1. 007 EK2.02 501

Given the following plant conditions:

- Unit 1 is operating at 100% RTP.
- 1-SI-IFT-099-90.8A, "Reactor Trip Instrumentation Monthly Functional Test (SSPS) Train A," is in progress.
- Reactor Trip Breaker A (RTA) is open.
- Subsequently, conditions occur which meet an automatic reactor trip.
- The reactor fails to trip automatically.
- Operation of the manual reactor trip switch trips the reactor.

Which ONE of the following completes the statements below?

The manual trip switch generated signals to the ___(1)___.

AND

The ___(2)___ will open.

A. ✔ (1) shunt trip coil and SSPS
(2) RTB and BYA breakers

B. (1) shunt trip coil only
(2) RTB and BYA breakers

C. (1) shunt trip coil and SSPS
(2) RTB only

D. (1) shunt trip coil only
(2) RTB only

The SSPS system in general is a de-energize to actuate process and ESFAS is an energized to actuate process. Also, the reactor trip breakers have two methods of tripping – UV and by the shunt trips device which was installed do an event in which the "normal" UV trip failed to trip the breaker. The bypass breakers only have the UV trip and also operate from the opposite train SSPS. The breaker trip mechanism is such that springs are charged to trip the breaker. The UV coil will de-energize to operate a plunger to release the springs and trip the breaker. The Shunt trip relay de-energizes to energize the TC to operate the mechanical device to release the springs

DISTRACTOR ANALYSIS:

A. *Correct, The manual reactor trip switch directly actuates the shunt trip coil in each breaker (this opens the RTB) and is an input to SSPS which de-energizes each breakers UV coil (this opens BYA)*

B. *Incorrect, Plausible because the both breakers get a shunt trip coil input and a novice operator may not understand that a manual reactor trip also inputs SSPS which causes the UV coils to trip the breaker as well. In addition, the BYA does not get a UV trip signal from the A train of SSPS. The second part is correct.*

C. *Incorrect, the first part is correct. Plausible as the BYA does not get a trip signal from A train of SSPS. Also plausible as BYA does not have the shunt trip relay that de-energizes to energize the shunt trip coil to trip the breaker.*

D. *Incorrect, Plausible because the both breakers get a shunt trip coil input and a novice operator may not understand that a manual reactor trip also inputs SSPS and causes the UV coils to trip the breaker as well. In addition, the BYA does not get a UV trip signal from the A train of SSPS. The second part is plausible as the BYA does not get a trip signal from A train of SSPS. Also plausible as BYA does not have the shunt trip relay that de-energizes to energize the shunt trip coil to trip the breaker.*

Question Number: 1

Tier: 1 **Group** 1

K/A: 007 EK2.02 Knowledge of the interrelations between a reactor trip and the following: Breakers, relays and disconnects

Importance Rating: 2.6/2.8

10 CFR Part 55: (CFR 41.7 / 45.7)

10CFR55.43.b: Not applicable

K/A Match: Question matches the KA in that it examines the applicants knowledge of the reactor trip breakers and the relays associted with trip operation.

Technical Reference: 0-47W611-99-1 R11
0-45N699-1 R10

Proposed references to be provided: None

Learning Objective: OPT200.RPS LO#'s 5 and 6

Question Source:

New	X
Modified Bank	
Bank	

Question History: New question for the ILT 1311 NRC Exam

Comments:

2. 009 EA2.11 602

Given the following plant conditions:

- Unit 1 Reactor trip and SI have occurred 10 minutes ago.
- RCS Tave 535°F and stable.
- RCS Pressure 1810 psig and slowly lowering.
- Pressurizer level 15% and stable.
- Containment pressure is 1.2 psig and slowly rising.
- The following annunciators are in alarm:
  - TS-30-31 LOWER COMPT TEMP HIGH
  - MS-30-241 LOWER COMPT MOISTURE HI

Which ONE of the following identifies the SI signal which was actuated and the type of accident that is in progress?

A. PZR Pressure Low
PZR steam space break

B. Containment Pressure Hi
PZR steam space break

C. ✔ PZR Pressure Low
Small break LOCA

D. Containment Pressure Hi
Small break LOCA

DISTRACTOR ANALYSIS:

A. Incorrect. First part is correct. SI is actuated with PZR pressure at 1870 psig. Second part is incorrect. A PZR steam space break will cause PZR level to rise. This is plausible since the other indications support this type of break.

B. Incorrect. First part is incorrect. SI is actuated with Containment pressure at 1.54 psid. This is plausible since a preemptive manual SI is frequently directed based on Containment pressure being 1.0 psid and rising. Second part is incorrect (see item A).

C. Correct. First part is correct. SI is actuated with PZR pressure at 1870 psig. Second part is correct. A SBLOCA causes Containment parameters to increase, without causing RCS temperature to lower. PZR level could be maintained with the Charging pump flow.

D. Inc*orrect. First pat is incorrect (see item B). Second part is correct (see item C).*

Question Number: 2

Tier: 1 **Group** 1

K/A: 009 Small Break LOCA
EA2.11 Ability to determine or intrepret the following as they apply to a small break LOCA: Containment temperature, pressure, and humidity.

Importance Rating: 3.8 / 4.1

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

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA since containment parameters are being used to determine the type of event which is progress.

Technical Reference: E-0 Rev 35
AR-M5-C Rev 19 (Window B-1 and B-3)

Proposed references to be provided: None

Learning Objective: OPL271E-0 Obj 7
Given a set of initial plant conditions, determine required procedural transitions per E-0.

Question Source:

New	
Modified Bank	
Bank	X

Question History: Original question from WBN, SQN Bank, ILT 1311 NRC Exam

Comments: Added more detailed S/G data for distractor analysis plausiblity for ILT 1311 NRC Exam

3. 015 AK1.01 503

Given the following plant conditions:

- The plant is tripped from full power due to a loss of Component Cooling Water.
- The crew transitions to ES-0.1, "Reactor Trip Response," while continuing to perform the actions of AOP-M.03, "Loss of Component Cooling Water."
- 20 minutes after the trip, the following conditions exist:
  - S/G pressures are all approximately 1005 psig and stable.
  - RCS pressure 2235 psig and stable.
  - Thot is approximately 570°F in all loops and slowly lowering.
  - Core exit TC's indicate approximately 575°F and stable.
  - Tcold is approximately 547°F in all loops and stable.

Which ONE of the following completes the statements below?

Heat is being removed via ___(1)___

AND

Natural Circulation conditions ___(2)___ exist in accordance with EA-68-6, "Monitoring Natural Circulation Conditions".

A. (1) Condenser Steam Dumps ONLY
   (2) do

B. (1) Condenser Steam Dumps ONLY
   (2) do NOT

C. (1) Condenser Steam Dumps AND Atmospheric Relief Valves
   (2) do

D. (1) Condenser Steam Dumps AND Atmospheric Relief Valves
   (2) do NOT

DISTRACTOR ANALYSIS:

A. Correct. First part is correct. Condenser steam dumps are controlling temperature as indicated by Tcold being 547°F and stable. Second part is correct. Conditions provided meet the criteria of EA-68-6.

B. Incorrect. First part is correct. Condenser steam dumps are controlling temperature as indicated by Tcold being 547°F and stable. Second part is incorrect. This is plasible if the candidate does not recognize the conditions required to meet the criteria of EA-68-6.

C. Incorrect. First part is incorrect. Condenser steam dumps are controlling temperature as indicated by Tcold being 547°F and stable. This is plausible as it can logically be assumed that both sets of relief valves would be required to control RCS temperature early post trip. Second part is correct. Conditions provided meet the criteria of EA-68-6.

D. Incorrect. First part is incorrect (see item C). Second part is incorrect (see item B).

Question Number: 03

Tier: 1 **Group** 1

K/A: 015 RCP Malfunctions
AK1.01 Knowledge of the operational implications of the following concepts as they apply to Reactor Coolant Pump Malfunctions (Loss of RC flow): Natural Circulation in a nuclear reactor power plant.

Importance Rating: 4.4 / 4.6

10 CFR Part 55: 41.10

10CFR55.43.b: Not applicable

K/A Match: This question requires the candidate to recognize a condition where the RCPs are off and the associated RCS conditions which indicate that natural circulation is established.

Technical Reference: EA-68-6, Monitoring Natural Circulation Conditions, Rev 0

Proposed references to be provided: None

Learning Objective: OPL271ES-0.1, Obj 9
Given a set of plant conditions, detemine if natural circulation is occurring inthe RCS and identify actions required if natural circulation cannot be verified IAW ES-0.1.

Question Source:

New	X
Modified Bank	
Bank	

Question History: SQN ILT 1311

Comments:

4. 025 AK3.02 504

Given the following plant conditions:

- Unit 1 is in Mode 5 with the PZR solid.
- Train "A" RHR is aligned to provide shutdown cooling.
- An equipment malfunction occurs causing RCS pressure to rise.
- 1A-A RHR pump has just tripped.
- It is reported that RCS pressure is 375 psig and rising.

In accordance with AOP-R.03, "RHR System Malfunction," which ONE of the following identifies the RCS pressure at which FCV-74-1 & FCV-74-2 are closed and the reason for this action?

NOTE:
FCV-74-1, RHR Suction from RCS Loop 4
FCV-74-2, RHR Suction from RCS Loop 4

A. ✔ 450 psig, to prevent inventory loss through the suction relief valve.

B. 450 psig, to prevent rupturing the PRT rupture disc.

C. 600 psig, to prevent rupturing the PRT rupture disc.

D. 600 psig, to prevent inventory loss through the suction relief valve.

DISTRACTOR ANALYSIS:

A. Correct. First part is correct. AOP-R.03 states that if RCS pressure cannot be kept below 450 psig then close FCV-74-1 & 74-2. Second part is correct. This is to isolate the system due to lifting the suction relief valve which will reduce RCS inventory.

B. Incorrect. First part is correct (see item A). Second part is incorrect. Plausible since the RHR suction and discharge relief valves go to PRT and if left unattended, could cause PRT rupture disc to rupture.

C. Incorrect. First part is incorrect. This is the design pressure of the system, AOP-R.03 directs isolation at 450 psi. This is plausible since overpressurization of the RHR could cause additional loss of RCS inventory. Plausible since the RHR suction and discharge relief valves go to PRT and if left unattended, could cause PRT rupture disc to rupture.

D. Incorrect. First part is incorrect (see item C). Second part is correct. The valves are closed to isolate the system prior to the pressure reaching the lift pressure of the suction relief valve which will reduce RCS inventory.

Question Number: 4

Tier: 1 **Group** 1

K/A: 025 Loss of Residual Heat Removal System
AK3.02 Knowledge of the reasons for the following responses as they apply to the Loss of Residual Heat Removal System:
Isolation of RHR low-pressure piping prior to pressure increase above specified level.

Importance Rating: 3.3 / 3.7

10 CFR Part 55: 41.5, 41.10

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by requiring the candidate to identify the pressure at which RHR must be isolated and the reason why.

Technical Reference: AR-M6-C E-7, Rev 37;
AOP-R.03 rev 30;
0-SO-74-1, Residual Heat Removal System, Rev 86

Proposed references to be provided: None

Learning Objective: OPL271AOP-R.03 Obj 6
Describe the reasons and applicable conditions for the notes and cautions of AOP-R.03.

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN ILT 1002, SQN ILT 1311

Comments: Reformatted original question to ensure both knowledge parts of the K/A are tested.

5. 026 AA1.01 205

Given the following plant conditions:

- Unit 1 is at 100% RTP.
- The in-service thermal barrier booster pump trips.
- The standby thermal barrier booster pump failed to start.
- No. 1 RCP lower bearing temperature is 190°F and rising slowly.

Which one of the following completes the statement below?

The standby thermal barrier booster pump should have started on ___(1)___ and in accordance with AOP-M.03, "Loss of Component Cooling Water" the reactor and affected pump must be tripped at ___(2)___ RCP lower bearing temperature.

A. (1) low pressure
   (2) 200°F

B. (1) low pressure
   (2) 225°F

C. (1) low flow
   (2) 200°F

D✔ (1) low flow
   (2) 225°F

DISTRACTOR ANALYSIS:

A. Incorrect, the first part is plausible since the CCS pumps have an auto start on low pressure. The second part is plausible as both the RCP upper and lower motor bearing temperatures reaching 200°F require a reactor and RCP trip.

B. Incorrect, the first part is plausible since the CCS pumps have an auto start on low pressure. The second part is correct.

C. Incorrect, the first part is correct. The standby thermal barrier booster pump is supposed to start automatically in standby on a low flow of <15 gpm. The second part is plausible as both the RCP upper and lower motor bearing temperatures reaching 200°F require a reactor and RCP trip.

D. Correct, the first part is correct. The standby thermal barrier booster pump is supposed to start automatically in standby on a low flow of <15 gpm. The second part is correct. Per AOP-M.03 the reactor must be tripped and the affected RCP removed from service at 225°F.

Question Number: 5

Tier: 1 **Group** 1

K/A: 026 Loss of Component Cooling Water (CCW)
AA1.01 Ability to operate and / or monitor the following as they apply to the Loss of Component Cooling Water:
CCW temperature indications.

Importance Rating: 3.1 / 3.1

10 CFR Part 55: (CFR: 41.7 / 45.5 / 45.6)

10CFR55.43.b: Not applicable

K/A Match: Question matches KA in that it requires the examinee to know a CCW temperature to to take action if temperature limits have been exceeded.

Technical Reference: AOP-M.03, Rev 15
1,2-47W611-70-3 Rev 14

Proposed references to be provided: None

Learning Objective: OPL271AOP-M.03 Obj 7
Given the procedure and a set of initial plant conditions, determine actions required to mitigate the event in progress.

Question Source:

New	X
Modified Bank	
Bank	

Question History: New question for ILT 1311 NRC Exam

Comments:

6. 027 AK1.02 106

Given the following plant conditions:

- Unit 1 is performing Section 5.4, "Drawing a bubble in the Pressurizer" of 0-GO-1, "Unit Startup from Cold Shutdown to Hot Standby.
- To initiate the PZR heatup for drawing a bubble, the OATC placed 1-PIC-68-340A, PZR PRESSURE CONTROL in MANUAL and attempted to drive the output needle to the CLOSE position, but the output failed to 25%.
- 1-PIC-68-340A reference setpoint (potentiometer setting) is at the normal setting.
- PZR level cold cal is at 100%.
- When the BACKUP HEATERS A and B heater control switch is placed to ON and released to A-AUTO, the heaters energize and remain energized.

Which ONE of the following completes the statements below?

The BACKUP HEATERS A and B remain energized due to the __(1)__.

AND

As the PZR liquid is heated for bubble formation, maintaining a constant RCS pressure requires letdown flow to rise due to the PZR liquid density ___(2)___.

A. (1) pressure control malfunction
(2) increasing

B. (1) pressure control malfunction
(2) decreasing

C. (1) PZR level
(2) increasing

D. ✔ (1) PZR level
(2) decreasing

DISTRACTOR ANALYSIS:

A. Incorrect. First part is incorrect. Master controller output cause the BU htr to energize when the output is approx 11%. This is plausible if it is assumed that since the controller is in MANUAL, the controller output would not cause or inhibit heater operation. Second part is incorrect. As water is heated, the density decreases. This is plausible since this is a common point of confusion/misconception since it is an inverse function.

B. Incorrect. First part is incorrect (see item A). The second part is correct. As water is heated, density decreases.

C. Incorrect. First part is correct. Since PZR level is greater than Ref level (>5%), BU htrs will remain energized when the htrs are placed in ON. Second part is incorrect. As water is heated, the density decreases. This is plausible since this is a common point of confusion/misconception since it is an inverse function.

D. Correct. First part is correct. Since PZR level is greater than Ref level (>5%), BU htrs will remain energized when the htrs are placed in ON. Second part is correct. As water is heated, density decreases.

Question Number: 6

Tier: 1 **Group** 1

K/A: 027 Pressurizer Pressure Control System (PZR PCS) Malfunction
AK 1.02 Knowledge of the operational implications of the following concepts as they apply to Pressurizer Pressure Control Malfunctions: Expansion of liquids as temperature increases.

Importance Rating: 2.8 / 3.1

10 CFR Part 55: (CFR: 41.8 / 41.10 / 45.3)

10CFR55.43.b: Not applicable

K/A Match: Question matches KA in that it requires knowledge of PZR PCS operation with a malfunction and requires knowledge of properties of water when heated.

Technical Reference: TI-28 Att 9, eff date 3-30-12
0-GO-1, Rev 70
1-AR-M5-A, Rev 37, (Window E-4)

Proposed references to be provided: None

Learning Objective: OPT200.PZR-PRT Obj 7.f
Explain the Pressurizer Level and Pressure Control System design features and/or interlocks that provide the following: Pressurizer Pressure Control Program.

Question Source:

New	X
Modified Bank	
Bank	

Question History: New question for ILT 1311 NRC Exam

Comments:

7. 038 EG2.4.31 507

Given the following plant conditions:

- Unit 1 Reactor trip and SI were initiated due to a Steam Generator Tube Rupture.
- The crew is performing E-3, "Steam Generator Tube Rupture".
- RCS cooldown and depressurization has been completed.
- SI has been terminated.
- Charging and letdown are in service.
- While isolating Cold Leg Accumulators at step 31, the OATC reports CET Subcooling is 38°F.

Which ONE of the following actions is required?

A. Turn on PZR heaters.

B. Throttle open on 1-FCV-62-93, to raise charging flow.

C. Start CCPs or SI pumps manually and return to Step 8 to reperform the RCS cooldown and restore subcooling.

D. ✔ Start CCPs or SI pumps manually and GO TO ECA-3.1, SGTR and LOCA - Subcooled Recovery."

DISTRACTOR ANALYSIS:

A. Incorrect. Foldout page criteria requires a transition to ECA-3.1. This is plausible since this action would increase pressure and raise subcooling. It is also an action in Step 32 for raising RCS pressure to minimize Pri to Sec leakage.

B. Incorrect. Foldout page criteria requires a transition to ECA-3.1. This is plausible since this action is provided in Step 32 for controlling Pri to Sec leakage.

C. Incorrect. Foldout page criteria requires a transition to ECA-3.1. This is plausible since starting the pumps and performing additional cooldown would restore subcooling.

D. Correct. *Foldout page criteria requires a transition to ECA-3.1.*

Question Number: 7

Tier: 1 **Group** 1

K/A: 038 Steam Generator Tube Rupture (SGTR)
G2.4.31 Knowledge of annunciator alarms, indications, or response procedures.

Importance Rating: 4.2 / 4.1

10 CFR Part 55: (CFR: 41.10 / 45.3)

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA in that it provides an indication and requires knowledge of the response procedure to determine required action.

