 1200 - Rod Position Indication (RPI) for Control Bank D (CBD) Group 1 rod D4 fails to "0"
- Mar 11 0800 - RPI for Control Bank D Group 2 rod D8 fails to "0"
- Mar 11 1400 - CBD, Group 2 step counter LCD display just went blank
- There are **NO** rod bottom lights LIT

Which one of the following statements completes the statement below?

In accordance with Tech Spec 3.1.7, "Rod Position Indication" bases, the position of control rod D8 (1) be administratively verified and U1 (2) .

Reference Provided

- A. (1) can
(2) U1 must be in Hot Standby by 1400 hrs. (Mar 12)
- B. (1) can
(2) power must be reduced to < 50% by 2200 hrs. (Mar 11) but may continue at that power until the next outage
- C. (1) can **NOT**
(2) power must be reduced to < 50% by 2200 hrs. (Mar 11) but may continue at that power until the next outage
- D✓ (1) can **NOT**
(2) must be in Hot Standby by 1400 hrs. (Mar 12)

DISTRACTOR ANALYSIS:

- A. *Incorrect, Plausible if the candidate thinks that the position can be administratively verified since the incore instruments are used verify rod position in other conditons, however according to Tech Spec 3.1.7 bases, the RPI needs to OPERABLE to be able to administratively verify position. Also plausible since the second part is correct.*
- B. *Incorrect, Plausible if the candidate thinks that the position can be administratively verified since the incore instruments are used verify rod position in other conditons, however according to Tech Spec 3.1.7 bases, the RPI needs to OPERABLE to be able to administratively verify position. Also plausible if the candidate applies condition C.2 which requires the plant be <50% within 8 hrs, and does not recognize that 2 RPIs are INOPERABLE in the same bank which requires a plant shutdown within 30 hrs.*
- C. *Incorrect, Plausible since the first part is correct. Also plausible if the candidate applies condition C.2 which requires the plant be <50% within 8 hrs, and does not recognize that 2 RPIs are INOPERABLE in the same bank which requires a plant shutdown within 30 hrs.*
- D. *Correct, In accordance with Tech Spec 3.1.7 bases, to be able to administratively verify the position of the controls in the group with a failed step counter, the RPI for those rods must be OPERABLE. Thus with a failed RPI for control D8 its position cannot be administratively verified. Also, with two RPIs failed in the same bank, (D4 & D8) condition B must be applied, condition B.4 requires that at least one of the failed RPIs need to be returned to service within 24 hrs or be in Hot Standby (Mode 3) within the next 6 hrs. Thus 30 hrs from the failure of the second RPI would require plant to be in Mode 3 by 1400 hrs, Mar 12.*

1603 NRC SRO Exam

Question Number: 93

Tier: 2 **Group** 2

K/A: 014 Rod Position Indication
G 2.1.45 Ability to identify and interpret diverse indications to validate the response of another indication.

Importance Rating: 4.3 / 4.3

10 CFR Part 55: 41.7

10CFR55.43.b: 2, 5

K/A Match: This question matches the K/A by having the candidate analyze the failures of the Rod Position Indications and apply the necessary actions in accordance with Tech Specs and bases.
SRO only because it requires the candidate to analyze the conditions and using knowledge of the Tech Spec bases for 3.1.7, and apply the correct Tech Spec actions.

Technical Reference: Unit 1 ITS 3.1.7 Rod Position Indication

Proposed references to be provided: ITS 3.1.7 pages 3.7.1-1 thru 5

Learning Objective: OPT200.TS-APP obj. 5

Question Source:

New	<u>X</u>
Modified Bank	<u> </u>
Bank	<u> </u>

Question History: New question written for 1603 ILT exam

Comments:

1603 NRC SRO Exam

94. G 2.1.42 094/BANK/SQN/LOWER//SRO/SEQUOYAH/03/2016/NO

In accordance with FHI-3, "Movement of Fuel," which ONE of the following identifies the maximum number of **NEW** and **IRRADIATED** fuel assemblies within the areas listed below that can be located out of approved storage locations?