Technical Reference: E-3, Steam Generator Tube Rupture

Proposed references to be provided: None

Learning Objective: OPL271E-3 Obj 7
Describe the conditions and resons for transitions within this procedure and transitions to other procedures.

Question Source:

New	
Modified Bank	
Bank	X

Question History: Diablo Canyon 2007, SQN ILT 1311 NRC Exam

Comments:

8. 055 EA2.03 008

Given the following plant conditions:

- A loss of offsite power occurs.
- 2A-A and 2B-B D/Gs are the only diesel generators to start automatically.
- The Unit 1 crew enters ECA-0.0, "Loss of All AC Power" and has completed the Immediate Operator Actions.

Which ONE of the following identifies both...

1) the actions the crew would take when <u>first directed</u> in accordance with ECA-0.0 to attempt to manually start the diesel generators

AND

2) the speed at which the diesel generator field should flash after the diesel generator is started?

A. ✔ (1) Attempt to emergency start 1A-A and 1B-B D/Gs <u>without</u> placing the associated ECCS pump handswitches in Pull-to-Lock (PTL).

(2) 550 rpm.

B. (1) Attempt to emergency start 1A-A and 1B-B D/Gs <u>without</u> placing the associated ECCS pump handswitches in Pull-to-Lock (PTL).

(2) 850 rpm.

C. (1) Attempt to emergency start 1A-A and 1B-B D/Gs <u>only after</u> the ECCS pump handswitches have been placed in Pull-to-Lock (PTL).

(2) 550 rpm.

D. (1) Attempt to emergency start 1A-A and 1B-B D/Gs <u>only after</u> the ECCS pump handswitches have been placed in Pull-to-Lock (PTL).

(2) 850 rpm.

DISTRACTOR ANALYSIS:

A. Correct, a manual start of the DGs would be attempted after the IOAs were completed prior to placing the ECCS pump hand switches in the pull-to-lock position and after the DG is started, the generator field will be flashed by the 550 rpm speed switch.

B. Incorrect, First part is plausible because it is correct. Second part is plausible because at 850 rpm several actions in the DG start sequence occur (permissibility for BKR closure, failure to run alarm defeated, etc).

C. Incorrect, The ECCS pump switches do not get placed in PTL until step 10, after this step the DG is not started until the applicable ECCS equip is defeated from auto start per the basis documents. Plausible, because after this step the DG would not be started until this condition is met. The second part is plausible because it is correct.

D. Incorrect, . The ECCS pump switches do not get placed in PTL until step 10, after this step the DG is not started until the applicable ECCS equip is defeated from auto start per the basis documents. Plausible, because after this step the DG would not be started until this condition is met. Second part is plausible because at 850 rpm several actions in the DG start sequence occur (permissibility for BKR closure, failure to run alarm defeated, etc).

Question Number: 8

Tier: 1 **Group** 1

K/A: 055 Loss of Offsite and Onsite Power (Station Blackout)
055 EA2.03 Ability to determine or interpret the following as they apply to a Station Blackout: Actions necessary to restore power

Importance Rating: 3.9/4.7

10 CFR Part 55: (CFR 43.5 / 45.13)

10CFR55.43.b: Not applicable

K/A Match: Question matches the KA because it requires knowledge of how to take actions to start DGs amd repower the SDBs.

Technical Reference: ECA-0.0, "Loss of All AC Power", Rev 26
EPM-3 ECA-0.0 Rev 14
DWG:1/2 45N767-3

Proposed references to be provided: None

Learning Objective: OPL271ECA-0.0 Obj 3 & 6
Given a set of initial plant conditions, determine initial Operator response to stabilize the plant, including applicable Immediate Operator Actions (IOAs)
Given the procedure and a set of initial plant conditions, determine actions required to mitigate the event in progress.

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN Bank, ILT 1311 NRC Exam

Comments:

9. 056 AG2.1.20 609

Given the following plant conditions:

- The 1B-B DG is tagged for maintenance.
- A loss of off-site power has occurred.
- Unit 1 is responding per AOP-P.01, "Loss of Offsite Power."
- Unit 2 is responding per ECA-0.0, "Loss of All AC Power."
- You are an extra UO and have been directed by U2 SRO to perform EA-250-1, "Load Shed of Vital Loads After Station Blackout."

In accordance with EA-250-1, which ONE of the following identifies both:

(1) the maximum time allowed to complete the load shedding actions

and based upon that time

(2) which load(s) will no longer be available after the required DC loads have been load shed?

A. (1) 45 minutes
(2) MCR annunciators, permissive lights and SSPS status lights

B. (1) 45 minutes
(2) DC air side seal oil pump

C. (1) 90 minutes
(2) MCR annunciators, permissive lights and SSPS status lights

D. (1) 90 minutes
(2) DC air side seal oil pump

DISTRACTOR ANALYSIS:

A. Correct, ECA-0.0 states that to conserve battery capacity, 125V battery board breakers with pink SBO tags must be opened within 45 minutes. Completing the actions of EA-250-1 will result in loss of all MCR annunciators, permissive lights and SSPS status lights.

B. Incorrect, Plausible since the action to load shed is to be completed within 45 minutes, however the DC air side seal oil pump is removed from service using EA-250-2, but only after the generator hydrogen pressure has been reduced to less than 3 psig and is performed within 90 minutes.

C. Incorrect, Plausible since the DC air side seal oil pump is to be load shed within 90 minutes, thus the candidate may get confused as to when the load shed actions of EA-250-1 are to be performed.

D. Incorrect, Plausible since the DC air side seal oil pump is to be load shed within 90 minutes, however the time limit for load shed in accordance with EA-250-1 is within 45 minutes.

Question Number: 9

Tier: 1 **Group** 1

K/A: 056 AG2.1.20 Loss of Offsite Power
Ability to interpret and execute procedure steps.

Importance Rating: 4.6/4.6

10 CFR Part 55: (CFR: 41.10 / 43.5 / 45.12)

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A since it requires the operator to know the time required in execution of EA-250-1 and interpretation of plant status as affected by hte actions.

Technical Reference: ECA-0.0 R 26
EA-250-1 R 16
EA-250-2 R9

Proposed references to be provided: None

Learning Objective: OPL271ECA-0.0 obj 5

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN ILT NRC 1201 , SQN ILT NRC 1311 Exam

Comments:

10. 057 AA1.04 410

Given the following plant conditions:

Unit 1 is operating at 100% RTP.

Subsequently,

- Annunciator 1-M-1C, B-7, “120V AC VITAL POWER BOARD 1-II UV OR BKR TRIP” is LIT.
- Channel II status lights are LIT.

Which ONE of the following completes the statement below?

___(1)___ and the crew will be required by AOP-P.03, "LOSS OF UNIT 1 VITAL INSTRUMENT POWER BOARD" to ___(2)___.

A. (1) 1-FCV-62-136, RWST TO CCP would indicate open
(2) manually close the valve

B. ✔ (1) 1-FCV-62-136, RWST TO CCP would indicate open
(2) trip the reactor

C. (1) Both 1-HS-68-340B & D, Loops 1 & 2 Spray valves will fail closed
(2) allow a PORV to control RCS pressure

D. (1) Both 1-HS-68-340B & D, Loops 1 & 2 Spray valves will fail closed
(2) operate the PZR Heaters to control RCS pressure

DISTRACTOR ANALYSIS:

A. Incorrect, the first part is correct. The second part is plausible as closing the valve would stop the uncontrolled boration, however the operator has no control over the valve from the MCR.

B. Correct, due to loss of the vital instrument power board 1-II, the loss of train separation relays causes the RWST to the CPP to open causing an uncontrolled boration. AOP-P.03 directs the reactor to be tripped.

C. Incorrect, the first part is plausible as loops 1 & 2 spray valves are both affected by the loss of the 1-II instrument bus. Loop 2 will be unavailable from loss of air. Loop one will be available, but it will have no open indication when it is operated. The situation in this distracter is completely accurate for a loss of vital bus IV. The second part is plausible as they are correct actions contained in AOP-P.03, for the given situation for a loss of bus VI and loss of the PZR spray valves.

D. Incorrect, the first part is plausible as loops 1 & 2 spray valves are both affected by the loss of the 1-II instrument bus. Loop 2 will be unavailable from loss of air. Loop one will be available, but it will have no open indication when it is operated. The situation in this distracter is completely accurate for a loss of vital bus IV. The second part is plausible as they are correct actions contained in AOP-P.03, for the given situation for a loss of bus VI and loss of the PZR spray valves.

Question Number: 10

Tier: 1 **Group** 1

K/A: 057 Loss of Vital AC Electrical Instrument Bus
AA 1.04 Ability to operate and / or monitor the following as they apply to the Loss of Vital AC Instrument Bus: RWST and VCT valves

Importance Rating: 3.5/3.6

10 CFR Part 55: **(CFR 41.7 / 45.5 / 45.6)**

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA because it test the indication status of the RWST supply to the CCP suction on a loss of 120V vital power and examines which action to take in response to this.

Technical Reference: AOP-P.03, Loss of Unit 1 Vital Instrument Power Board R25

Proposed references to be provided: None

Learning Objective: OPL271P.03/04 Obj 9 & 12
List any condition(s) that require a Reactor or Turbine trip in AOP-P.03/04.
Given a set of initial plant conditions, describe the expected plant response for the loss of a vital instrument power board.

Question Source:

New	X
Modified Bank	
Bank	

Question History: New for NRC ILT 1311 Exam

Comments:

11. 058 AK3.01 211

Given the following plant conditions:

- Unit 1 & 2 are steady-state at 100% power.
- 125V DC Vital Battery Board IV is inadvertently deenergized.
- All 4 Diesel Generators start.

Which ONE of the following describes an effect this has on the diesel generators?

A. Diesel Generator 1B-B could only be shutdown using the EMERGENCY STOP pushbutton on 0-M-26.

B. ✔ Diesel Generator 2B-B could only be shutdown using the Local Panel EMERGENCY STOP pushbutton at the DG Building.

C. All engine trips except for overspeed on Diesel Generator 1B-B would be disabled and ALL generator trips would remain enabled.

D. All generator trips except for generator differential on Diesel Generator 2B-B would be disabled and ALL engine trips would remain enabled.

DISTRACTOR ANALYSIS:

A. Incorrect, A loss of Vital Battery Board IV affects the control power associated with Diesel Generator 2B-B not the 1B-B. Plausible if the control power supply for the Train B DGs and their associated controls are reversed.

B. CORRECT, A loss of Vital Battery Board III results in an auto start of all diesel generators via the CES relay and a loss of control power to the Main and Auxiliary Control Room controls for Unit 2. Vital Battery Board IV supplies control power to Diesel Generator 2B-B controls. Without control power available, Diesel Generator 2B-B can only be stopped using the Emergency Stop pushbutton locally at the diesel.

C. Incorrect, The condition of all trips being enabled except for the overspeed trip is not correct for the condition identified. Plausible because this condition would exist if the DG was paralleled to the board and received an emergency start signal from the CES relay.

D. Incorrect, The condition of all trips being enabled except for the generator differential trip is not correct for the condition identified. Plausible because this condition would exist if the DG received an emergency start signal from the emergency start pushbutton on 0-M-26.

Question Number: 11

Tier: 1 **Group** 1

K/A: 058AK3.01
AK3.01 Knowledge of the reasons for the following responses as they apply to the Loss of DC Power:
Use of dc control power by D/Gs

Importance Rating: 3.4/3.7

10 CFR Part 55: 41.5, 41.10 / 45.6 / 45.1

10CFR55.43.b: Not applicable

K/A Match: The question matches the K/A as requires the applicant to know the reason the DG will not shutdown from the MCR.

Technical Reference: AOP-P.02, Loss of 125V DC Vital Battery Board, Rev 14
1,2-45N767-2 R31
1,2-45N767-4 R
1,2-45N767-5 R15

Proposed references to be provided: None

Learning Objective: OPT200.DC #8
Given specific plant conditions, Analyze the effect that a loss or malfunction of the DC systems will have on the following: a. DGs

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN ILT 0109 NRC Exam

Comments:

12. 062 AA2.06 512

Given the following plant conditions:

- Unit 1 is at 100% RTP.
- Subsequently, the unit experiences….

Time	Event
0 seconds	Loss of all Offsite Power
13.5 seconds	LOCA resulting in Safety Injection (SI)

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

The selected ERCW pumps sequence on ~15 seconds after ___(1)___.

AND

As stated in AOP-M.01, "Loss of Essential Raw Cooling Water", any running CCP may experience bearing failure as early as ___(2)___ minutes after losing cooling water.

A. (1) shutdown board voltage is restored
(2) 10

B. ✔ (1) the SI signal is received
(2) 10

C. (1) shutdown board voltage is restored
(2) 15

D. (1) the SI signal is received
(2) 15

DISTRACTOR ANALYSIS:

A. Incorrect. First part is incorrect. The timer resets and the ERCW will start 15 seconds after the SI signal is developed. This is plausible as logically the pump would start 15 seconds after the BO sequence began if the SI did not reset the timer. Second part is correct.

B. Correct. First part is correct. ERCW pumps strip on BO and sequence on at time 15 seconds. Having not started before the SI signal is actuated caused the timer to reset and start 15 seconds after the SI signal is developed. Second part is correct. IAW AOP-M.01, the CPPs could have bearing failure after 10 minutes without ERCW cooling.

C. Incorrect. First part is incorrect (see item A). This is plausible as logically the pump would start 15 seconds after the BO sequence began if the SI did not reset the timer. Second part is incorrect. Plausible as 15 minutes is the only other time mentioned in AOP-M.01 as being critical and is the time that the AUX BLDG passive sump would fill up on a ERCW header rupture.

D. Incorrect. First part is correct (see item B). Secon part is incorrect. Plausible as 15 minutes is the only other time mentioned in AOP-M.01 as being critical and is the time that the AUX BLDG passive sump would fill up on a ERCW header rupture.

Question Number: 12

Tier: 1 **Group** 1

K/A: 062 Loss of Nuclear Service Water
AA2.06 Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water:
The length of time after the loss of SWS flow to a component | before that component may be damaged

Importance Rating: 2.8*/3.1*

10 CFR Part 55: **(CFR: 43.5 / 45.13)**

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA in that it examines the applicants knowledge of the amount of time required from a loss of ERCW unitl CCP damage occurs.

Technical Reference: AOP-M.01, Loss of Essential Raw Cooling Water R26
TI-28, ATT 9, eff date 3-30-2012

Proposed references to be provided: None

Learning Objective: OPT200.CVCS #9.f
Given specific plant conditions, Analyze the effect that a loss or malfunction of the following will have on CVCS: ERCW

Question Source:

New	
Modified Bank	X
Bank	

Question History: Modified 056 AK3.01 to add stem, answer and distracter criteria to match KA

Comments:

13. 065 AK3.04 013

Given the following plant conditions:

- Unit 1 has experienced a station blackout.
- The crew is responding in accordance with ECA-0.0, “Loss of All AC Power”.

Which ONE of the following completes the statement below?

The reason for the Turbine Driven AFW Pump LCV’s backup air supply is to allow the LCVs to be ___(1)___ and the backup air supply will ___(2)___.

A. (1) OPENED
(2) require manual alignment locally when needed

B. (1) OPENED
(2) automatically be supplied when air pressure drops below regulator setpoint

C. ✔ (1) CLOSED
(2) require manual alignment locally when needed

D. (1) CLOSED
(2) automatically be supplied when air pressure drops below regulator setpoint

DISTRACTOR ANALYSIS:

A. Incorrect, the backup supply is to allow the valves to be closed, not opened, during a station blackout where the normal air is lost. The manual alignment of the supply is correct. Plausible because other AFW LCVs do fail closed and the manual alignment is required to use the backup supply.

B. Incorrect, the backup supply is to allow the valves to be closed, not opened, during a station blackout where the normal air is lost and while there is a regulator, the backup supply is not automatically until it is manually aligned. Plausible because other AFW LCVs do fail closed and there are regulators to maintain pressure to the LCVs at 75 psig when using the backup supply.

C. CORRECT, the backup supply is from high pressure air cylinders that allow the valves to be closed a limited number of times after the normal air pressure is lost during a station blackout and its use requires manual valve alignment in accordance with EA-3-4, Local Alignment of TD AFW LCV Backup Air Supply.

D. Incorrect, the backup supply is to allow the valves to be closed during a station blackout where the normal air is lost but it requires a manual valve to be opened to enable its use. Plausible because its purpose is to allow the valve to be closed and there are regulators to maintain pressure to the LCVs at 75 psig when using the backup supply

Question Number: 13

Tier: 1 **Group** 1

K/A: 065 AK3.04 Loss of Instrument Air
Knowledge of the reasons for the following responses as they apply to the Loss of Instrument Air: Cross-over to backup air supplies

Importance Rating: 3.0 / 3.2

10 CFR Part 55: **(CFR 41.5,41.10 / 45.6 / 45.13)**

10CFR55.43.b: Not applicable

K/A Match: Question matches the K/A because it test applicants knowledge of the reason that a backup air supply is needed for TDAFW Pump LCVS during a station blackout.

Technical Reference: ECA-0.0, Loss of ALL AC" R25
EA-3-4, Local Alignment of TD AFW LCV Backup Supply, R4

Proposed references to be provided: None

Learning Objective: OPT200.AFW #14
Given specific plant conditions, ANALYZE the effect taht a loss or malfunctioni of the following will have on the AFW system:
b. Control air

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN ILT NRC Exam 0109, SQN ILT 1311 NRC Exam

Comments: Modified stem to meet new expectations and change to a two part question. Reordered answer and distractors.

14. 077 AG2.2.42 214

Given the following plant conditions:

- Units 1 & 2 are at 100% RTP.
- The switchyard is in a normal lineup when a malfunction occurs with the “A” CSST tap changer ‘Y’ winding.
- The tap changer is currently stuck in the Manual **3R** position.

Which one of the following completes the following statement?

The tap changer ___(1)___ in an “other alternate alignment” and the crew will ___(2)___ LCO 3.8.1.1, AC Sources – Operating action statement.

A. (1) is
(2) enter

B. (1) is
(2) NOT enter

C. (1) is NOT
(2) enter

D. (1) is NOT
(2) NOT enter

DISTRACTOR ANALYSIS:

A. Correct, the CSST tap changers are considered to be in an “other alternate alignment” if they are not in “auto". Per GOI-6 the CSST is INOP and LCO 3.8.1.1 is entered.

B. Incorrect, the CSST tap changers are considered to be in an “other alternate alignment” if they are not in “auto" and is correct. The second part is plausible as there are other alternate alignments that do not require entry into the LCO such as Manual 2R.

C. Incorrect, plausible as there are other alternate alignments listed in the same section of the procedure. For example there is a "medium Voltage Alternate Alignment". The second part is correct.

D. Incorrect, plausible as there are other alternate alignments listed in the same section of the procedure. For example there is a "medium Voltage Alternate Alignment". The second part is plausible as there are other alternate alignments that do not require entry into the LCO such as Manual 2R.

In addition, if B CSST is used in the stem answer 'D' is correct which adds to the plausibilty.

Question Number: 14

Tier: 1 **Group** 1

K/A: 077 AG2.2.42 Generator Voltage and Electric Grid Disturbances
Ability to recognize system parameters that are entry-level conditions for Technical Specifications.

Importance Rating: 3.9/4.6

10 CFR Part 55: (CFR: 41.7 / 41.10 / 43.2 / 43.3 / 45.3)

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA in that it requires the applicant to know TS entry - level conditions for a grid disturbance. The CSST is considered the interface with the GRID.

Technical Reference: GOI-6
Unit 1 Technical Specifications 3.8.1.1,
Amendment 241

Proposed references to be provided: None

Learning Objective: OPT200.SWYD 6,7 & 11

Question Source:

New	X
Modified Bank	
Bank	

Question History: New for the SQN ILT 1311 NRC Exam

Comments:

15. W/E04 EK2.2 015

Given the following plant conditions:

- The crew has entered ECA-1.2, "LOCA Outside Containment" from E-0, "Reactor Trip or Safety Injection."
- The crew is determining break location and is ready to close 1-FCV-63-94, "RHR Train B Cold Leg Injection Valve."

Which ONE of the following completes the statements below?

RHR pump 1B-B ___(1)___ be stopped prior to closing 1-FCV-63-94.

AND

In accordance with ECA-1.2, if the RCS pressure is lowering after 1-FCV-63-94 is closed, ECA-1.2 requires 1-FCV-63-94 to be ___(2)___.

A. (1) will
(2) left closed

B. (1) will
(2) re-opened

C. (1) will NOT
(2) left closed

D. ✔ (1) will NOT
(2) re-opened

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible because stopping the RHR pump before the valve is isolated would prevent running the pump with no forward flow. At this point in the procedure the first train has already been checked and the examinee could think that re-opening the valve could further add to rapid depletion of the RWST. See caution prior to step 4.

B. Incorrect, Plausible because stopping the RHR pump before the valve is isolated would prevent running the pump with no forward flow. The second part is correct.

C. Incorrect, The first part is correct. At this point in the procedure the first train has already been checked and tne examinee could think that re-opening the valve could further add to rapid depletion of the RWST. See caution prior to step 4.

D. Correct, In accordance with ECA-1.2, "LOCA Outside Containment," the applicable RHR pump is not secured prior to the leak isolation steps. Determination of the leak being isolated is for the RCS pressure to be increasing after the valve is closed. If the pressure is stable or dropping after the valve is closed the leak is not isolated and the valve is re-opened.

Question Number: 15

Tier: 1 **Group** 1

K/A: E04 LOCA Outside Containment
EK2.2 Knowledge of the interrelations between the (LOCA Outside Containment) and the following: Facility*s heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.

Importance Rating: 3.8/4.0

10 CFR Part 55: (CFR: 41.7 / 45.7)

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by requiring the candidate understand the interalationships given a LOCA outside CNMT, RCS pressure and the decay heat removal system.

Technical Reference: ECA-1.2. LOCA Outside Containment, Rev 10

Proposed references to be provided: None

Learning Objective: OPL271.ECA-1.2 Obj 4
Summarize the mitigating strategy for ECA-1.2.

Question Source:

New	
Modified Bank	X
Bank	

Question History: Modified WBN ILT 1303 NRC exam question , SQN NRC ILT 1311 Exam

Comments:

16. W/E05 EK1.3 516

Given the following plant conditions:

- Unit 1 is responding to a Loss of Heat Sink per FR-H.1, "Response to Loss of Secondary Heat Sink."
- All S/G Wide Range levels are Off-Scale low.
- RCS temperature is approximately 588°F and rising slowly.
- Core Exit Thermocouples are 605°F and rising slowly.

Which ONE of the following describes the preferred method of initiating Auxiliary Feed flow for these conditions?

A. Feed at 50 to 100 gpm to all S/Gs to prevent possible tube failures.

B. Feed at the maximum available feed flow to all S/Gs to reestablish S/G inventory and secondary heat sink.

C. Feed at 50 to 100 gpm to one S/G until level is established, then at the maximum available feed flow.

D. ✔ Feed at the maximum available feed flow to one S/G to reestablish S/G inventory and secondary heat sink.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible since SG tube failures are the primary concern when initiating aux. feed, but for these conditions, restoration of 1 SG as soon as possible is the priority and the direction in the procedure is to feed between 50 to 100 gpm.

B. Incorrect, Plausible if the candidate did not recognize that with all SG wide range levels off-scale, the RCS would already be on Feed and Bleed, however prior to going to Feed and Bleed the operators would have been directed to feed at the maximum avaiable rate.

C. Incorrect, Plausible, since the operators normally are to limit RCS cooldown rate, however on a loss of heat sink, cooldown rate is not the priority. The RCS has already heated up. Loss of inventory is a concern due to potential tube failures, but addressed by feeding only 1 SG

D. Correct, If RCS temp is rising with no inventory, AFW flow should be directed to one SG at the max rate available in an attempt to recover heat sink. This minimizes the chance for multiple tube failures as well as the quickest way to recover at least 1 SG as heat sink. At this point, bleed and feed should already be initiated.

Question Number: 16

Tier: 1 **Group** 1

K/A: W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink
EK1.3 Knowledge of the operational implications of the following concepts as they apply to the (Loss of Secondary Heat Sink):
annunciators and conditions indicating signals, and remedial actions associated with the (Loss of Secondary Heat Sink)

Importance Rating: 3.9/4.1

10 CFR Part 55: 41.8, 41.10

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA as it gives plant indications and examines on applicants knowledge of the operational implications of the indications.

Technical Reference: FR-H.1 R19
EPM-3 FR-H.1 R9

Proposed references to be provided: None

Learning Objective: OPL271FR-H.1 Obj. 5 & 6
Describe the bases for all limits, notes, cautions and steps of FR-H.1
Given the procedure and a set of initial conditions, determine actions required to mitigate the event in progress.

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN ILT 1201 NRC Exam, SQN ILT 1311 NRC Exam

Comments: Reordered answer and distractors for 1311 exam

17. W/E11 EA1.3 517

Given the following plant conditions:

- Unit 1 was operating at 100% RTP.
- 1A-A RHR Pump is tagged due to motor repair when a LOCA occurred.
- While performing E-1, "Loss of Reactor or Secondary Coolant," 1B-B RHR pump trips due to a locked rotor.
- During performance of E-1, the crew transitions to ECA-1.1, "Loss of ECCS Sump Recirculation."

- The conditions at the transition are:
  - RCS pressure is 160 psig.
  - Containment pressure is 9.7 psid.
  - RWST level is 58%.
  - Containment sump level is 17%.

Using the plant parameters stated above, when ALL ECA-1.1 steps to address Containment Spray Pump operation are completed, which ONE of the following identifies the number of containment spray pumps that will be running and the suction source to the pump(s)?

	Number of Pumps Running	Suction Source
A.✔	1	RWST
B.	1	Containment sump
C.	2	RWST
D.	2	Containment sump

DISTRACTOR ANALYSIS:

A. Correct, per the table in ECA-1.1 only one CSP will be left running with the given information in the stem. The suction for the pumps will still be the RWST unit level in the sump reaches 22% for adverse CTMT conditions.

B. Incorrect, the first part is correct. The second part is incorrect as suction would still be from the RWST. This is plausible as at 18% the sump switch over requirements take effect. In this case at 22% the suction to the CSP would be switched over to the CTMT sump.

C. Incorrect, the first part is plausible as the table has conditions were the number of CSPs is two. The second part is correct.

D. Incorrect, the first part is plausible as the table has conditions were the number of CSPs is two. The second part is incorrect as suction would still be from the RWST. This is plausible as at 18% the sump switch over requirements take effect. In this case at 22% the suction to the CSP would be switched over to the CTMT sump.

Question Number: 17

Tier: 1 **Group** 1

K/A: E11 Loss of Emergency Coolant Recirculation
EA1.3 Ability to operate and / or monitor the following as they apply to the (Loss of Emergency Coolant Recirculation)
Desired operating results during abnormal and emergency situations.

Importance Rating: 3.7/4.2

10 CFR Part 55: (CFR: 41.7 / 45.5 / 45.6)

10CFR55.43.b: Not applicable

K/A Match: Question matches KA in that given specific parameters during a loss of sump recirc it requires the applicant to know the desired outcome of the CTMT spray system.

Technical Reference: ECA-1.1, Loss of ECCS Sump Recirculation, 12

Proposed references to be provided: None

Learning Objective: OPL271ECA-1.1 Obj 4
Summarize the mitigating strategy foe ECA-1.1

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN ILT 2008 NRC Exam

Comments:

18. W/E12 EK2.1 118

Given the following plant conditions:

- Operators are performing ECA 2.1, "Uncontrolled Depressurization of All Steam Generators."
- RCS Cooldown rate is 125°F per hour.
- Lowest RCS cold leg temperature is 490°F and dropping.
- RCS pressure is 1200 psig and slowly lowering.
- CTMT pressure is at 6 psig and slowly rising.
- Narrow range S/G levels indicate:

S/G 1	S/G 2	S/G 3	S/G 4
9%	12%	10%	12%

- AFW flow to the S/Gs indicate:

S/G 1	S/G 2	S/G 3	S/G 4
110 gpm	180 gpm	170 gpm	180 gpm

Which ONE of the following completes the statement below?

The AFW flow should be reduced to ___(1)___ and the RCPs should ___(2)___ stopped.

A. ✔ (1) 50 gpm to each S/G
(2) be

B. (1) 50 gpm to each S/G
(2) NOT be

C. (1) 440 gpm total
(2) be

D. (1) 440 gpm total
(2) NOT be

DISTRACTOR ANALYSIS:

A. Correct, ECA-2.1 directs that for CDR > 100 °F/hour that AFW flow be reduced to 50 gpm per S/G. With > 2.8 psig a phase B has occurred and RCPs will be without cooling, which requires them to be shutdown on a phase B.

B. Incorrect, the first part is correct. The second part is plausible as ECA-2.1 directs that for CDR > 100 °F/hour that AFW flow be reduced to 50 gpm per S/G. It can be assumed that SIPs and CCPs started on the SI and with RCS pressure < 1250 psig you would stop the RCPs if subcooling < 40°F. However, subcooling is around 70 degrees and the RCPs would remain running without recognizing that a phase B has occurred and must be secured do to inability to maintain support conditions.

C. Incorrect, the first part is plausible as 440 gpm is the minimum AFW flow required to maintain heat sink. The second part is correct.

D. Incorrect, the first part is plausible as 440 gpm is the minimum AFW flow required to maintain heat sink. The second part is plausible as ECA-2.1 directs that for CDR > 100 °F/hour that AFW flow be reduced to 50 gpm per S/G. It can be assumed that SIPs and CCPs started on the SI and with RCS pressure < 1250 psig you would stop the RCPs if subcooling < 40°F. However, subcooling is around 70 degrees and the RCPs would remain running without recognizing that a phase B has occurred and must be secured do to inability to maintain support conditions.

Question Number: 18

Tier: 1 **Group** 1

K/A: W/E12 Uncontrolled Depressurization of all Steam Generators
EK2.1 Knowledge of the interrelations between the (Uncontrolled Depressurization of all Steam Generators) and the following: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Importance Rating: 3.4/3.7

10 CFR Part 55: (CFR: 41.7 / 45.7)

10CFR55.43.b: Not applicable

K/A Match: The question meets the KA in that it requires the applicant to apply knowledge of their understanding of the interrelationship of an uncontrolled depressurization of all SGs and components within the AFW and RCS systems that are controlled to mitigate the event.

Technical Reference: ECA-2.1 Uncontrolled Depressurization of All SGs, R11

Proposed references to be provided: None

Learning Objective: OPL271ECA-2.1 Obj 4 & 6
Summarize the mitigating strategy for ECA-2.1
Given the procedure and a set of initial plant conditions, determine actions required to mitigate the event in progress

Question Source:

New	
Modified Bank	X
Bank	

Question History: Modified W/E12 EK2.1 from SQN ILT 1305 Audit

Comments:

19. 001 AA1.04 119

Given the following plant conditions:

- Unit 1 is at 45% RTP placing B MFP in service.
- Control Bank "D" begins withdrawing at 48 steps/min.
- Rods are placed in MANUAL and continue to withdraw.
- Both Reactor Trip switches are manipulated and the reactor fails to trip
- FR-S.1, "Nuclear Power Generation / ATWS" is entered.
- EA-68-4, "Emergency Boration" is being performed using the BAT as the boration source.
- When the OATC releases the 1-HS-62-138A, EMERGENCY BORATION FLOW CONTROL VALVE switch, boric acid flow is at 40 gpm.
- 2 minutes after EA-68-4 has been initiated, plant conditions are as follows:
  - Turbine is tripped
  - Tave is 553°F and slowly lowering
  - No RCS dilution is in progress
  - AUOs have completed local actions of FR-S.1 successfully

Which ONE of the following completes the statement below?

The boric acid flow ___(1)___ greater than minimum required flow

AND

Emergency Boration can first be terminated after ___(2)___.

A. (1) is NOT
   (2) ONLY after cold shutdown boron concentration is reached

B. (1) is NOT
   (2) all control rods are fully inserted

C. (1) is
   (2) ONLY after cold shutdown boron concentration is reached

D. ✔ (1) is
   (2) all control rods are fully inserted

DISTRACTOR ANALYSIS:

A. Incorrect. First part is incorrect. This is a throttle valve and only moves when the switch is held in the desired position. The flow is plausible since there are other minimum required flows - such as emergency borating from the RWST (90 gpm). Second part is incorrect. FR-S.1 step 21 establishes the criteria for termination and adequate shutdown margin is all that is needed, CSD boron concentration is not required. This is plausible since there are steps in EA-68-4 which establish varying levels of boron concentration based upon RCS temperature.

B. Incorrect. First part is incorrect (see item A). Second part is correct. FR-S.1 step 21 establishes the criteria for termination and all control rods fully inserted (along with the parameters stated in the step of the question) allow termination of emergency boration.

C. Incorrect. First part is correct. The minimum required flow is 35 gpm. Second part is incorrect (see item A).

D. Corret. First part is correct. The minimum required flow is 35 gpm. Second part is correct. FR-S.1 step 21 establishes the criteria for termination and all control rods fully inserted (along with the parameters stated in the step of the question) allow termination of emergency boration.

Question Number: 19

Tier: 1 **Group** 1

K/A: 001 Continuous Rod Withdrawal
AA1.04 Ability to operate and / or monitor the following as they apply to the Continuous Rod Withdrawal: Operating swtich for emergency boration motor-operated valve operating switch

Importance Rating: 3.8 / 3.6

10 CFR Part 55: 41.7 / 45.5 / 45.6

10CFR55.43.b: Not applicable

K/A Match: K/A is match since candidate must recall what the minimunm required boric acid flow is when operating the emergency boration valve.

Technical Reference: FR-S.1, Nuclear Power Generation / ATWS, Rev 23
EA-68-4, Emergency Boration,Rev 12

Proposed references to be provided: None

Learning Objective: OPL271FR-S.1 #
OPT200.CVCS Obj 1.s,t & u
Describe the purpose and/or functions of the CVCS and subsystems, and the major systems listed below:
Emergency borate valve FCV-62-138 and alternate borate valve VLV-62-929

Question Source:

New	X
Modified Bank	
Bank	

Question History: SQN ILT 1311

Comments:

20. 036 AK3.02 520

Which ONE of the following completes the statement below?

The reason for the Transfer Cart/Upender “Conveyor at Pit” interlock is to prevent a fuel handling accident by NOT upending the cart unless it is at the ___(1)___ side and this interlock ___(2)___ be bypassed with the Fuel Handling Supervisors permission.

A. (1) Rx
(2) can

B. (1) Rx
(2) cannot

C. ✔ (1) SFP
(2) can

D. (1) SFP
(2) cannot

DISTRACTOR ANALYSIS:

A. Incorrect, plausible as there is a Conveyor at Rx interlock that requires the conveyor to be at the Rx to upend the cart. The second part is correct.

B. Incorrect, plausible as there is a Conveyor at Rx interlock that requires the conveyor to be at the Rx to upend the cart. The second part is plausible as there are Transfer Cart/Upender interlocks that cannot be bypassed (Valve Open interlock).

C. Correct, the Conveyor at Pit interlock exist to prevent raising the cart unless it is at the SFP (PIT). The interlock can be bypassed.

D. Incorrect, The first part is correct. The second part is plausible as there are Transfer Cart/Upender interlocks that cannot be bypassed (Valve Open interlock).

Question Number: 20

Tier: 1 **Group** 2

K/A: 036 Fuel Handling Accident
AK3.02 Knowledge of the reasons for the following responses as they apply to the Fuel Handling Incidents:
Interlocks associated with fuel handling equipment

Importance Rating: 2.9 / 3.6

10 CFR Part 55: 41.5, 41.10

10CFR55.43.b: not applicable

K/A Match: This question meets the KA in that it examines the applicant on the reasons for the Conveyor at Pit interlock.

Technical Reference: FHI-3, page 43 rev 70

Proposed references to be provided: None

Learning Objective: OPT200FH, Obj. 5.d
Explain the Fuel Handling System design features and/or interlocks that provide the following: Conveyor and Transfer Cart

Question Source:

New	X
Modified Bank	
Bank	

Question History: New question for SQN 1311 ILT NRC Exam

Comments:

21. 037 AK1.02 621

Given the following plant conditions:

- Unit 1 is at 85% RTP with a shutdown in progress IAW AOP-C.03, "Rapid Shutdown Or Load Reduction due to a Steam Generator Tube Leak.
- PZR level has been stabilized in accordance with AOP-R.01, “Steam Generator Tube Leak”.
- Turbine is currently on HOLD to allow RCS conditions to stablize.
- Current plant conditions are:
  - PZR Level is 55% and stablized
  - Charging flow is 105 gpm on FI-62-93A, "CHARGING HDR FLOW"
  - RCP seal leak off is 3 gpm per pump
  - RCP seal injection is 8 gpm per pump
  - Letdown is isolated

Which ONE of the following completes the statement below?

The tube leak estimated magnitude is ___(1)___ gpm and leak rate will ___(2)___ as power is reduced.