	<u>New Fuel Assemblies within the fuel-handling area</u>	<u>Irradiated Fuel Assemblies within the refueling canal</u>
A.	1	2
B✓	1	3
C.	2	2
D.	2	3

DISTRACTOR ANALYSIS:

- A. *Incorrect, FHI-3 Limitation B allows one unirradiated nuclear fuel assembly within the fuel-handling area and three (not 2) nuclear fuel assemblies within the refueling canal to be out of approved storage locations.*
- B. *Correct, FHI-3 Limitation B allows one unirradiated nuclear fuel assembly within the fuel-handling area and three nuclear fuel assemblies within the refueling canal to be out of approved storage locations.*
- C. *Incorrect, FHI-3 Limitation B allows one (not 2) unirradiated nuclear fuel assembly within the fuel-handling area and three (not 2) nuclear fuel assemblies within the refueling canal to be out of approved storage locations.*
- D. *Incorrect, FHI-3 Limitation B allows one (not 2) unirradiated nuclear fuel assembly within the fuel-handling area and 3 nuclear fuel assemblies within the refueling canal to be out of approved storage locations.*

1603 NRC SRO Exam

Question Number: 94

Tier: 3 **Group** n/a

K/A: G 2.1.42 Conduct of Operations
Knowledge of new and spent fuel movement procedures

Importance Rating: 2.5 / 3.4

10 CFR Part 55: 41.10

10CFR55.43.b: 7

K/A Match: This question matches the K/A by testing the candidates knowledge of Fuel movement procedure requirements for new and irradiated fuel. SRO for Sequoyah Station due to the fact that fuel movement requirements is an SRO specific task.

Technical Reference: FHI-3, Movement of Fuel, Rev 70

Proposed references to be provided: None

Learning Objective: OPT200.FH rev 6
Obj. 7.c

Cognitive Level:

Higher	<u> </u>
Lower	<u> X </u>

Question Source:

New	<u> </u>
Modified Bank	<u> </u>
Bank	<u> X </u>

Question History: SQN bank question used on SRO Audit Exam 1/2009, and Sept 2010 exam. SQN ILT 1311 NRC Exam.

Comments:

95. G 2.2.5 295/BANK/SQN/LOWER//SRO/SEQUOYAH/03/2016/NO

Given the following plant conditions:

- A plant design change request form is in the approval process.
- The proposed modification will modify the control rod overlap setpoints in the logic cabinets.

Which ONE of the following identifies the final management position, by title, required to approve the change prior to implementation?

- A✓ Plant Manager
- B. Site Vice President
- C. Maintenance and Mods Manager
- D. Engineering and Support Manager

DISTRACTOR ANALYSIS:

- A. *Correct. Per NPG-SSP-09.3, the Plant Manager (or his designee) is required to sign for final approval of a DCN.*
- B. *Incorrect. Plausible since the Site Vice President will be involved in the approval process, but the Plant Manager has final authority for approval.*
- C. *Incorrect. Plausible since the MODs manager has responsibility for completion of the physical work, but does not have final approval authority.*
- D. *Incorrect. Plausible since the engineering manager does handle the completion of the DCN and MODs package, but does not have final approval authority.*

1603 NRC SRO Exam

Question Number: 95

Tier: 3 **Group** n/a

K/A: G 2.2 Equipment Control
2.2.5 Knowledge of the process for making design or operating changes to the facility.

Importance Rating: 2.2 / 3.2

10 CFR Part 55: 41.10 / 43.3 / 45.13

10CFR55.43.b: 3

K/A Match: K/A is matched and is SRO because the question requires knowledge of the Plant Modification change procedure which is an SRO task.