A. ✔ (1) 93
(2) lower

B. (1) 125
(2) remain the same

C. (1) 93
(2) remain the same

D. (1) 125
(2) lower

DISTRACTOR ANALYSIS:

A. Correct, since the charging flow meter is inclusive of seal injection flow – total charging flow is 105 gpm. With PZR level stable the leak rate is 105 gpm – 12 gpm (3 X 4 RCPs = 12) = 93 gpm. As power is reduced SG pressures rise, lowering the D/P between the SG and the RCS. This causes the leak rate to lower.

B. Incorrect, plausible if the applicant does not understand that the charging flow meter includes seal injection flow. If the calculation is down with this understanding, calculated leak rate is 105 gpm + 32 gpm – 12 gpm = 125 gpm. The second part is plausible as it is logical to think that the leak rate is independent of power level as a primary leak would be not associated with a SG.

C. Incorrect, the first part is correct. The second part is plausible as it is logical to think that the leak rate is independent of power level as a primary leak would be not associated with a SG.

D. Incorrect, plausible if the applicant does not understand that the charging flow meter includes seal injection flow. If the calculation is down with this understanding, calculated leak rate is 105 gpm + 32 gpm – 12 gpm = 125 gpm. The second part is correct.

Question Number: 21

Tier: 1 **Group** 2

K/A: 037 Steam Generator (S/G) Tube Leak
AK1.02 Knowledge of the operational implications of the following concepts as they apply to Steam Generator Tube Leak:
Leak rate vs. pressure drop

Importance Rating: 3.5/3.9

10 CFR Part 55: **(CFR 41.8 / 41.10 / 45.3)**

10CFR55.43.b: Not applicable

K/A Match: Question matches KA in that it gives the situation of a SGTL and examines on the interelationship between leak magnitude and effect on RCS pressure.

Technical Reference: AOP-R.01, SGTL R31
AOP-R.05, RCS Leak. R18

Proposed references to be provided: None

Learning Objective: OPL271AOP-R.01 Obj 10
Given a set of initial plant conditions, determine the S/G Tube leak rate.

Question Source:

New	X
Modified Bank	
Bank	

Question History: New for ILT 1311 NRC Exam

Comments:

22. 051 AA2.02 522

Given the following plant conditions:

- Unit 1 turbine load is at 25% power.
- Condenser backpressure is 1.8 psia and rising at 0.1 psia/minute.
- Operators have entered AOP-S.02, "Loss of Condenser Vacuum."

Which ONE of the following is the correct action in accordance with AOP-S.02 for the current conditions?

A. Commence a shutdown per AOP-C.03, "Rapid Shutdown or Load Reduction."

B. Trip the reactor and trip the turbine, GO TO E-0, "Reactor Trip or Safety Injection."

C. Continue in AOP-S.02 and take actions to recover vacuum.

D. ✔ Trip the turbine and GO TO AOP-S.06, "Turbine Trip."

DISTRACTOR ANALYSIS:

A. Incorrect, plausible as this is the correct action to take if turbine load is > 30% and at AOP-S.02 step 11 if condenser pressure is still rising.

B. Incorrect, plausible as this is the correct action to take if turbine load is > 30% and condenser pressure is > 2.7 psia.

C. Incorrect, plausible as this is the correct action to take if condenser pressure is < 1.72 psia

D. Correct, per step 1.b RNO of AOP-S.02, the turbine is tripped.

Question Number: 22

Tier: 1 **Group** 2

K/A: 051 Loss of Condenser Vacuum
AA2.02 Ability to determine and interpret the following as they apply to the Loss of Condenser Vacuum:
Conditions requiring reactor and/or turbine trip

Importance Rating: 3.9/4.1

10 CFR Part 55: 43.5/45.13

10CFR55.43.b: Not applicable

K/A Match: Question matches KA in that it requires knowledge of trip criteria contained in AOP-S.02 for loss of condenser vacuum.

Technical Reference: AOP-S.02, Loss of Condenser Vacuum, Revision 13

Proposed references to be provided: None

Learning Objective: OPL271AOP-S.02
6. Given the procedure and a set of initial plant conditions, determine actions required to mitigate the event in progress. O.F. Teamwork

Question Source:

New	
Modified Bank	X
Bank	

Question History: Modified SRO question 051 AA2.02 from SQN ILT 1211 NRC Exam by changing stem conditions, changing former distracter to the correct answer and making question at the RO level.

Comments:

23. 068 AA2.05 623

Given the following plant conditions:

- Unit 1 was operating at 100% RTP when a Main Control Room evacuation was performed in accordance with AOP-C.04, “Shutdown From Auxiliary Control Room”.

- The crew is in the process of verifying secondary heat sink.

- S/G NR levels are:

#1 S/G	#2 S/G	#3 S/G	#4 S/G
8%	8%	11%	10%

Which ONE of the following completes the statement below?

The above S/G levels ___(1)___ meet heat sink criteria and in accordance with AOP-C.04, the S/G levels are determined by using ___(2)___.

A. (1) do
(2) L-381, S/G level meters on 669 ft elevation

B. ✔ (1) do
(2) 1-L-11, MD AFW Level Indicating Controllers (LICs)

C. (1) do NOT
(2) L-381, S/G level meters on 669 ft elevation

D. (1) do NOT
(2) 1-L-11, MD AFW Level Indicating Controllers (LICs)

DISTRACTOR ANALYSIS:

A. Incorrect, the first part is correct. The second part is plausible as these S/G level meters are outside the MCR and it is logical to assume that they would be used during MCR evacuation.

B. Correct, only one S/G with level ≥ 10% meets the heat sink criteria in AOP-C.04. The process indication from the LIC is used to determine S/G level in AOP-C.04.

C. Incorrect, The first part is plausible as the AER procedure direction has the operator maintain 10-50% in all S/Gs. The operator may think that 2 S/Gs does not meet the heat sink criteria. The second part is plausible as these S/G level meters are outside the MCR and it is logical to assume that they would be used during MCR evacuation.

D. Incorrect. The first part is plausible as the AER procedure direction has the operator maintain 10-50% in all S/Gs. The operator may think that 2 S/Gs does not meet the heat sink criteria. The second part is correct.

Question Number: 23

Tier: 1 **Group** 2

K/A: 068 Control Room Evacuation
AA 2.05 Ability to determine and interpret the following as they apply to the Control Room Evacuation:
Availability of heat sink

Importance Rating: 4.2/4.3

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

10CFR55.43.b: Not applicable

K/A Match: Question matches KA in that it requires the applicant to have knowledge of the indications used to determine availibility of heat sink during an evacuated control room event.

Technical Reference: AOP-C.04, “Shutdown From Auxiliary Control Room”. R32

Proposed references to be provided: None

Learning Objective: OPL271AOP-C.04 Obj 11a
Describe actions per AOP-C.04, that are required to: Maintain plant in Hot Shutdown.

Question Source:

New	X
Modified Bank	
Bank	

Question History: New for ILT 1311 NRC Exam

Comments:

24. 076 AK2.01 524

Given the following plant conditions:

- Unit 1 at 100% RTP with a 48 gpd steady state S/G #2 tube leak for the past 9 hours.
- The following radiation monitors begin to rise concurrently:
  - 1-RM-90-119, "Condenser Vacuum Exhaust"
  - 1-RM-90-106, "Lower Containment"

In accordance with AOP-R.01, "Steam Generator Tube Leak," which ONE of the following:

(1) could cause the concurrent rise in the radiation monitors listed above

AND

(2) identifies the associated sample location requirements?

A. (1) An oscillating primary to secondary leak (Spiking).
(2) S/G ONLY

B. (1) An oscillating primary to secondary leak (Spiking).
(2) S/G and RCS

C✔ (1) The development of a sudden fuel defect.
(2) S/G and RCS

D. (1) The development of a sudden fuel defect.
(2) RCS ONLY

DISTRACTOR ANALYSIS:

A. Incorrect. First part is incorrect. Oscillating primary-to-secondary leakage "spiking" phenomenon would not cause the monitors to rise concurrently. Plausible because the phenomenon is discussed in AOP-R.02 relative to repetitive rises and drops in the S/G tube leakage rates. Second part is incorrect. Since lower containment rad monitors are not STABLE or DROPPING, RCS samples are required. This is plausible if fuel defects are not assumed.

B. Incorrect. First part is incorrect (see item A). Second part is correct. Since lower containment rad monitor is not stable or dropping, RCS samples are taken (AOP-R.01 Step 4.a RNO) while the procedure is continued, therefore S/G samples are taken (App E directs S/G samples to determine leak rate).

C. Correct. First part is correct. Lower containment rad monitor count rate rising concurrently with secondary rad monitors may indicate sudden fuel defect (AOP-R.01 Section 2.2 Note prior to step 4). Second part is correct (see item B).

D. Incorrect. First part is correct (see item C). Second part is incorrect. RCS samples are taken while AOP-R.01 is continued and S/G samples are taken (App E directs S/G samples to determine leak rate) to confirm S/G leak. Plausible since fuel defects would be first identified in RCS samples and novice operator could misapply step 4.a and skip 4.b which directs the S/G samples.

Question Number: 24

Tier: 1 **Group** 2

K/A: 076 High Reactor Coolant Activity
AK 2.01 Knowledge of the interrelations between the High Reactor Coolant Activity and the following:
Process radiation monitors

Importance Rating: 2.6/3.0

10 CFR Part 55: (CFR 41.5,41.10 / 45.6 / 45.13)

10CFR55.43.b: Not applicable

K/A Match: The question requires the applicant to recognize a condition that could exist as a result of failed fuel from information provided during monitoring of process/area radiation monitors affected by the fuel failure..

Technical Reference: AOP-R.01, Steam Generator Tube Leakage, Rev 31
AOP-R.06, High RCS Activity, Rev 12

Proposed references to be provided: None

Learning Objective: OPL271AOP-R.01 Obj 13
Describe the indications of a failed radiation monitor
OPL271AOP-R.06 Obj 1
State the purpose of AOP-R.06

Question Source:

New	X
Modified Bank	
Bank	

Question History: SQN ILT 1311 NRC Exam

Comments:

25. W/E02 EG2.2.44 625

Given the following plant conditions:

- The Unit 1 operating crew is performing actions to terminate a Safety Injection in accordance with ES-1.1, "SI Termination."
- Normal charging and letdown have been established.
- ECCS pumps stopped and placed in A-AUTO.
- Annunciator 1-M4-A, C-4, AUTO SI BLOCKED is currently LIT.

Which ONE of the following identifies the action required to be taken as the procedure is continued that will result in annunciator C-4 being cleared?

A. ✔ Cycling the Reactor Trip Breakers using handswitch on panel 1-M-4 in MCR.

B. Depressing the SI reset pushbuttons 1-HS-63-134A and 1-HS-63-134B.

C. Install AUTO SI BLOCK jumper in accordance with 0-PI-IXX-099-002.0, "AUTO SI Block".

D. Perform EA-99-1, "Blocking Auto SI Signals".

DISTRACTOR ANALYSIS:

A. Correct, When the Reactor Trip breakers are cycled the P-4 contact will re-enable the automatic SI function (clear the SI block).

B. Incorrect, Plausible because depressing the SI reset pushbuttons cleared the 'SI Initiated' window to clear what caused the 'Auto SI blocked' window to be lit.

C. Incorrect, plausible as this PI is called out in the applicable AR on installing a jumper to cause the blocking of the SI signals.

D. Incorrect, plausible as this is a procedure contained in the EOP network that blocks AUTO SI. It just blocks the Hi CTMT pressure SI however.

Question Number: 25

Tier: 1 **Group** 2

K/A: E02 SI Termination
EG2.2.44 Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.

Importance Rating: 4.2/4.4

10 CFR Part 55: (CFR: 41.5 / 43.5 / 45.12)

10CFR55.43.b: Not applicable

K/A Match: Question matches KA in that it requires the applicant to interpret the "Auto SI Blocked" light and what it means when LIT/UNLIT during SI reset and ES-1.1 implementation.

Technical Reference: ES-1.1, SI Termination, R12
1-AR-M4A, Bypass, Intlk, & Permissive, Rev 15, Window C4

Proposed references to be provided: None

Learning Objective: OPL271ES-1.1 Obj 5 & 6
Describe the bases for all limits, notes, cautions and steps of ES-1.1.
Given the procedure and a set of initial plant conditions, determine actions required to mitigate the event in progress.

Question Source:

New	
Modified Bank	
Bank	X

Question History: WBN 06/2011 Audit Exam, SQN ILT 1311 NRC Exam

Comments: Modified for SQN

26. W/E03 EK2.2 026

Given the following plant conditions:

- A small break LOCA occurred on Unit 1.
- ES-1.2, "Post LOCA Cooldown and Depressurization," is in progress.
- RCS pressure is 1420 psig and one charging pump has been stopped.
- The crew is ready to stop the first SI pump.

Which ONE of the following completes the statements below?

When the SI pump is stopped, RCS subcooling will drop ___(1)___.

AND

The minimum RCS subcooling value required to allow the second SI pump to be stopped is ___(2)___ than the value required for stopping the first pump.

A. (1) and stabilize at a lower value due to an increase in RCS temperature with lower ECCS injection flow
   (2) less

B. (1) and stabilize at a lower value due to an increase in RCS temperature with lower ECCS injection flow
   (2) greater

C. (1) due to reduced ECCS injection flow and stabilize at a lower value when break flow equals ECCS injection flow.
   (2) less

D✔ (1) due to reduced ECCS injection flow and stabilize at a lower value when break flow equals ECCS injection flow.
   (2) greater

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible because the total ECCS flow from the SI pumps will be decreased when the first SI pump is stopped but the RCS temperature rising is not the cause of RCS subcooling dropping. Also, the amount of subcooling required to stop the second SI pump does change, but more is required not less.

B. Incorrect, Plausible because the total ECCS flow from the SI pumps will be decreased when the first SI pump is stopped but the RCS temperature rising is not the cause of RCS subcooling dropping. Also, the amount of subcooling required to stop the second SI pump being higher is correct.

C. Incorrect, Plausible because the subcooling value will first drop due RCS pressure dropping because of a reduction in the ECCS injection flow when the SI pump is stopped, allowing the break flow to drop due to reduce RCS pressure. Also, the amount of subcooling required to stop the second SI pump does change, but more is required not less.

D. Correct, The subcooling value will first drop due RCS pressure dropping because of a reduction in the ECCS injection flow when the SI pump is stopped. Then as the pressure in the RCS drops the break flow will drop. Eventually the RCS break flow and the ECCS injection flow will reach equilibrium at a lower pressure. The procedure does require a higher subcooling to stop the second pump.

Question Number: 26

Tier: 1 **Group:** 2

K/A: W/E03 LOCA Cooldown and Depressurization
EK2.2 Knowledge of the interrelations between the (LOCA Cooldown and Depressurization) 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.

Importance Rating: 3.7 / 4.0

10 CFR Part 55: 41.7 / 45.7

10CFR55.43.b: Not applicable

K/A Match: K/A is matched because the question requires the applicant to determine how RCS conditions including subcooling are affected due to stopping a pump supplying water used for heat removal during a post LOCA cooldown and depressurization event.

Technical Reference: ES-1.2, Post LOCA Cooldown and Depressurization, Rev 19
EPM-3-ES-1.2 Rev 7

Proposed references to be provided: None

Learning Objective: OPL271ES-1.2 Obj 6 & 13
Given the procedure and a set of initial plant conditions, determine actions required to mitigate the event in progress.
Analyze and explain the process that leads to a new RCS equilibrium pressure following the shutdown of an ECCS pump during the ES-1.2 reduction sequence.

Cognitive Level:

Higher	X
Lower	

Question Source:

New	
Modified Bank	
Bank	X

Question History: WBN 10/2011 NRC exam, SQN ILT 1311 NRC Exam

Comments:

27. W/E08 EK3.3 527

Given the following plant conditions:

- The crew is responding to a LOCA and is performing the actions contained in FR-P.1, "Pressurized Thermal Shock."

- Plant conditions are:
  - Subcooling is 45°F.
  - RVLIS indication is greater than the values in Table 1, RVLIS Level for 25% Void Fraction.

Which ONE of the following completes the statements below?

Subcooling ___(1)___ above the minimum value in FR-P.1 for starting an RCP

AND

the reason for getting a RCP running is that it ___(2)___.

A. (1) is
(2) raises the RCS temperature entering the vessel downcomer

B. (1) is NOT
(2) raises the RCS temperature entering the vessel downcomer

C. (1) is
(2) reduces the minimum required subcooling to terminate SI

D. (1) is NOT
(2) reduces the minimum required subcooling to terminate SI

DISTRACTOR ANALYSIS:

A. Correct, Minimum subcooling in P.1 is 40°F. Starting an RCP results in mixing the warmer flow from the RCPs with the colder ECCS flow, creating a warmer combined flow entering the beltline region of the reactor vessel downcomer which can reduce the stress on the vessel.

B. Incorrect, The first part is plausible as within P.1 because 90°F is used for SI termination. The second part is correct. The second part is plausible

C. Incorrect, The first part is correct. Second part is incorrect. When RCP are Plausible because subcooling is involved in determining if RCP restart is required and the minimum subcooling value required to start the pump does change based on conditions.

D. Incorrect, The first part is plausible as within P.1 because 90°F is used for SI termination. Plausible because subcooling is involved in determining if RCP restart is required and the minimum subcooling value required to start the pump does change based on conditions.

Question Number: 27

Tier: 1 **Group** 2

K/A: W/E08 Pressurized Thermal Shock
EK3.3 Knowledge of the reasons for the following responses as they apply to the (Pressurized Thermal Shock)
Manipulation of controls required to obtain desired operating results during abnormal, and emergency situations.

Importance Rating: 3.7 / 3.8

10 CFR Part 55: 41.5 / 41.10, 45.6, 45.13

10CFR55.43.b: Not applicable

K/A Match: KA is matched because the question requires knowledge of the reasons controls may be manipulated to terminate ECCS flow under different conditions than normally required in the EOP network as allowed by the procedure when responding to a pressurized thermal shock.

Technical Reference: FR-P.1, Pressurized Thermal Shock, Rev 14
EPM-3-FR-P.1, Basis Document for FR-P.1 Pressurized Thermal Shock, Rev 5

Proposed references to be provided: None

Learning Objective: OPL271FR-P.1 Obj 4 & 5
Summarize the mitigating strategy for FR-P.1
Describe the bases for all limits, notes, cautions and steps of FR-P.1

Cognitive Level:

Higher	X
Lower	

Question Source:

New	
Modified Bank	X
Bank	

Question History: WBN Bank, 10/2011 NRC Exam, SQN ILT 1311 NRC Exam

Comments:

28. 003 K6.14 628

Given the following plant conditions:

- Unit 1 is in Mode 5.
- The crew is preparing to start RCP(s) in accordance with 1-SO-68-2, "Reactor Coolant Pumps", to initiate RCS Heatup.
- The CRO has been directed to start #3 RCP.
- RCP parameters:
  - #3 RCP No. 1 Seal Leakoff flow is 0.7 gpm.
  - #3 RCP Lift Oil Pump is started.
  - PS-68-9 REAC COOL PMPS OIL LIFT PRESS LOW annunciator alarms and does not clear.
  - #3 RCP Lift Oil Pump has been running for 3 minutes.

Which ONE of the following completes the statements below?

#3 RCP No. 1 Seal Leakoff flow is ___(1)___ the minimum required for RCP start.

AND

If the #3 RCP start switch is placed to start, the RCP ___(2)___ start.

A. (1) above
   (2) will

B. ✔ (1) above
   (2) will NOT

C. (1) below
   (2) will

D. (1) below
   (2) will NOT

DISTRACTOR ANALYSIS:

A. Incorrect. The first part is correct. 1-SO-68-2 allows a lower value for Seal Leakoff Flow (>0.2 gpm) when starting RCPs. The second part is incorrect. RCPs are interlocked such that lift oil pressure is required to be greater than 700 psig (the alarm cleared) and the Lift Oil Pump running. This is plausible since one part of the interlock is met (pump running for greater than 2 minutes) and candidate may not recognize that the RCPs are also interlocked with the pressure.

B. Correct. The first part is correct (see item A). The second part is correct. While the pump running time portion of the interlock is met, the pressure portion is not met and the RCP will not start.

C. Incorrect. The first part is incorrect. 1-SO-68-2 allows a lower value for Seal Leakoff Flow (>0.2) when starting RCPs. This is plausible since the normal value for Seal Leakoff flow is 0.8 gpm. The second part is incorrect (see item A).

D. Incorrect. The first part is incorrect (see item C). The second part is correct. While the pump running time portion of the interlock is met, the pressure portion is not met and the RCP will not start.

Question Number: 28

Tier: 2 **Group** 1

K/A: 003 Reactor Coolant Pump System (RCPS)
K6.14 Knowledge of the effect of a loss or malfunction on the following will have on the RCPS:
Starting requirements

Importance Rating: 2.6/2.9

10 CFR Part 55: (CFR: 41.7 / 45/5)

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA in that it examines the applicants knowledge of RCP starting requirements.

Technical Reference: 01-47W611-68-1 Rev 4
1-SO-68-2 Rev 37
AR-M5-B Rev 39

Proposed references to be provided: None

Learning Objective: OPT200.RCP Obj 10
Given plant conditions, IDENTIFY and APPLY the following RCP limits and precautions related to the following:
0-GO-1, Unit Startup from CSD to HSB and
1(2)-SO-68-2, Reactor Coolant Pumps

Question Source:

New	X
Modified Bank	
Bank	

Question History: New for the ILT 1311 NRC Exam

Comments:

29. 004 K2.02 029

Which ONE of the following identifies the power supply to Primary Water Makeup Pump 1A?

A. ✔ C & A Vent BD 1A1-A

B. Reactor Vent BD 1A1-A

C. Aux Building Common MCC BD A

D. Fuel & Waste Handling Building BD A

DISTRACTOR ANALYSIS:

A. Correct, The power supply for the 1A Primary water makeup pump.

B. Incorrect, Plausible since other 480 VAC loads such as #3 RCP oil lift pump is powered from this supply and Ice condenser floor cooling pump 1A.

C. Incorrect, Plausible since this 480 VAC board powers other 480 VAC loads that are in the Aux Bldg such as reactor bldg sump pumps, Aux bldg hot water pumps, primary cool water loop pump A. .

D. Incorrect, Plausible since this 480 volt board is located in the Aux bldg and powers other 480 VAC loads in the Auxiliary bldg, such as Aux feedwater condensater sump pump, Unit 1 SG layup water pumps, component cooling water pump seal leakage return pump.

Question Number: 29

Tier: 2 **Group** 1

K/A: 004 Chemical and Volume Control System (CVCS)
K2.02 Knowledge of the bus power supplies to the following:
Makeup Pumps

Importance Rating: 2.9 / 3.1

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having the candidate identify the power supply to the 1A Primary Water Makeup pump.

Technical Reference: AOP-P.05, Loss of Unit 1 Shutdown Boards, appendix G
480V C&A Vent Board 1A1-A Load List

Proposed references to be provided: None

Learning Objective: OPTSTG200.PMW
obj. 6 List the bus power supplies to the following Primary Water System components:
a. Primary water pumps

Question Source:

New	X
Modified Bank	
Bank	

Question History: New question written for 1311 ILT NRC exam.

Comments:

30. 004 K3.06 030

Given the following plant conditions:

- Unit 1 restarted 10 days ago following a refueling outage and is operating at 100% RTP.
- Control Bank D is currently 205 steps withdrawn and Rod control is in AUTOMATIC.
- Subsequently, the following occurs;
  - A controller problem results in the Letdown Hx Temperature Control Valve slowly drifting closed.
  - The operating crew enters AOP-C.02, "Uncontrolled RCS Boron Concentration Changes."

Which ONE of the following completes the statement below?

In accordance with AOP-C.02, control rods should be operated in ___(1)___ and the direction will be ___(2)___.

A. (1) manual
   (2) in

B. (1) automatic
   (2) in

C. (1) manual
   (2) out

D. ✔ (1) automatic
   (2) out

DISTRACTOR ANALYSIS:

A. *Incorrect: The first part is plausible because there are sections in AOP-C.02 that requires rods to be placed in manual (inadvertent dilutions). The second part is plausible since it is a logical conclusion that rods will step in if the reactivity effects are considered the opposite of the letdown HX TCV actual effects.*

B. *Incorrect: The first part is correct. The second part is plausible since it is a logical conclusion that rods will step in if the reactivity effects are considered the opposite of the letdown HX TCV actual effects.*

C. *Incorrect. The first part is plausible because there are sections in AOP-C.02 that requires rods to be placed in manual (inadvertent dilutions). The second part is correct.*

D. *Correct. Letdown temperature would increase resulting in boron being released from the mixed bed and Tave lowers therefore rods would move out in Auto. AOP-C.02 section 2.1, Uncontrolled or Unplanned dilution specifically states Control rods are not to be withdrawn in Manual however Automatic rod motion is allowed.*

Question Number: 30

Tier: 2 **Group** 1

K/A: 004 Chemical and Volume Control System
K3.06 Knowledge of the effect that a loss or malfunction of the CVCS will have on the following: RCS temperature and pressure

Importance Rating: 3.4/3.6

10 CFR Part 55: (CFR: 41.7/45/6)

10CFR55.43.b: Not applicable

K/A Match: Question matches KA in that it places the context of the question in a situation where a malfuction of the CVCS letdown HX TCV occurs and then examines on the effects of this malfunction on RCS temperature.

Technical Reference: AOP-C.02, Uncontrolled RCS Boron Concentration Changes Rev 9

Proposed references to be provided: None

Learning Objective: OPL271AOP-C.02 Obj 3 & 5
Given a set of initial plant conditions, determine initial Operator response to stabilize the plant.
Summarie AOP-C.02's mitigating strategy for an Uncontrolled RCS Boron Concentration Change.

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN ILT 2008 NRC Exam, ILT 1311 NRC Exam

Comments: Modified stem and answers to new format. Reordered distractors and answer.

31. 005 K5.03 531

Given the following plant conditions:

- RCS pressure is 365 psig.
- RCS boron concentration is 2160 ppm.
- RHR train A boron concentration is 2050 ppm.
- Minimum boron concentration required to maintain shutdown margin is 1800 ppm.

Which ONE of the following completes the statements below?

Given the current boron concentrations, in accordance with 0-SO-74-1, "Residual Heat Removal System," RHR train "A" ___(1)___ be placed in operation.

AND

If FCV-74-1 and FCV-74-2, RHR Loop Suction valve switches are placed to OPEN, the valves ___(2)___ open.

(Assume all other parameters are within required procedural criteria)

A. (1) can
   (2) will NOT

B. ✔ (1) can
   (2) will

C. (1) can NOT
   (2) will NOT

D. (1) can NOT
   (2) will

DISTRACTOR ANALYSIS:

A. Incorrect, the first part is correct. The second part is plausible as 350 psig is maximum actual RCS pressure listed in the procedure allowed to place RHR in service.

B. Correct, the procedure will allow the RHR train to be placed in service if the boron concentration is verified to be over the required boron to maintain SDM. The 74-1 & 2 valve interlock is satisfied once RCS pressure is < 380 psig.

C. Incorrect, the first part is plausible because it is logical to assume that you would want the RHR train to be > than RCS current boron and not cause it to lower once RHR is placed in service. The second part is correct.

D. Incorrect, the first part is plausible because it is logical to assume that you would want the RHR train to be > than RCS current boron and not cause it to lower once RHR is placed in service. The second part is plausible as 350 psig is maximum actual RCS pressure listed in the procedure allowed to place RHR in service.

Question Number: 31

Tier: 2 **Group** 1

K/A: 005 Residual Heat Removal System (RHRS)
K5.03 Knowledge of the operational implications of the following concepts as they apply the RHRS:
Reactivity effects of RHR fill water

Importance Rating: 2.9/3.1

10 CFR Part 55: (CFR: 41.5 / 45.7)

10CFR55.43.b: Not applicable

K/A Match: Question meets KA in that it examines the the knowledge required to know whehter or not an RHR loop can be placed in service on a cooldown given boron concentrations.

Technical Reference: 0-SO-74-1, RHR System Rev 86

Proposed references to be provided: None

Learning Objective: OPT200.RHR Obj 8.f and 9.b
Explain the RHR System design features and/or interlocks that provide for the following: Interlocks between RHR valves and RCS
Explain operational implications of the following concepts as they apply to the RHR system: Dilution and boration considerations.

Question Source:

New	X
Modified Bank	
Bank	

Question History: New for ILT 1311 NRC exam

Comments:

32. 006 A4.01 032

Given the following plant conditions:

- A plant cooldown was in progress in accordance with 0-GO-7, "Unit Shutdown from Hot Standby to Cold Shutdown".
- 1-SI-OPS-OPS-068-001.0, "Low Temperature Overpressure Protection" has been completed.
- Initial plant conditions:
  - Low Temperature Over Pressure Protection System (LTOPS) is armed
  - RCS temperature is 355°F
  - RCS pressure is 650 psig
- Subsequently a LOCA occurred.
- Currently RCS pressure is 450 psig and lowering slowly.

Which ONE of the following describes the status of the ECCS equipment identified below? (assume no operator action taken)

A. SI Pump flow is rising;
RHR pump flow is rising

B. ✔ SI Pump flow is zero;
RHR pump flow is zero

C. SI Pump flow is rising;
RHR pump flow is zero

D. SI Pump flow is zero;
RHR pump flow is rising

DISTRACTOR ANALYSIS:

A. Incorrect. First part is incorrect. SI pumps are rendered incapable of injecting prior to placing LTOP in service to comply with Tech Spec 3.4.12. This is plausible since RCS pressure is below SI pump shutoff head of 1520 psig. Second part is incorrect. RCS pressure is above RHR pump shutoff head of 175 psig. This is plausible since RCS pressure is lowering and pump flow does rise as RCS pressure lowers.

B. Correct. First part is correct. SI pumps are rendered incapable of injecting prior to placing LTOP in service to comply with Tech Spec 3.4.12. Second part is correct. RCS pressure is above RHR pump shutoff head of 175 psig.

C. Incorrect. First part is incorrect (see item A). Second part is correct. RCS pressure is above RHR pump shutoff head of 175 psig.

D. Incorrect. First part is correct. SI pumps are rendered incapable of injecting prior to placing LTOP in service to comply with Tech Spec 3.4.12. Second part is incorrect (see item A).

Question Number: 32

Tier: 2 **Group** 1

K/A: 006 Emergency Core Cooling System (ECCS)
A4.01 Ability to manually operate and/or monitor in the control room: Pumps

Importance Rating: 4.1 / 3.9

10 CFR Part 55: (CFR: 41.5 / 45.7)

10CFR55.43.b: Not applicable

K/A Match: Question meets KA in that it examines the the ability to monitor pump operations.

Technical Reference: 0-GO-7 Rev 71
1-SI-OPS-068-001.0 Rev 7
PTLR Rev 4
TI-28 Att 9 Eff date 11/09/12
1-SO-63-5 Rev 60

Proposed references to be provided: None

Learning Objective: OPT200.ECCS Obj 5 and 10
Explain the physical connections and/or cause-effect relationships between the ECCS and the following systems: RCS, including pressures at which the ECCS subsystems inject into the core.
Given plant conditions, IDENTIFY and APPLY the following ECCS limits and precautions related to the following operating procedures
1-SO-63-5, Emergency Core Cooling System

Question Source:

New	
Modified Bank	X
Bank	

Question History: SQN ILT 2007 NRC exam, ILT 1311 NRC exam

Comments: Modified similar question from SQN 2007 NRC Exam from K/A 006 A3.01.

33. 007 K5.02 633

Given the following plant conditions:

- Unit 2 is in Mode 5.

- When establishing a steam bubble, in accordance with GO-1, "Unit Startup From Cold Shutdown To Hot Standby," the following PRT indications are present:
  - PRT level is 71%
  - PRT pressure is 9 psig
  - PRT Temperature is 126°F

Which ONE of the following describes the action(s) to be taken and the reason for the action(s), in 2-SO-68-5, "Pressurizer Relief Tank," to return the PRT to normal?

A. ✔ Start a Waste Gas Compressor, open 2-PCV-68-301, PRT VENT TO WDS VENT HDR, to restore PRT pressure.

B. Align the B RCDT pump, open FCV-68-305, N2 SUPPLY TO PRT, open 2-LCV-68-310, PRT DRAIN TO RCDT, to restore PRT level.

C. Open 2-FCV-68-303, PRIMARY WATER TO PRT, to restore PRT level.

D. Open 2-FCV-68-303, PRIMARY WATER TO PRT, to restore PRT temperature.

DISTRACTOR ANALYSIS:

A. Correct, 8 psig is the alarm setpoint, and 9 provides positive assurance that the alarm will be in, AR-M5-A directs reducing pressure using 2-SO-68-5.

B. Incorrect, the given PRT level is below the alarm setpoint for PRT high level (88%). This is plausible since it can be logically assumed that this level is higher than normal.

C. Incorrect, plausible if the applicant does not know that the condition is a high pressure condition or if the applicant assumes that temperature is high in the PRT.

D. Incorrect, plausible as the given temperature is close to the high PRT temperature set point and would require action to be taken in 2-SO-68-5 to lower PRT temp.

Question Number: 33

Tier: 2 **Group** 1

K/A: 007 Pressurizer Relief Tank/Quench Tank System (PRTS)
K5.02 Knowledge of the operational implications of the following concepts as they apply to PRTS:
Method of forming a steam bubble in the PZR

Importance Rating: 3.1/3.4

10 CFR Part 55: 41.5 / 45.7

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA in that it examines the operational implications of maintaining PRT parameters during drawing a bubble in the PZR by venting to the PRT.

Technical Reference: 2-SO-68-5 Rev 19
2-AR-M5-A, B-1, C-1, D-1 Rev 26

Proposed references to be provided: None

Learning Objective: OPT200.PZR-PRT #8, 9 & 17

Question Source:

New	
Modified Bank	X
Bank	

Question History: Modified 007 G2.1.20 from ILT 1305 NRC exam by changing the stem conditions and changing one of the previous distracters to the correct answer.

Comments:

34. 008 K3.03 534

Given the following plant conditions:

- Unit 1 is operating at 100% RTP.
- 1B-B CCS pump trips.
- 1A-A CCS pump did not automatically start.
- Seal injection flow rate to each RCP is 8 gpm.

Which ONE of the following identifies how the operation of the RCPs will be affected, if at all, (assume no operator actions)?

A. The RCP stator windings will overheat.

B. ✔ The RCP motor bearings will overheat.

C. The RCPs will experience seal failure.

D. The RCPs can operate without CCS indefinitely.

DISTRACTOR ANALYSIS:

A. Incorrect, The RCP stator windings are not cooling by CCS. The motor coolers use ERCW to cool the air leaving the RCP motors. Plausible if the RCP motor cooling is confused with the RCP motor bearing cooling.

B. Correct, The loss of CCS cooling to the motor bearings will cause overheating of the motor bearings and damage to the RCP motor.

C. Incorrect, The RCPs will NOT experience seal failure as long as seal injection flow is present, but plausible because seal damage would occur if the CCS were lost and seal flow was not present.

D. Incorrect, The RCP motors cannot operate without component cooling water because the motor bearings will overheat. Plausible to conclude that due to the seal injection flow, the loss of thermal barrier cooling would not be an issue.

Question Number: 34

Tier: 1 **Group** 1

K/A: 008 Component Cooling Water System (CCWS)
K3.03 Knowledge of the effect that a loss or malfunction of the CCWS will have on the following: RCP

Importance Rating: 4.1/4.2

10 CFR Part 55: (CFR: 41.2 to 41.9 / 45.7 to 45.9)

10CFR55.43.b: not applicable

K/A Match: This question matches the K/A by testing the candidates knowledge of the interrelationship between CCWS (CCS) and the RCPs and the affect of losing CCS flow to the RCPs.

Technical Reference: 0-AR-M27-B-A Rev 12
AOP-R.04 Rev 27
1-47W859-2 Rev 31

Proposed references to be provided: None

Learning Objective: OPT200.RCP obj 4.c
Explain the physical connections and/or cause-effect relationships between the RCP and the following: Component Cooling System (CCS)

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN ILT 1201 NRC Exam, SQN ILT 1311 NRC Exam

Comments: Reorded distracters and correct answer.

35. 010 K1.08 035

Given the following plant conditions:

- The Unit 1 is at 100% RTP.
- Pressurizer Level Control is selected to 1-LT-68-339/335 on 1-XS-68-339E.

If 1-LT-68-335 fails low, what is the impact on the Pressurizer Pressure/Level Control System?

A. ✔ Pressurizer Heaters de-energize and Letdown isolates.

B. Pressurizer Heaters de-energize and Letdown does **NOT** isolate.

C. Pressurizer Heaters remain available and Letdown isolates.

D. Pressurizer Heaters remain available and Letdown does **NOT** isolate.

DISTRACTOR ANALYSIS:

A. Correct. 1-LT-68-339/335 position identifies 339 as the controlling channel with 335 as the backup. Even though 335 is the backup failing low would deenergize pressurizer heaters and close selected CVCS letdown isolation valves thus isolating letdown.