Technical Reference: NPG-SPP-09.3, Plant Modifications and Engineering Change Control, rev 0017

Proposed references to be provided: None

Learning Objective: OPL271C209, Obj. 12

Question Source:

New	<u> </u>
Modified Bank	<u> </u>
Bank	<u> X </u>

Question History: SQN bank question

Comments:

1603 NRC SRO Exam

96. G 2.2.14 096/BANK/SQN/LOWER//SRO/SEQUOYAH/1/2009/NO

Given the following plant conditions:

- Unit 1 is operating at 100% power.
- I & C going to perform 1-SI-ICC-063-051.2, "Channel Calibration of RWST Level Channel II Rack 7 Loop L-63-51."
- As part of the surveillance the following 1-M-6E annunciator window inputs from 1-LT-63-51 will be disabled.

LS-63-50A RWST LVL LO
LS-63-50B RWST LVL LO-LO

- All other inputs to these annunciators will remain in service.
- The surveillance is expected to be completed by the end of shift.

In accordance with OPDP-4, "Annunciator Disablement," which ONE of the following completes the statement below as related to the SRO's responsibility for a 50.59 review and a Technical Evaluation?

Prior to disabling the annunciator input _____ is required.

- A. only a 50.59 review
- B. only a Technical Evaluation
- C. both a 50.59 review and a Technical Evaluation
- D. neither a 50.59 review nor a Technical Evaluation

DISTRACTOR ANALYSIS:

- A. *Incorrect, Plausible because a 50.59 review would be required if the disablement were to exceed 90 days. See OPDP-4 excerpt below.*
- B. *Incorrect, Plausible because a Technical Evaluation would be required if the disablement caused the inputs to the alarm to also be disabled. See OPDP-4 excerpt below.*
- C. *Incorrect, Plausible because a 50.59 review and a Technical Evaluation would be required if the annunciator input were to be disabled with the equipment remaining in service. See OPDP-4 excerpt below.*
- D. *Correct, In accordance with OPDP-4, Annunciator Disablement, the annunciator input can be disabled without either 50.59 or a Technical Evaluation being performed. See OPDP-4 excerpt below.*

OPDP-4 Appendix A

- B. If an annunciator window/input is disabled in support of maintenance or surveillance activities, a 50.59 review is not required UNLESS the annunciator will remain disabled for more than 90 days. If 90 days will be exceeded, a 50.59 review shall be completed prior to exceeding 90 days. A Technical Evaluation is required prior to disablement if alarm functions will be disabled for equipment remaining in service (not removed from service/inoperable for the maintenance activity).

- 1. The following example would be considered necessary to support maintenance activities and requires a Technical Evaluation:

A pump is tagged with a clearance for maintenance. Its suction pressure switch will be depressurized and disabling the associated low pressure alarm will disable the alarm function for other equipment that must remain in service.

- 2. The following examples would be considered necessary to support maintenance activities and do not require a Technical Evaluation provided the parameter is the only input to the alarm:

A pump is tagged with a clearance for maintenance. Its suction pressure switch will be depressurized and the associated low pressure alarm disabled.

An instrument is declared inoperable, and any required LCO action(s) are entered for calibration in accordance with an approved maintenance instruction. The alarm from this instrument is disabled.

1603 NRC SRO Exam

Question Number: 96

Tier: 3 **Group** n/a

K/A: G 2.2.14 Knowledge of the process for controlling equipment configuration or status.

Importance Rating: 3.9 / 4.3

10 CFR Part 55: 41.10 / 43.3 / 45.13

10CFR55.43.b: 3

K/A Match: The KA is matched because the question requires knowledge of the an SRO administrative function associated with the process to control the disablement of annunciators in the Main Control Room.