B. Incorrect. First part correct. Second part plausible if the student believes only 339 (selected) channel failing low causes letdown to isolate and since 335 was the failing channel, letdown would remain in service.

C. Incorrect. First part incorrect. Plausible if the student believes only 339 (selected) channel failing low would cause heaters to deenergize and since 335 was the failing channel, heaters would remain in service. Second part correct.

D. Incorrect. Both parts incorrect. Plausible if the student believes only 339 (selected) channel failing low would cause heaters to deenergize and letdown to isolate and since 335 was the failing channel, heaters and letdown would remain in service.

Question Number: 35

Tier: 2 **Group** 1

K/A: 010 Pressurizer Pressure Control System (PZR PCS)
010 K1.08 Knowledge of the physical connections and/or cause-effect relationships between the PZR PCS and the following systems: PZR LCS

Importance Rating: 3.2/3.5

10 CFR Part 55: (CFR: 41.2 to 41.9 / 45.7 to 45.8)

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA in that it gives a failure in the PZR level systems and then examines the interelationship/cause-effect relationship with the LCS and PCS.

Technical Reference: AOP-I.04 Rev 12

Proposed references to be provided: None

Learning Objective: OPL271-AOP-I.04 Obj 12
Discuss the results of specific PZR level channel failures

Question Source:

New	
Modified Bank	
Bank	X

Question History: WBN Bank

Comments:

36. 012 A2.05 636

Given the following plant conditions:

- Unit 1 load reduction is in progress
- PT-1-73, HP Turbine IMP Pressure is stuck at a pressure equivalent to 50% turbine load.
- Reactor power is currently 8% RTP.

Which ONE of the following completes the statements below (assuming no operator actions)?

The P-7 Low Power Trip Block ___(1)___ met for current plant conditions.

AND

If ONE RCP trips in this condition, the procedure which would be entered first to mitigate the event is ___(2)___.

A. (1) is
(2) E-0, "Reactor Trip or Safety Injection"

B. (1) is
(2) AOP-R.04, "Reactor Coolant Pump Malfunctions"

C. (1) is NOT
(2) E-0, "Reactor Trip or Safety Injection"

D. ✔ (1) is NOT
(2) AOP-R.04, "Reactor Coolant Pump Malfunctions"

DISTRACTOR ANALYSIS:

A. Incorrect. The first part is incorrect. To satisfy P-7 (block the "At Power Trips"), both Turb Impulse channels are required to be less than 10% turbine load AND 3/4 NIs are required to be less than 10% reactor power. This is plausible since the novice operator can easily confuse the logic for how P-7 works. The second part is incorrect. Since reactor power is less than 35%, the low flow reactor trip logic is changed to 2/4 loops. Therefore, a low flow condition in 2 of 4 loops is required to initiate a reactor trip, ie directly enter E-0. AOP-R.04 would be entered first, and the reactor trip directed out of this AOP. This is plausible since the novice operator can confuse P-7 functions (totally remove the low flow trip) and P-8 functions (change from a single loop low flow to 2 out of 4) and determine that a reactor trip would have occurred, requiring E-0 entry first.

B. Incorrect. The first part is incorrect (see item A). The second part is correct. Since reactor power is less than 35%, the low flow reactor trip logic is changed to 2/4 loops. Therefore, a low flow condition in 2 of 4 loops is required to initiate a reactor trip. Since no automatic reactor trip occurred, AOP-R.04 would be entered first and the reactor trip directed out of this AOP.

C. Incorrect. The first part is correct. To satisfy P-7 (block the "At Power Trips"), both Turb Impulse channels are required to be less than 10% turbine load AND 3/4 NIs are required to be less than 10% reactor power. Since PT-1-73 is stuck at 50%, P-7 is NOT satisfied and the "At Power Trips" remain inservice. The second part is incorrect (see item A).

D. Correct. The first part is correct (see item C). The second part is correct. Since reactor power is less than 35%, the low flow reactor trip logic is changed to 2/4 loops. Therefore, a low flow condition in 2 of 4 loops is required to initiate a reactor trip. Since no automatic reactor trip occurred, AOP-R.04 would be entered first and the reactor trip directed out of this AOP.

Question Number: 36

Tier: 2 **Group** 1

K/A: 012 Reactor Protection System
012 A2.05 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: Faulty or erratic operation of detectors and function generators

Importance Rating: 3.1/3.2

10 CFR Part 55: (CFR: 41.5 / 43.5 / 45.3 / 45.5)

10CFR55.43.b: Not applicable

K/A Match: Question matches the KA in that it gives a malfunction to an RPS instrument and requires knowledge of the entry criteria for the procedure to mitigate the consequences of this malfunction.

Technical Reference: 1, 2-47W611-99-1 Rev 11
1, 2-47W611-99-2 Rev 13
1-47W611-99-6 Rev 2
TI-28 Att 9 Eff Date 11/9/12
AOP-R.04, RCP Malfunctions Rev 27

Proposed references to be provided: None

Learning Objective: OPT200.RPS Obj 6.e
Explain the RPS design features and/or operational interlocks that provide the following: Automatic or manual enable/disable of RPS trips

Question Source:

New	X
Modified Bank	
Bank	

Question History: SQN ILT 1311 NRC Exam

Comments:

37. 013 K2.01 537

Given the following plant conditions:

- A loss of 120V AC Vital Instrument Power Board 1-I has occurred.
- Unit 1 reactor is tripped and the crew has implemented E-0, "Reactor Trip or Safety Injection."
- The OATC has just reported that PZR pressure transmitter 1-PT-68-334 (Channel II) failed **LOW**.

Which ONE of the following describes the plant response?

(Assume **NO** operator action)

A. Only the "A" train SSPS SI master relays would actuate AND only "A" train of ECCS equipment would start.

B. Only the "B" train SSPS SI master relays would actuate AND only "B" train ECCS equipment would start.

C. SI master relays on both trains of SSPS would actuate AND both trains of ECCS equipment would start.

D. ✔ SI master relays on both trains of SSPS would actuate AND only "B" train ECCS equipment would start.

DISTRACTOR ANALYSIS:

A. Incorrect, Master Relays on both trains will have power and both trains would actuate. Train A from Channel III via the auctioneering circuit, however, Channel 1 is the only power supply for the slave relays that control the Train A equipment. Plausible if the candidate mistakes the function of the circuit that auctioneers power in the logic cabinet.

B. Incorrect, Master Relays on both trains will have power and both trains would actuate. Train A from Channel III via an auctioneering circuit , however, Channel 1 is the only power supply for the slave relays that control the Train A equipment. Plausible if the candidate mistakes the function of the circuit that auctioneers power in the logic cabinet.

C. Incorrect, The Master Relays on both trains will have power. Train A from Channel III via an auctioneering circuit, however, with the 1-I AC vital Instrument Power Board deenergized (Channel 1), the slave relays that control the Train A equipment will not have a power supply. Plausible if the candidate mistakes the source of the power supply or thinks that the circuit that auctioneers power in the logic cabinet provides power to the slave relays.

D. Correct, Master Relays on both trains will have power. Train A from Channel III via an auctioneering circuit, however with the 1-I AC vital Instrument Power Board deenergized, the slave relays that control the Train A equipment will not have power.

Question Number: 37

Tier: 2 **Group** 1

K/A: 013 Engineered Safety Features Actuation System (ESFAS)
K2.01 Knowledge of the bus power supplies to the following:
ESFAS/Safeguards equipment control

Importance Rating: 3.6 / 3.8

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by testing the candidates knowledge of the power supplies for individual channels and the effect a loss of a power supply will have on the associated ESFAS channel signals.

Technical Reference: 47W611-63-1 Rev 4,
AOP-P.03 Rev 25,

Proposed references to be provided: None

Learning Objective: OPT200.RPS Obj 4.a
Explain the physical connections and/or cause-effect relationships between the Reactor Protection System and the following: 120V Vital Instrument Power

Question Source:

New	
Modified Bank	
Bank	X

Question History: Used on the 1201 ILT NRC Exam, ILT 1311 NRC Exam

Comments:

38. 022 A3.01 038

Given the following plant conditions:

- Unit 1 was operating at 100% RTP
- At 0905, the unit experienced a LOCA
- At 0907, CTMT pressure is 2.8 psig and rising

Which ONE of the following completes the statement below?

At 0915, the CTMT Lower Compartment Coolers that were not running ___(1)___ started in automatic and the CTMT Air Return Fans ___(2)___ started in automatic.

A. (1) have
(2) have

B. (1) have
(2) have NOT

C. (1) have NOT
(2) have

D✔ (1) have NOT
(2) have NOT

DISTRACTOR ANALYSIS:

A. Incorrect, plausible as the CTMT Lower Compartment Coolers do start on a phase B if they are in A-Auto. The second part is plausible as the CTMT Air return fans do start on a phase B, but only after a ten minute time delay.

B. Incorrect, plausible as the CTMT Lower Compartment Coolers do start on a phase B if they are in A-Auto. The second part is correct.

C. Incorrect, the first part is correct. The second part is plausible as the CTMT Air return fans do start on a phase B, but only after a ten minute time delay.

D. Correct, the non-running CTMT Lower Compartment Coolers are kept in A Auto and will not auto start on phase B actuation that will occur at 2.8 psig in CTMT. The CTMT Air Return Fans will auto start on a phase B, however only after 10 minutes have elapsed since the phase B. In this case they will start 0917, but at 0915 the fans will be off.

Question Number: 38

Tier: 2 **Group** 1

K/A: 022 Containment Cooling System (CCS)
A3.01 Ability to monitor automatic operation of the CCS, including:
Initiation of safeguards mode of operation

Importance Rating: 4.1/4.3

10 CFR Part 55: (CFR: 41.7 / 45.5)

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA in that it has the examinee in the context of a phase B initiation and test on monitoring the correct response of CCS components.

Technical Reference: 1-47W611-30-2 R2
1-47W611-30-3 R6
1-47W611-30-4 R18

Proposed references to be provided: None

Learning Objective: OPT200.CNTMTCL & Purge Obj 6.f
Explain the physical connections and/or cause-effect relationships between the Containment Cooling and Purge Systems and the following systems: Emergency Safeguard Feature Actuation System (ESFAS)

Question Source:

New	X
Modified Bank	
Bank	

Question History: New question for the ILT 1311 NRC Exam

Comments:

39. 022 K3.01 039

Which ONE of the following describes the effect of an increase in containment lower compartment air temperature from 110°F to 130°F over a 10 minute period?

A. Pressurizer PORV leakage.

B. ✔ Pressurizer Safety Valve leakage.

C. Control Rod Drive Mechanism damage.

D. Neutron Detector and/or cable damage.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible since PZR PORVs are in lower CNMT, however PZR PORV leakage is not affected by changes in containment temperature.

B. Correct, Per the guidance in 0-SO-30-5, a rapid heatup of lower containment/pressurizer enclosure adversely affects Pzr Safety Valve leakage, causing it to increase.

C. Incorrect, Plausible since an increase in lower CNMT temperature would effect the CRDMs and with temperature above the Tech Spec limit of 125°F, however the temperature limit for CRDMs is 164°F.

D. Incorrect, Plausible since an increase in lower CNMT temperature will affect the NIs and temperature given is 130°F, however the temperature limit for NIs/cabling is 135°F continuous and 175°F for 8 hours.

Question Number: 39

Tier: 2 **Group** 1

K/A: 022 Containment Cooling System (CCS)
K3.01 Knowledge of the effect that a loss or malfunction of the CCS will have on the following:
Containment equipment subject to damage by high or low temperature, humidity, and pressure

Importance Rating: 2.9* / 3.2*

10 CFR Part 55: 41.7 / 45.6

10CFR55.43.b: Not applicable

K/A Match: Question presents applicant with a partial loss of containment cooling and requires applicant to recall the effect of the resulting rapid heatup of lower containment.

Technical Reference: 0-SO-30-5, P&L, C & H (page 6 of 44) rev 35

Proposed references to be provided: None

Learning Objective: OPT200CONTCOOLING Obj 9
Given specific plant conditions, analyze the effect that a loss or malfunction of the Containment Cooling and Purge Systems will have on the following:
Containment equipment subject to damage by high or low temperature, humidity and pressure.

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN ILT 1009 NRC Exam, SQN ILT 1311 NRC Exam

Comments: Re-ordered distractors and correct answer.

40. 025 A3.02 040

Given the following plant conditions:

- Unit 1 is at 100% RTP.
- Annunciator D-6 on 1-M6-E, "LIS-61-195B/A GLYCOL EXP TANK LEVEL LOW-LOW LOW" annunciates.
- The alarm was acknowledged and an AUO was dispatched to investigate the alarm, but before a report is received the alarm reflashes.

Which ONE of the following describes the expected condition of Glycol Expansion Tank Isolation Valves (1-FSV-61-109 and 1-FSV-61-118) and Glycol Supply and Return Isolation Valves (1-FCV-61-191 and 1-FCV-61-193)?

	Glycol Expansion Tank Isolation Valves	**Glycol Supply and Return Isolation Valves**
A.	Open	Open
B.	Open	Closed
C✔	Closed	Closed
D.	Closed	Open

DISTRACTOR ANALYSIS:

A. Incorrect, 109/118 auto close on lo-lo level (18" decreasing) and will auto open when the lo-lo level clears. The reflash indicates that level has reached lo-lo level setpoint. 191/193 will auto close on lo-lo level. Plausible because valves would be open if lo-lo level not reached.

B. Incorrect, 109/118 auto close on lo-lo level (18" decreasing) and will auto open when the lo-lo level clears. The reflash indicates that level has reached lo-lo level setpoint. Plausible because reflash could be interpreted as low-low has cleared which would leave the 109/118 open and the 191/193 vlaves closed.

C. Correct, 109/118 auto close on lo-lo level (18" decreasing). The reflash indicates that level has reached lo-lo level setpoint. 191/193 will auto close on lo-lo level.

D. Incorrect, 191/193 will auto close on lo-lo level. The reflash indicates that level has reached lo-lo level setpoint. Plausible as the 109/118 valves could have closed on a low level and with the low-low not being reached the 191/193 valves would be open.

Question Number: 40

Tier: 2 **Group** 1

K/A: 025 Ice Condenser System
A3.02 Ability to monitor automatic operation of the ice condenser system, including: Isolation valves

Importance Rating: 3.4/3.4

10 CFR Part 55: (CFR: 41.7 / 45.5)

10CFR55.43.b: Not applicable

K/A Match: Question matches KA in that it gives a changing level condition in the expansion tank and test on the affects of this on the isolation valves.

Technical Reference: AR-M6-E window D-6 R23
47W611-61-2 Rev 7

Proposed references to be provided: None

Learning Objective: OPT200.ICE Obj 5
Given palnt conditions, determine if any of the following Ice Condenser System alarms would be present and describe actions required by the ARP.
XA-55-6E Window D-6, GLYCOL EXP TANK LEVEL
HI-HI HI/LOW- LOW LOW

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN Bank

Comments:

41. 026 G2.2.36 541

Given the following plant conditions:

- Unit 1 is at 100% RTP
- Containment Spray Pump 1B-B is out of service and tagged.
- At 0750, DG 1A-A is determined to be inoperable.

Which ONE of the following completes the statements below?

Containment Spray Pump 1A-A ___(1)___ operable.

AND

Performance of 0-SI-OPS-082-007.W, "AC Electrical Power Source Operability Verification," ___(2)___ required to be completed.

A. (1) is
   (2) is

B. (1) is
   (2) is NOT

C✔ (1) is NOT
   (2) is

D. (1) is NOT
   (2) is NOT

DISTRACTOR ANALYSIS:

A. Incorrect, the spray pump is inoperable by application of TS definition of operability which requires both normal and emergency power supply. This is plausible since the novice operator could determine that either the normal or emergency power supply is sufficient for operability. The SI is required per LCO 3.8.1.1.

B. Incorrect, the first part is incorrect (see item A). The second part is plausible as the CSP is unrelated to performance of the SI and logically may not be required.

C. Correct, the spray pump is inoperable by application of TS definition of operability which requires both normal and emergency power supply. The second part is correct.

D. Incorrect, the first part is correct. The second part is plausible as the CSP is unrelated to performance of the SI and logically may not be required.

Question Number: 41

Tier: 2 **Group** 1

K/A: 026 Containment Spray System (CSS)
G2.2.36 Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.

Importance Rating: 3.1/4.2

10 CFR Part 55: (CFR: 41.10 / 43.2 / 45.13)

10CFR55.43.b: Not applicable

K/A Match: Question matches KA in that it gives a pump out for maintenance activities and degraded electrical situation and examines the operator on the status of limiting conditions of the CTMT Spray pump.

Technical Reference: TS LCO 3.8.1.1
TS 3.0.5

Proposed references to be provided: None

Learning Objective: OPT200.CS Obj 11.c
Using the Containment Spray system Technical Specifications and Technical Requirements Manual, given a set of plant conditions/parameters, determine entry level conditions for LCO actions and/or Technical Requirements.
OPT200.DG Obj 12.g
Using the Technical Specifications, given a setp of plant conditions/parameters, determine entry level conditions for DG Tech Spec LCO actions

Question Source:

New	
Modified Bank	X
Bank	

Question History: Modified for SQN ILT 1311 NRC Exam

Comments: Question modified (G2.2.36) from SRO level question from the 1305 exam by making it RO level. The pump affected was changed along with the stem questions, answer and distracters.

42. 039 A4.04 042

Given the following plant conditions:

- Unit 1 was operating at 100% RTP
- A reactor trip and safety injection was initiated due to a safety valve failure on S/G #1.

Which ONE of the following completes the statements below?

The steam supply swapover on the TDAFW pump is automatically initiated when the __(1)__ pressure drops below setpoint for a specified time.

AND

When the automatic swapover is initiated, 1-FCV-1-16, SG 4 STEAM SUPPLY TO T-D AFW PUMP, will begin opening __(2)__.

Note:
1-FCV-1-15, SG 1 STEAM SUPPLY TO T-D AFW PUMP

	(1)	(2)
A.	steam supply	while the 1-FCV-1-15 is traveling closed
B.	steam supply	ONLY after 1-FCV-1-15 is fully closed
C.	pump discharge	while the 1-FCV-1-15 is traveling closed
D. ✔	pump discharge	ONLY after 1-FCV-1-15 is fully closed

DISTRACTOR ANALYSIS:

A. *Incorrect, Plausible because the transfer is being initiated because there is not sufficient steam pressure available to drive the turbine and the transfer valves can travel at the same time under different conditions. One being if the supply from SG #4 is open and the supply from #1 leaves the fully position, the valve from #4 will start traveling closed.*

B. *Incorrect, Plausible because the transfer is being initiated because there is not sufficient steam pressure available to drive the turbine and the requirement for the valve from SG #4 being prevented from opening until the valve from SG #1 is fully closed is correct.*

C. *Incorrect, Plausible because the transfer being initiated from pump discharge pressure is correct and the transfer valves can travel at the same time under different conditions. One being if the supply from SG #4 is open and the supply from #1 leaves the fully position, the valve from #4 will start traveling closed.*

D. *Correct, The steam supply transfer is initiated when the TD AFW pump discharge pressure drops to 100 psig for 60 seconds. The transfer sequence requires the main steam supply from SG #1 to be fully closed prior to the steam supply from SG #4 beginning to open.*

Question Number: 42

Tier: 2 **Group** 1

K/A: 039 Main and Reheat Steam System
A4.04 Ability to manually operate and/or monitor in the control room: Emergency feedwater pump turbines

Importance Rating: 3.8 / 3.9

10 CFR Part 55: 41.7 / 45.5 to 45.8

10CFR55.43.b: Not applicable

K/A Match: K/A is matched because the question requires the ability to monitor the Main and Reheat Steam System during the TD AFW pump steam automatic supply transfer including when the transfer is initiated and how the valves should respond during the transfer in order to be able to detect when manual action would be appropriate if needed.

Technical Reference: 1-47W611-1-1R 16
1-47W611-3-4R 25

Proposed references to be provided: None

Learning Objective: OPT200.AFW #6

Question Source:

New	
Modified Bank	
Bank	X

Question History: Used from WBN 1303 NRC Exam, SQN ILT 1311 NRC Exam

Comments:

43. 059 A2.11 043

Given the following plant conditions:

- Unit 2 is operating at 100% RTP.
- A malfunction occurs and feedwater flow to each S/G starts lowering.
- Level in all S/Gs are observed to be trending down.

Which ONE of the following identifies both the cause of the event and the required immediate operator actions in accordance with AOP-S.01, "Main Feedwater Malfunctions"?

Note:
PT-1-33, Main Steam Header Pressure
PT-3-1, Feedwater Header Pressure

	CAUSE	**OPERATOR ACTIONS**
A.	Common sensing line to PT-1-33 has developed a leak.	Place feedwater reg valve controllers for all 4 S/Gs in MANUAL and raise main feedwater flow.
B.	Common sensing line to PT-1-33 has developed a leak.	Ensure PC-46-20, MFPT1A & 1B Speed Control shifted to Manual and raise MFPT speed.
C.	Common sensing line to PT-3-1 has developed a leak.	Ensure PC-46-20, MFPT1A & 1B Speed Control shifted to Manual and raise MFPT speed.
D.	Common sensing line to PT-3-1 has developed a leak.	Place feedwater reg valve controllers for all 4 S/Gs in MANUAL and raise main feedwater flow.

DISTRACTOR ANALYSIS:

A. *Incorrect, The first part is correct. The second part is plausible if the candidate thought that a decrease in Steam pressure would affect the automatic SG level control system vs MFP turbine speed. This would be the action to perform if there was a failure of the Automatic SG level control system, however there has been a failure of the MFP turbine control. The immediate action "to take the FRVs to manual," is an action directed by AOP-S.01, for a Failure of Auto SG level control.*

B. *Correct, A leak on the common sensing line to PT-1-33 (steam header pressure input to Stm pressure / Feed pressure delta P) would cause the output of all steamline pressures to increase. This would cause the delta P to increase which would in-turn cause both MFPs to slow down. In accordance with AOP-S.01, for a failure of the MFP speed control, the operators are to ensure the master controller, or each MFP Turbine controller is in manual and operate the controller to restore normal FW pressure.*

C. *Incorrect, Plausible as a leak on the common sensing line to PT-3-1 (feedheader pressure input to Stm pressure / Feed pressure delta P) would affect the output of all feedline pressures, only it would do the opposite - it would decrease the D/P. The second part is correct.*

D. *Incorrect, the first part is plausible as a leak on the common sensing line to PT-3-1 (feedheader pressure input to Stm pressure / Feed pressure delta P) would affect the output of all feedline pressures, only it would do the opposite - it would decrease the D/P. The second part is plausible if the candidate thought that a decrease in Steam pressure would affect the automatic SG level control system vs MFP turbine speed. This would be the action to perform if there was a failure of the Automatic SG level control system, however there has been a failure of the MFP turbine control. The immediate action "to take the FRVs to manual," is an action directed by AOP-S.01, for a Failure of Auto SG level control.*

Question Number: 43

Tier: 2 **Group** 1

K/A: 059 Main Feedwater (MFW) System
A2.11 Ability to (a) predict the impacts of the following malfunctions or operations on the MFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:
Failure of feedwater control system

Importance Rating: 3.0/3.3

10 CFR Part 55: (CFR: 41.5 / 43.5 / 45.3 / 45.13)

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having the candidate determine the cause/failure that is leading to the conditions listed and based on their prediction of failure determine the course of action necessary to control the MFP speed.

Technical Reference: 1-SO-98-1, Distributed Control System, Rev 9
AOP-S.01, Loss of Normal Feedwater, Rev 21

Proposed references to be provided: None

Learning Objective: OPT200.MFW Obj 9 and 15.
State the feewater DCS response to the following:
steam pressure transmitter failure.
Describe the indications of a loss of MFP speed control.

Question Source:

New	
Modified Bank	X
Bank	

Question History: Modified Q 059 A2.03 from ILT 1211 NRC Exam, ILT 1311 NRC Exam

Comments:

44. 059 K4.16 044

Given the following plant conditions:

- Unit 1 is at 100% RTP.
- An AUO is performing 1-SO-2/3-1, "Condensate and Feedwater System," Section 8.11, "Swapping High Pressure Injection Water Pumps."
- The following alarm is received:
  - MFPT 1A & 1B INJECTION SEAL WATER PRESS LOW (M3-B)
- Concurrent with the alarm the AUO reports that local injection water pressure to the main feedwater pumps is 200 psig.
- 25 seconds after the alarm is received, the seal pressure suddenly rises and the alarm clears.

Which ONE of the following describes the plant response and proper action for this condition?

	Plant Response	**Action**
A.	1A-A MFPT trips	Implement AOP-S.01, "Loss of Normal Feedwater"
B. ✔	1B-B MFPT trips	Implement AOP-S.01, "Loss of Normal Feedwater"
C.	Both 1A-A MFPT and 1B-B MFPT require MANUAL trip	Implement E-0, "Reactor Trip or Safety Injection"
D.	Neither 1A-A MFPT or 1B-B MFPT trip	Implement AOP-S.04, "Condensate or Heater Drains Malfunction"

DISTRACTOR ANALYSIS:

A. Incorrect, The time delay setpoints for the MFPTs are different. 1A-A MFPT time delay is 28 sec. Plausible because the 1B-B MFPT time delay is 20 sec.

B. Correct, The 1B-B MFPT trips on low injection water pressure (< 220 psig) for > 20 sec. 1B-B MFPT time delay is 20 sec. AOP-S.01 is the correct procedure for a MFPT

C. Incorrect, Both MFPTs do not trip because the time delays are different. Plausible because one would expect the time delays to be the same.

D. Incorrect, The 1B-B MFPT trips on low injection water pressure (< 220 psig) for > 20 sec. Plausible because low injection water pressure is a MFPT trip and possible cause of problem is Condensate related.

Question Number: 44

Tier: 2 **Group** 1

K/A: 059 Main Feedwater (MFW) System
K4.16 Knowledge of MFW design feature(s) and/or interlock(s) which provide for the following: Automatic trips for MFW pumps

Importance Rating: 3.1/3.2

10 CFR Part 55: (CFR: 41.7)

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA in that it requires knowledge of the MFW Pump automatic trips to answer the question.

Technical Reference: 1-AR-M3-B (E-1)
TI-28 attachment 9

Proposed references to be provided: None

Learning Objective: OPT200.MFW #8

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN ILT 1311 NRC Exam

Comments:

45. 061 K1.07 045

Given the following plant conditions:

- Unit 1 has tripped from 100% RTP.
- All Unit 1 AFW pumps are running.
- Condensate Storage Tank (CST) "A" ruptures.
- 1-M3-C, A-5, PS-3-121A COND STG TANK HDR TO AUX FWPS PRESS LOW has been LIT for 60 seconds.
- An AUO reports:
  - MDAFW Pumps suction pressure gauge indicates 2 psig.
  - TDAFW Pump suction pressure gauge indicates 12 psig.

Which ONE of the following describes the position of the ERCW AFW Supply Valves?

	MDAFW 1A-A/1B-B	**TDAFW**
A. ✔	OPEN	OPEN
B.	OPEN	CLOSED
C.	CLOSED	OPEN
D.	CLOSED	CLOSED

DISTRACTOR ANALYSIS:

A. Correct, with pressures less the alarm in for > 5.5 seconds and pressures less than 3.21 psig for the MDAFW pumps and < 13.9 psig for the TDAFW pumps (and the pump running) all the ERCW supply valves will be open.

B. Incorrect, the first part is correct. The second part is plausible as the TDAFW pump ERCW supply valve will not open if the pump is not running even with a low pressure condition.

C. Incorrect, the first part is plausible as the pressures for switch over to ERCW are different and the applicant will need to know that the MDAFW setpoint was reached and TD met to allow switchover. The second part is correct.

D. Incorrect, the first part is plausible as the pressures for switch over to ERCW are different and the applicant will need to know that the MDAFW setpoint was reached and TD met to allow switchover. The second part is plausible as the TDAFW pump ERCW supply valve will not open if the pump is not running even with a low pressure condition.

Question Number: 45

Tier: 2 **Group** 1

K/A: 061 Auxiliary / Emergency Feedwater (AFW) System
K1.07 Knowledge of the physical connections and/or causeeffect relationships between the AFW and the following systems: Emergency water source

Importance Rating: 3.6/3.8

10 CFR Part 55: (CFR: 41.2 to 41.9 / 45.7 to 45.8)

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA in that it test knowledge of the automatic switchover of the ERCW supply valves to the AFW pumps.

Technical Reference: 1,2-47W611-3-3 Rev 38
1-AR-M3-C, A-5 Rev 21

Proposed references to be provided: None

Learning Objective: OPT200.AFW # 5, 6 and 8.a

Question Source:

New	
Modified Bank	X
Bank	

Question History: Modified SYS-AFW LOR Bank question by changing the stem criteria, the correct answer and by making it a closed reference question. For ILT 1311 NRC Exam

Comments:

46. 061 K6.01 146

Given the following plant conditions:

- Unit 1 is performing a surveillance test on the TDAFW pump when the following alarm is received on 1-M-3C:
  - AUX FWP TURBINE 1A-S MECHANICAL OVERSEED TRIP (Window A-4)

- The cause of the alarm is determined to be 1-FIC-46-57 failed to control the pump outlet flow.

Which ONE of the following identifies:

(1) the setpoint for this alarm

AND

(2) <u>after</u> the Mechnical Overspeed mechanism is RESET and LATCHED, the action required prior to attempting to restart the TDAFW pump in accordance with 1-SO-3-2, "Auxiliary Feedwater System?

A. (1) 4300 rpm
(2) Hold 1-HS-1-51A-S, Trip/Throttle Valve, closed for 10 seconds to clear the overspeed alarm **only**.

B. (1) 4300 rpm
(2) Hold 1-HS-1-51A-S, Trip/Throttle Valve, closed for 10 seconds to clear the overspeed alarm and place speed controller in MANUAL and set controller output at 20%.

C. (1) 4900 rpm
(2) Hold 1-HS-1-51A-S, Trip/Throttle Valve, closed for 10 seconds to clear the overspeed alarm **only**.

D✔ (1) 4900 rpm
(2) Hold 1-HS-1-51A-S, Trip/Throttle Valve, closed for 10 seconds to clear the overspeed alarm and place speed controller in MANUAL and set controller output at 20%.

DISTRACTOR ANALYSIS:

A. Incorrect. First part is incorrect. Plausible since 4300 rpm is the setpoint of the electrical overspeed trip device for the TDAFW pump. Second part is incorrect. Plausible since these are the actions required to reset and clear the alarm for an electrical overspeed trip.

B. Incorrect. First part is incorrect (see item A). Second part is correct. These are the actions required when a mechnical overspeed trip occurs due to 1-FIC-46-57 failing to control pump flow automatically.

C. Incorrect. First part is correct. 4900 rpm is the setpoint of the mechanical overspeed trip device. Second part is incorrect (see item A).

D. Correct. First part is correct. 4900 rpm is the setpoint of the mechanical overspeed trip device. Second part is correct. These are the actions required when a mechnical overspeed trip occurs due to 1-FIC-46-57 failing to control pump flow automatically.

Question Number: 46

Tier: 2 **Group** 1

K/A: 061 Auxiliary / Emergency Feedwater (AFW) System
K6.01 Knowledge of the effect of a loss or malfunction of the following will have on the AFW components: Controllers and positioners

Importance Rating: 2.5/2.8

10 CFR Part 55: (CFR: 41.7 / 45.7)

10CFR55.43.b: Not applicable

K/A Match: Question matches KA by having candidate determine the actions necessary to re-start the TDAFW pump following a malfunction of the pump speed controller in accordance with plant procedures

Technical Reference: 1-SO-3-2, Rev 48
1-AR-M3-C Rev 19 (window A-4)

Proposed references to be provided: None

Learning Objective: OPT200.AFW Obj 8.e
Explain the AFW system design features and/or operational interlocks that provide the following: Turbine trip, including overspeed

Question Source:

New	X
Modified Bank	
Bank	

Question History: New for ILT NRC 1311 Exam

Comments:

47. 062 A1.01 547

Given the following plant conditions:

- Unit 1 was at 100% RTP
- Unit 1 subsequently suffers a large break LOCA
- Offsite power was lost following the Unit 1 safety injection
- 1B-B D/G fails to start
- 1A-A D/G loading increases to 4.7 MW
- Containment pressure is now 1.9 psig

Which ONE of the following describes the required actions in response to D/G load indications?

A. The DG loading must be reduced immediately. Stop the 1A-A Containment Spray pump and secure any D/G loads deemed non-essential.

B. There are no restrictions to running the 1A-A D/G under these conditions. Continue operations and DG loading as directed by emergency operating procedures in effect.

C. ✔ 1A-A D/G loading may continue for 2 hours. Stop the 1A-A Containment Spray pump when directed by the applicable EOP to minimize diesel loading. Secure any D/G loads deemed non-essential.

D. 1A-A D/G loading may continue for 3 hours. Stop the 1A-A Containment Spray pump when directed by the applicable EOP to minimize diesel loading. Secure any D/G loads deemed non-essential.

DISTRACTOR ANALYSIS:

A. *Incorrect. Operation of the D/G at loads of > 4.4MW and <4.8MW is allowed for up to 2 hours. The only running containment spray pump is still required based on containment pressure. Plausible as the MW loading is above the limit and logically load should be reduced. The second part of the distracter is plausible as the CTMT pressure is below the phase B actuation.*

B. *Incorrect. AOP-P.01, Step 7 requires the crew to reduce non-essential loads to reduce loading to less than 4.4MW. Plausible as the conditions put the plant in an emergency situation and typically equipment guidelines in AOPs do not take precedence over EOP actions which rely on the equipment to protect the core.*

C. *Correct. Operation of the D/G at loads of > 4.4MW and <4.8MW is allowed for up to 2 hours. The only running containment spray pump is still required based on containment pressure. AOP-P.01, Step 6 requires the crew to reduce non-essential loads to reduce loading to less than 4.4MW. It is possible to load a D/G > 4.4 MW for a combination of a loss of offsite power, one power train, and LOCA. Note 3 of AOP-P.01, Appendix A and calculation SQN-E3-002R15.*

D. *Incorrect. Operation of the D/G at loads of > 4.4MW and <4.8MW is allowed* ***for ONLY up to 2 hours not 4 hours****. Plausible as the 4 hour limit is listed in AOP-P.01. The second part is correct.*

Question Number: 47

Tier: 2 **Group** 1

K/A: 062 AC electrical distribution:
A1.01 Ability to predict and or monitor changes in parameters to prevent exceeding design limits associated with operating the ac distribution system controls including: Significance of D/G Load limits.

Importance Rating: 3.4/3.8

10 CFR Part 55: (CFR 41.5 / 45.5)

10CFR55.43.b: Not applicable

K/A Match: Question matches the KA in that it requries the examinee to evaluate DG loading, determine if it has exceeded a limit and make a determination on actions to take.

Technical Reference: AOP-P.01 Loss of Offsite Power Rev 32

Proposed references to be provided: None

Learning Objective: OPL271AOP-P.01 #5

Question Source:

New	
Modified Bank	
Bank	X

Question History: Used on SQN 2008 Audit Exam, ILT 1311 NRC Exam

Comments: Minor modifications to the stem

48. 063 A1.01 348

Given the following plant conditions:

- A loss of all AC power has occurred on Unit 1.

- The crew is performing actions of ECA-0.0, "Loss of Shutdown Power," and EA-250-1, "Load Shed of Vital Loads After Station Blackout."

Which ONE of the following completes the following statements?

The design capacity of the vital 125 vdc batteries is rated at ___(1)___ hours

AND

Load shedding performed in EA-250-1 will ___(2)___.

A. (1) 2
(2) ensure that the 2 hour requirement will be met

B. (1) 2
(2) extend the life of the batteries up to 4 hours

C✔ (1) 4
(2) ensures that the 4 hour requirement will be met

D. (1) 4
(2) extends the battery life for an additional 2 hours

DISTRACTOR ANALYSIS:

A. Incorrect, the first part is plausible because the Tech Spec action time for a DC Bus is 2 hours. The second part is plausible as it is correct if the operator thinks the capacity rating is 2 hours. Applicant must also know the purpose of load shedding and the design of the batteries to answer correctly.

B. Incorrect, the first part is plausible because the Tech Spec action time for a DC Bus is 2 hours. The second part is plausible as the time of 4 hours is the actual design capacity and load shedding ensures that the 4 hours are met. Applicant must also know the purpose of load shedding and the design of the batteries to answer correctly.

C. Correct, The design capacity is 4 hours per the SQN FSAR and to meet the 4 hour required coping time, the non-essential loads are required to be shed using EA-250-1.

D. Incorrect, the first part is correct. The second part is plausible because load shedding does extend battery life and 2 hours is the Tech Spec LCO time. The nominal operator could assume the 2 + 2 meets the 4 hour design.