Technical Reference: OPDP-4, Annunciator Disablement, Revision 4
0-SO-55-1, Annunciator System, Revision 0042

Proposed references to be provided: None

Learning Objective: OPL271OPDP-4 obj. 7 & 8

Question Source:

New	<u> </u>
Modified Bank	<u> </u>
Bank	<u> X </u>

Question History: SQN bank question used on 1/2009 ILT exam

Comments:

1603 NRC SRO Exam

97. G 2.3.6 197/BANK MOD/SQN/HIGHER//SRO/SEQUOYAH/05/2013/YES

Given the following plant conditions:

- Unit 1 is in Mode 3 shutting down for a refueling outage.
- A release of the Monitor Tank is planned.
- Sample results indicate non gaseous activity of the tank is slightly less than the limit of $7.0E-6 \mu\text{Ci/ml}$.
- 0-RM-90-122, "Liquid Radwaste Release Monitor" is INOPERABLE.

Which ONE of the following completes the statement below in accordance with 0-SI-CEM-077-400.1?

Provided ODCM compliance is maintained, approval to release this Monitor Tank

_____.

- A. is not permitted until its contents are reprocessed to lower activity.
- B. is not permitted until 0-RM-90-122 has been returned to OPERABLE status.
- C. is permitted, however Shift Manager approval is required for release due to activity level.
- D. is permitted with the US/SRO approval as the most senior operations personnel required for release at this activity level.

DISTRACTOR ANALYSIS:

- A. *Incorrect, Plausible since if the activity level was $> 7.0E-06 \text{ uCi/ml}$ the release would only be authorized if absolutely necessary. The normal procedure would be to reprocess the tank to lower the activity prior to release.*
- B. *Incorrect, Plausible to think that since there is only 1 rad monitor, that the monitor would be returned to service prior to the release of the Monitor Tank, however there are compensatory actions that can be taken in accordance with the ODCM to allow for the release of a Monitor Tank if the normal rad monitor is nonfunctional. This would include 2 Independent samples of tank contents are analyzed, 2 Independent discharge valve alignment, 2 Independent release rate calculations are verified per ODCM*
- C. *Incorrect, Plausible because if the activity level was $> 7.0E-06 \text{ uCi/ml}$ then Shift Manager along with the Chemistry Manager and Operations Superintendent are required to release the Montior Tank. The candidate could get the value of tank activity confused.*
- D. *Correct, In accordance with ODCM and 0-SI-CEM-077-400.1, with non-gaseous activity $< 7.0E-06 \text{ uCi/ml}$ the release is permitted. Also the US/SRO is the senior most authority needed to authorize the release at the current activity level.*

Question Number: 97**Tier:** 3 **Group** _____**K/A:** G 2.3.6 Ability to approve release permits.**Importance Rating:** 2.0 / 3.8**10 CFR Part 55:** 41.13**10CFR55.43.b:** 4

K/A Match: This question matches the K/A by having the candidate determine the authority required to approve a release of a Monitor Tank. SRO only because it requires detailed knowledge of the release procedure and the SRO's responsibility to review and approve a release permit.

Technical Reference: ODCM 1.1.1 rev 59
0-SI-CEM-077-400.1 appendix C & J rev 58

Proposed references to be provided: None

Learning Objective: OPT200.LRW rev 5
13. Using the Offsite Dose Calculation Manual:
b. Explain the applicable Liquid Radwaste System actions and requirements.

Question Source:

New	_____
Modified Bank	<u> X </u>
Bank	_____

Question History: Similar to question G2.3.6 #97 used on 05/2013 ILT exam with the stem data changed such that the answer changed from C to D

Comments:

Original Question:

Given the following plant conditions:

- Rad Waste water inventory is approaching storage capacity
- A release of the Monitor Tank is planned
- Sample results indicate non-gaseous activity in the tank is slightly higher than the 7.0E-6 microci/ml value listed on 0-SI-CEM-077-400.1, "Liquid Waste Effluent Batch Release," for opening a Batch Release Permit.
- The source check on 0-RM-90-122, "Liquid Radwaste Release Monitor," has failed and the monitor has been declared Inoperable.
- Chemistry Department Manager has granted approval of the release

Which ONE of the following completes the statement below in accordance with

0-SI-CEM-077-400.1?

Provided ODCM compliance is maintained, this Monitor Tank release is permitted

_____ .

- v A. after Shift Manager obtains the Operations Superintendant approval.
- B. after US/SRO grants approval, without any additional required signatures/approvals needed.
- C. only after the contents of the Monitor Tank are reprocessed to lower activity
- D. only after 0-RM-90-122 has been returned to an OPERABLE status

98. G 2.3.15 398/NEW//LOWER//SRO/SQN/03/2016/NO

Which ONE of the following identifies a radiation monitor that will be used to assess the integrity of both the Fuel Clad Barrier and the Containment Barrier in accordance with EPIP-1, "Emergency Plan Classification Matrix?"

- A. 1-RM-90-1, Spent Fuel Pit Area Rad Monitor
- B. 1-RM-90-112A, CNTMT Upper Compartment Rad Monitor
- C. 1-RM-90-7, Sampling Room Post Accident Area Monitor
- ☒ D. 1-RM-90-274A, Lower CNTMT Post Accident Area Monitor

DISTRACTOR ANALYSIS:

- A. *Incorrect, Plausible since a potential breach of Containment would cause an increase in Spent Fuel Pit area radiation levels and an increase in Containment radiation would be attributed to breach of fuel clad then the candidate could determine that this rad monitor could be used by procedure to indentify both or either condition.*
- B. *Incorrect, Plausible since a breach of the fuel cladding would cause the gaseous activity in the upper containment area to go up, thus the candidate could think that this monitor would be used to identify both a breach to fuel cladding and a possible breach of containment.*
- C. *Incorrect, Plausible since this monitor is used during post accident conditions and would indicate that a possible breach of fuel cladding is present, however this is not used by the EPIP to monitor and identify possible fuel cladding breach and containment breach during accident conditions.*
- D. *Correct, In accordance with EPIP-1, Emergency Plan Classification Matrix, an elevated reading on RM-90-274A is used as an indicator to assess both the 1.1 "Fuel Cladding Barrier" and 1.3 Containment Barrier, as a potential loss of the Containment Barrier.*

1603 NRC SRO Exam

Question Number: 98

Tier: 3 **Group** _____

K/A: G2.3.15 Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.

Importance Rating: 2.9 / 3.1

10 CFR Part 55: 41.12

10CFR55.43.b: 4

K/A Match: This question matches the K/A by having the student recall the radiation monitor used to assess plant conditions during an accident. SRO only because it requires the candidate to identify a rad monitor that is used during the implementation of the Radiological Emergency Plan implementation to assess potential core damage and a possible breach of Containment. This is an SRO function at our site.

Technical Reference: EPIP-1 rev 51

Proposed references to be provided: None

Learning Objective: OPL271REP obj 3
OPT200.RM obj 1.d

Question Source:

New	<u>X</u>
Modified Bank	_____
Bank	_____

Question History: New question written for 1603 ILT exam

Comments:

1603 NRC SRO Exam

99. G 2.4.14 199/BANK/SQN/HIGHER//SRO/SEQUOYAH/1/2009/NO

Given the following plant conditions:

- Unit 2 is at 100% power
- Subsequently, when a loss of Train A CCS occurs.
- The crew enters AOP-M.03, "Loss of Component Cooling Water", and initiate a Reactor trip.
- As the crew is performing the Immediate Operator Actions of E-0, "Reactor Trip or Safety Injection", an automatic Safety Injection occurs.
- The crew performs E-0 to the last step without identifying a transition.

Which ONE of the following completes the statement below?

The US is to (1) identify a transition and AOP-M.03 (2) be implemented in parallel with the EOP in affect.

- A. (1) loop back in E-0 to re-perform steps to
(2) can **NOT**
- B✓ (1) loop back in E-0 to re-perform steps to
(2) can
- C. (1) transition to ES-0.0, "Rediagnosis," and
(2) can **NOT**
- D. (1) transition to ES-0.0, "Rediagnosis," and
(2) can

DISTRACTOR ANALYSIS:

- A. *Incorrect, if E-0 is performed to the last step, the step will direct a loop back to step 8 so that a transition can be identified either to an accident procedure or to the procedure to terminate the safety injection. EPM-4, User's Guide does permit AOP performance while in the EOP network with the conditions stated in the stem. Plausible because the loop back in E-0 is correct and the EOPs do have priority over the AOPs except under certain conditions.*
- B. *CORRECT, if a transition is not made while E-0 is performed the last step will direct a loop back to step 8 so that a transition can be identified either to an accident procedure or to the procedure to terminate the safety injection. EPM-4, User's Guide, does permit the AOP performance while in the EOP network with the conditions stated in the stem.*
- C. *Incorrect, while ES-0.0, Rediagnosis, can be used to determine the correct procedure, it is not applicable until a transition is made from E-0. EPM-4, User's Guide does permit AOP performance while in the EOP network with the conditions stated in the stem. Plausible because ES-0.0, Rediagnosis, can be used to determine the correct procedure under different conditions and the EOPs do have priority over the AOPs except under certain conditions.*
- D. *Incorrect, while ES-0.0, Rediagnosis, can be used to determine the correct procedure, it is not applicable until a transition is made from E-0. EPM-4, User's Guide does permit AOP performance while in the EOP network with the conditions stated in the stem. Plausible because ES-0.0, Rediagnosis, can be used to determine the correct procedure under different conditions and EPM-4, User's Guide, does permit AOP performance while in the EOP network with the conditions stated in the stem.*

Question Number: 99

Tier: 3 **Group**

K/A: G 2.4.14 Knowledge of general guidelines for EOP usage.

Importance Rating: 3.8 / 4.5

10 CFR Part 55: 41.10

10CFR55.43.b: 5

K/A Match: This question matches the K/A by having the candidate recall specific procedure useage rules when implementing both EOPs and AOPs. SRO only because it requires detailed knowledge of the use of E-0, and detailed knowledge of rules of useage when implementing both EOPs and AOPs from EPM-4.

Technical Reference: E-0, Reactor Trip or Safety Injection, Rev
EPM-4, User's Guide, Rev

Proposed references to be provided: None

Learning Objective: OPL271EPM-4 obj. 5
OPL271E-0 obj. 7

Question Source:

New	_____
Modified Bank	_____
Bank	<u> X </u>

Question History: SQN bank question

Comments:

Question No. 84

Tier 1 Group 2

K/A WE01 EG2.4.11
Rediagnosis
Knowledge of abnormal condition procedures.

Importance Rating: 4.0 / 4.2

Technical Reference: E-0, Reactor Trip or Safety Injection, Rev 30
EPM-4, User's Guide, Rev 20

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271EPM-4 B.7 & 8
Given plant operating conditions, determine if EOP entry conditions have been met and state the resultant appropriate immediate action steps for those conditions.
Given plant operating conditions, determine if AOP entry conditions have been met and state the resultant appropriate actions for those conditions.
OPL271EPM-4 B.2.b
Discuss the ES-0.0 entry conditions. Describe the requirements associated with ES-0.0 entry conditions.

Question Source:

	Bank # _____
Modified Bank #	_____
New	<u> X </u>

Question History: New question for Sequoyah 2009 exam

Question Cognitive Level:

Memory or fundamental knowledge	_____
Comprehension or Analysis	<u> X </u>

1603 NRC SRO Exam

10 CFR Part 55 Content: (41.10 / 43.5 / 45.13)

10CFR55.43.b (5)

Comments: New question for Sequoyah 2009 exam

1603 NRC SRO Exam

100. G 2.4.23 200/BANK/SQN/HIGHER//SRO/SEQUOYAH/09/2010/NO

Given the following plant conditions:

- A loss of offsite power resulted in Unit 1 only entry into ECA-0.0, "Loss Of All AC Power."
- The TDAFW pump was tagged OOS prior to the event.

Present plant conditions include the following:

- Core Exit TCs - 592 °F.
- Highest loop T-hot indication is 590 °F.
- RCS wide range pressure is 2085 psig.
- Pressurizer level is 12% and stable.
- Containment pressure stabilized at 0.9 psig.
- All SG narrow range levels are < 0%
- ECA-0.0, Appendix A, "Locking Out Shutdown Boards Loads" has been completed.

Subsequently:

- 1B DG has been manually started and has energized 6.9 kv shutdown board 1B.

Which ONE of the following identifies the required procedure flowpath to stabilize the Unit?

NOTE:

ECA-0.1, "Loss of All AC Power Recovery Without SI Required"

ECA-0.2, "Loss of All AC Power Recovery With SI Required"

FR-H.1, "Response to Loss of Secondary Heat Sink"

- A✓ Transition to ECA-0.1 and enter FR-H.1 when allowed by ECA-0.1.
- B. Transition to ECA-0.2 and enter FR-H.1 when allowed by ECA-0.2.
- C. Transition to FR-H.1 upon energizing 1B 6.9kv bus. Return to ECA-0.0 step 31 (procedure and step in effect) when FR-H.1 is complete.
- D. Transition to FR-H.1 upon exit from ECA-0.0. Perform ECA-0.1 when FR-H.1 is complete.

DISTRACTOR ANALYSIS:

- A. *Correct, The candidate's evaluation of subcooling margin, containment pressure and pressurizer level will conclude no SI is required, thus ECA-0.1 is the appropriate recovery procedure. Also in accordance with EPM-3, FRP implementation will be restored at step #15 of ECA-0.1 thus if the Red Path still existed at that time then a transition to FR-H.1 would be made as directed.*
- B. *Incorrect. Plausible because the candidate must evaluate subcooling margin, containment pressure and pressurizer level to determine SI is not required. It is plausible that the candidate could think that since there is a Red Path on Heat Sink (no SG level >10% NR and AFW flow < 400gpm) that an SI would be required. It is also plausible that FRP implementation would be resumed upon transition out of ECA-0.0 since power availability has been restored.*
- C. *Incorrect, Plausible if the candidate realizes that a Red Path on Heat Sink safety function is present and since a 6.9kv bus has been energized that they could transition to the FRP Red Path as would be the case during any other emergency condition, however the FRPs are not to be implemented until directed in either ECA-0.1 or ECA-0.2. Also plausible that the operator would return to ECA-0.0 since that would be the procedure that was in effect when the Red Path condition was identified.*
- D. *Incorrect. Plausible if the candidate thinks that the FRPs can be implemented once ECA-0.0 has been exited since power has been restored to at least 6.9kv and this is the method of FRP implementation when exiting E-0. Also plausible because no SI is required making ECA-0.1 the appropriate recovery procedure.*

1603 NRC SRO Exam

Question Number: 100

Tier: 3 **Group** na

K/A: G 2.4.23 Knowledge of the bases for prioritizing emergency implementation during emergency operations.

Importance Rating: 3.4 / 4.4

10 CFR Part 55:

10CFR55.43.b: 5

K/A Match: K/A match because the SRO must evaluate plant conditions and select the correct procedure to restore power to critical equipment following loss of offsite power. SRO because procedure selection is evaluated and also knowledge of the bases for prioritization of EOPs and Function Restoration procedures during plant recovery.

Technical Reference: ECA-0.0 "Loss of All AC Power" Rev 27
EPM-3-ECA-0.0, Basis Document for ECA-0.0
rev 15
ECA-0.1 "Recovery from Loss of All AC Power
Without SI Required" Rev 10.
ECA-0.0 "Recovery from Loss of All AC Power, With SI
Required," rev 10

**Proposed references
to be provided:** None

Learning Objective: OPL271ECA-0.0 Obj B.4

Cognitive Level:

Higher X
Lower

Question Source:

New
Modified Bank
Bank X

Question History: SQN bank question written for 09/2010 NRC exam with C & D distractors rewritten to increase plausibility

Comments: New question written 3-23-2010 from K/A. LWP