Question Number: 48

Tier: 2 **Group** 1

K/A: 063 D.C. Electrical Distribution
A1.01 Ability to predict and/or monitor changes in parameters associated with operating the DC electrical system controls including:
Battery capacity as it is affected by discharge rate

Importance Rating: 2.5 / 3.3

10 CFR Part 55: 41.5 / 45.5

10CFR55.43.b: Not applicable

K/A Match: K/A is matched because the question assumes the operator knows that load shedding reduces discharge rate and requires the operator to know how time and how much time figures into meeting the battery design basis ratings. The operator will have to differentiate between the listed times meeting the design basis capacity and/or extending the capacity of the batteries.

Technical Reference: Technical Specifications
SQN FSAR section 8
EA-250-1,Load Shed of Vital Loads After Station Blackout, Rev 16

Proposed references to be provided: None

Learning Objective: OPT200.DC
7. EXPLAIN the operational implication of the following concept as it applies to the DC Systems:
   c. Discharge rate effect on battery capacity

Question Source:

New	
Modified Bank	
Bank	X

Question History: Wolf Creek 2009 NRC Exam, WBN 2011 Audit Exam, SQN ILT 1311 NRC Exam

Comments:

49. 063 A2.01 049

Given the following plant conditions:

- Unit 1 is operating at 100% RTP.
- Alarm 1-XA-55-1C "125V DC VITAL BAT BD 1 ABNORMAL" has just been received.
- No other abnormal alarms are lit.

Which ONE of the following is the correct cause for this alarm and action required?

A. An undervoltage condition exists; dispatch operations personnel to adjust the charger output voltage.

B. ✔ A ground exists; dispatch operations personnel to the local board to adjust the red flag ground setpoint.

C. An overvoltage condition exists; dispatch operations personnel to adjust the charger output voltage.

D. A ground exists; dispatch operations personnel to depress the local reset push button.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible since an undervoltage condition does cause CR alarm however undervoltage causes alarm window A-4 not A-5.

B. Correct, A positive or negative ground is alarmed on this window. The direction given in the alarm response to clear the alarm is to locally adjust the red flag setpoint.

C. Incorrect, Plausible since an overvoltage condition does cause CR alarm however undervoltage causes alarm window A-4 not A-5.

D. Incorrect, Plausible since the alarm is correct and most feild alarms can be reset via the use of a local reset button. however this action is not correct as stated in ARP.

Question Number: 49

Tier: 2 **Group** 1

K/A: 063 DC Electrical Distribution System
A2.01 Ability to (a) predict the impacts of the following malfunctions or operations on the DC electrical systems; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:
Grounds.

Importance Rating: 2.5/3.2*

10 CFR Part 55: 41.5

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having the candidate analyze the data given to determine the type of failure that would give the alarms presented and then what action would be needed based on those assumptions.

Technical Reference: Alarm Response 1-AR-M1-C (A-5) 125V DC Vital Bat BD 1 Abnormal, Rev 46

Proposed references to be provided: None

Learning Objective: OPT200.DC #3 & 8

Question Source:

New	
Modified Bank	
Bank	X

Question History: Used on 2002 ILT exam, SQN ILT 1002, SQN ILT 1311 Exam

Comments:

50. 064 G2.4.4 550

Given the following plant conditions:

- Unit 1 was operating at 100% RTP when a reactor trip occurs due to an electrical fault.
- The following annunicators are observed in alarm:
  - 0-M26-A, A-5, “Diesel GEN 1A-A Running > 40 RPM”.
  - 0-M26-B, A-5, “Diesel GEN 1B-B Running > 40 RPM”.
  - 0-M26-C, A-5, “Diesel GEN 2A-A Running > 40 RPM”.
  - 0-M26-D, A-5, “Diesel GEN 2B-B Running > 40 RPM”.
  - 1-M1-B, B-2, "6900V Unit BD 1B Failure Or Undervoltage".
  - EDG 1A-A sped up to 840 rpm and is running steady.

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

The 1A-A DG Output breaker is ___(1)___ and in addition to performing applicable EOPs, entry conditions are met for ___(2)___.

A. (1) open
   (2) AOP-P.01, "Loss of Offsite Power"

B. ✔ (1) open
   (2) AOP-P.05, "Loss of Unit 1 Shutdown Boards"

C. (1) closed
   (2) AOP-P.01, "Loss of Offsite Power"

D. (1) closed
   (2) AOP-P.05, "Loss of Unit 1 Shutdown Boards"

DISTRACTOR ANALYSIS:

A. *Incorrect, the first part is correct. The second part is plausible as the given conditions are symptoms of a partial loss of offsite power, however AOP-P.01 specifies that if the SD board is energized by its respective EDG it does not apply for the given conditions.*

B. *Correct, At 850 RPM, the SS4 and SSX4 relays energize. A contact from the SSX4 relay in the DG breaker closing circuit closes allowing the breaker to close. Therefore, the breaker cannot close unless this contact is closed. The entry conditions are satisfied for entry into AOP-P.05 due to the 1A-A SD board being de-energized. The crew management team could elect to perform AOP-P.05 in parallel with the EOPs.*

C. *Incorrect, the first part is plausible as there are several speed switches all having specific functions on starting and placing the EDG on line. The applicant is only given EDG speed to determine that the SD board is energized or not. The second part is plausible as the given conditions are symptoms of a partial loss of offsite power, however AOP-P.01 specifies that if the SD board is energized by its respective EDG it does not apply for the given conditions.*

D. *Incorrect, the first part is plausible as there are several speed switches all having specific functions on starting and placing the EDG on line. The applicant is only given EDG speed to determine that the SD board is energized or not. The second part is correct.*

Question Number: 50

Tier: 2 **Group** 1

K/A: 064 Emergency Diesel Generator (EDG)
G2.4.4 Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.

Importance Rating: 4.5/4.7

10 CFR Part 55: (CFR: 41.10 / 43.2 / 45.6)

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA in that gives indications of a partial loss of offsite power and a EDG speed parameter, then requires application of EDG correct operation to determine if entry conditions are met for AOP-P.05.

Technical Reference: AOP-P.01, Loss of Offsite Power Rev 21
AOP-P.05, Loss of Unit 1 Shutdown Boards Rev 32

Proposed references to be provided: None

Learning Objective: OPT200.DG #1
OPL271-AOP-P.05 & P.06, #2

Question Source:

New	
Modified Bank	X
Bank	

Question History: Significantly modified Q056G2.4.4 from the ILT 1305 NRC Exam by examining on a different concept for part one and altering stem conditions to change a previous distractor to the correct answer for part 2. ILT 1311 NRC Exam.

Comments:

51. 073 K4.01 551

Given the following plant conditions:

- A release from the Neutralization Tank is in progress from the Condensate DI to Cooling Tower Blowdown
- FCV-14-187, Neutralization Tank Outlet Isolation Valve, automatically closes.

Which ONE of the following conditions could cause the automatic closure of FCV-14-187?

A. Low level in the Neutralization Tank.

B. 0-RM-90-212, Turbine Building Sump Rad Monitor.

C. ✔ Hi Rad Signal from 0-RM-90-225, Cond DI Waste Effluent Monitor.

D. 0-FT-27-175, Cooling Tower Blowdown Flow, transmitter fails downscale.

DISTRACTOR ANALYSIS:

A. Incorrect. Low level in the neutralization tank does provide an automatic function, but it only stops the pump and does not close this valve. This is plausible since some valves are interlocked with pump flow/pump breaker positions. However, this one is not.

B. Incorrect. One alternate flow path is to the turbine building sump. This sump does have a proces rad monitor (RM-90-212), however it does not have an automatic isolation feature. Plausible if the candidate logically concludes that this RM would provide monitoring and protection (most process RMs provide automatic protective features.

C. Correct. A hi rad signal from this rad monitor does cause this vavle to automatically close. Some rad monitors do not provide auto closure, such at the Station (Turbine BLDG) Sump Discharge Monitor 0-RE-90-212 which only provides alarm on any detectable radiation in the sump liquid.

D. Incorrect. This flow transmitter is not interlocked with any valves. This is plausible since some flow transmitters do provide input to FCVs and pumps (such at the Main Feed Regulating Valves, RHR bypass FCV, thermal barrier booster pumps, etc). In addition, there is a minimum flow required dilution flow required by the release permit.

Question Number: 51

Tier: 2 **Group** 1

K/A: 073 Process Radiation Monitoring (PRM) System
K4.01 Knowledge of PRM system design feature(s) and/or interlock(s) which provide for the following:
Release termination when radiation exceeds setpoint.

Importance Rating: 4.0 / 4.3

10 CFR Part 55: (CFR: 41.7)

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA in that it requires knowledge of the inputs which will terminate the release.

Technical Reference: 1,2-47W611-14-18

Proposed references to be provided: None

Learning Objective: OPT200.RM Obj 6.e
Expaling the Radiation Monitoring System design features and/or operational interlocks that provide the following: Isolation of effluent flowpaths.

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN Bank, SQN ILT 1311 NRC Exam

Comments:

52. 076 A3.02 552

Given the following plant conditions:

- Boths units are at 100% RTP with all components in normal alignment.
- A Safety injection occurs on Unit 1.

Which ONE of the following describes the automatic response, if any, of the ERCW system?

A. ✔ 0-FCV-67-151, CCS Heat Exchanger 'OB1' Disch to Hdr A remains AS IS
and
0-FCV-67-152, CCS Heat Exchanger 'OB2' Disch to Hdr B Throttles to re-position to 35%.

B. 0-FCV-67-151, CCS Heat Exchanger 'OB1' Disch to Hdr A travels from CLOSED to fully OPEN
and
0-FCV-67-152, CCS Heat Exchanger 'OB2' Disch to Hdr B remains fully OPEN.

C. 0-FCV-67-151, CCS Heat Exchanger 'OB1' Disch to Hdr A travels from OPEN to fully CLOSED
and
0-FCV-67-152, CCS Heat Exchanger 'OB2' Disch to Hdr B Throttles to re-position to 35%.

D. 0-FCV-67-151, CCS Heat Exchanger 'OB1' Disch to Hdr A remains AS IS
and
0-FCV-67-152, CCS Heat Exchanger 'OB2' Disch to Hdr B remains fully OPEN.

DISTRACTOR ANALYSIS:

A. Correct, 0-FCV-62-151 will remain as is (closed with the power removed from valve motor) and 0-FCV-62-152 will automatically go the the 35% throttled position.

B. Incorrect, Plausible if candidate thinks that 0-FCV-62-151 will go open on an Unit 1 SI signal (it does not), 0-FCV-62-152 will go to the 35% open position.

C. Incorrect, During normal plant operation 0-FCV-62-151 is closed and 152 is open, Plausible if the candidate does not recognize that 0-FCV-62-151 will remain as is (closed), but 0-FCV-62-152 will go open to the 35% position.

D. Incorrect, Plausible since the normal position of 0-FCV-62-151 is closed, however 0-FCV-62-152 will go the 35% open position.

Question Number: 52

Tier: 2 **Group** 1

K/A: 076 A3.02 Ability to monitor automatic operation of the SWS, including: Emergency heat loads.

Importance Rating: 3.7 / 3.7

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: This is a K/A match because it requires the operator to be able recognize the emergency alignment of ERCW given that the system would be aligned for normal operation.

Technical Reference: 0-47W611-67-5 Rev 36
1,2-47W845-2 Rev 105

Proposed references to be provided: None

Learning Objective: OPT200.ERCW #8

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN ILT 1002 NRC Exam, ILT 1311 NRC Exam

Comments: Reordered distracters and correct answer.

53. 076 K2.04 053

Given the following plant conditions:

- Both units were operating at 100% RTP.
- Subsequently, a loss of all site power occurs.
- The 2A-A DG did not start.

Which ONE of the following list the A train ERCW pumps that will have power available?

A. J-A and K-A

B. ✔ J-A and Q-A

C. K-A and R-A

D. Q-A and R-A

DISTRACTOR ANALYSIS:

A. Incorrect, plausible as it is logical that the lowest lettered pumps would be powered from SD Board 1A-A

B. Correct, J-A and Q-A are powered from SD Board 1A-A and it is powered from the 1A-A DG.

C. Incorrect, plausible as K-A and R-A are the 2 and 4 pumps and are trained together by alphabetic order, except on Unit 2.

D. Incorrect, plausible as it is logical that the two pumps with the highest letters would be trained together.

Question Number: 53

Tier: 2 **Group** 1

K/A: 076 Service Water System (SWS)
K2.04 Knowledge of bus power supplies to the following:
Reactor building closed cooling water

Importance Rating: 2.5/2.6

10 CFR Part 55: (CFR: 41.7)

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA in that it requires the examinee to apply knowledge of the ERCW Pump power supplies.

Technical Reference: 1-45N724-1 Rev 21
2-45N724-3 Rev 23

Proposed references to be provided: None

Learning Objective: OPT200.ERCW Obj7

Question Source:

New	X
Modified Bank	
Bank	

Question History: New for the ILT 1311 NRC Exam

Comments:

54. 078 K1.04 054

Which ONE of the following can **NOT** be cooled by Raw Cooling Water?

A. Control Air Compressor "A"

B. Control Air Compressor "C"

C. Service Air Compressor "E" (Sullair)

D. ✔ Auxiliary Control Air Compressor A-A

DISTRACTOR ANALYSIS:

A. Incorrect. Control Air Compressor "A" can be cooled by either RCW or by ERCW. This is plausible since Compressors "A" and "B" are a different type of air compressor than the other compressors and could be assumed to be only supplied by ERCW similar to the Aux Control Air Compressors.

B. Incorrect. Control Air Compressor "C" can be cooled by either RCW or by ERCW. This is plausible since Compressors "C" and "D" are a different type of air compressor than the other compressors and could be assumed to be only supplied by ERCW similar to the Aux Control Air Compressors.

C. Incorrect. Service Air Compressor "E" (Sullair) is only cooled by RCW. This is plausible since this air compressor is a different type of air compressor from the others and could be assumed to be air cooled. This air compressor is not normally used, but instructions are provided in 0-SO-33-1. 0-SO-33-1 Att 2 identifies that RCW is a source of cooling water for this compressor.

D. Correct. The Aux Control Air Compressor's can not be aligned to be cooled by RCW.

Question Number: 54

Tier: 2 **Group** 1

K/A: 078 Instrument Air System (IAS)
K1.04 Knowledge of the physical connections and/or cause-effect relationships between the IAS and the following systems: Cooling water to compressor.

Importance Rating: 2.6 / 2.9

10 CFR Part 55: (CFR: 41.2 to 41.9 / 45.7 to 45.8)

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA in that it requires knowledge of the sources of cooling water to the compressors.

Technical Reference: 1-47W844-1 RCW Rev 34
1,2-47W845-5 ERCW Rev 62
1-47W845-6 ERCW Rev 37
0-SO-33-1 Att 2 eff date 12-21-11

Proposed references to be provided: None

Learning Objective: OPT200.CSA Obj 5.a and m
Explain the the physical connections and/or coause-effect relationships between the Control and Service Air System and the following systems:
ERCW system
Raw Cooling Water System

Question Source:

New	X
Modified Bank	
Bank	

Question History: New for ILT 1311 NRC Exam

Comments:

55. 103 K4.04 655

Given the following plant conditions:

- Unit 1 is in Mode 6
- 1-M12-C, A-1, "1-ZS-90-245 LWR PERS ACCESS OUTER DR LOCK" is LIT
- 1-M12-C, A-2, "1-ZS-90-246 LWR PERS ACCESS INNER DR LOCK" is LIT
- The lower personnel airlock outer door is capable of being closed.
- The equipment hatch and all other penetrations are closed.
- Both trains of ABGTS are OPERABLE.

Which ONE of the following completes the statements below?

If refueling operations are commenced, conditions for LCO 3.9.4, "Containment Building Penetrations," ___(1)___ satisfied.

AND

When the lower personnel airlock outer door is closed, the MCR annunciator ___(2)___ need to be RESET for the window to be extinguished.

A. (1) are
(2) will

B. ✔ (1) are
(2) will NOT

C. (1) are NOT
(2) will

D. (1) are NOT
(2) will NOT

DISTRACTOR ANALYSIS:

A. Incorrect. First part is correct. The conditions for LCO 3.9.4 are satisfied with one door being capable of being closed. Second part is incorrect. This alarm is designed similar to the Permissive status lights on panel M-4 and do not require the annunciator to be reset for the annunciator to extinguish. This is plausible since the other annunciators required RESET when the condition clears to extinguish the annunciator window.

B. Correct. First part is correct. The conditions for LCO 3.9.4 are satisfied with one door being capable of being closed. Second part is correct. This alarm is designed similar to the Permissive status lights on panel M-4 and do not require the annunciator to be reset for the annunciator to extinguish.

C. Incorrect. First part is incorrect. LCO 3.9.4 is satisfied. This is plausible since both doors are typically closed during refueling as a good practice and logically the examinee may conclude the LCO is not satisfied. Second part is incorrect (see item A).

D. Incorrect. First part is incorrect (see item C). Second part is correct. This alarm is designed similar to the Permissive status lights on panel M-4 and do not require the annunciator to be reset for the annunciator to extinguish.

Question Number: 55

Tier: 2 **Group** 1

K/A: 103 Containment System
K4.04 Knowledge of containment system design feature(s) and/or interlock(s) which provide for the following: Personnel access hatch and emergency access hatch

Importance Rating: 2.5/3.2

10 CFR Part 55: (CFR: 41.7)

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA in that it requires knowledge of a design feature of the CTMT personnel airlock.

Technical Reference: TS LCO 3.9.4
0-AR-M12-C, A-1, A-2

Proposed references to be provided: None

Learning Objective: OPT200.CNTMTSTRUCTURE #3, 5 & 10

Question Source:

New	X
Modified Bank	
Bank	

Question History: New for ILT 1311 NRC Exam

Comments:

56. 001 K4.23 556

Given the following plant conditions:

- Unit 1 is at 80% RTP.
- Subsequently, 1-M4-B, A-6, “ROD CONTROL SYSTEM URGENT FAILURE” alarms.
- Control bank 'D' rods are capable of being moved.

Which ONE of the following completes the statement below?

The urgent failure is originated in the ___(1)___, and if Control Bank D rods are to be moved, the control rod mode selector switch is required to be in ___(2)___ position.

A. (1) Logic cabinet
   (2) MANUAL

B. (1) Logic cabinet
   (2) CB-D

C. ✔ (1) 1AC Power cabinet
   (2) CB-D

D. (1) 1AC Power cabinet
   (2) MANUAL

DISTRACTOR ANALYSIS:

A. Incorrect: The logic cabinet urgent failure stops all rod motion – auto, manual and bank select. Plausible if the examinee determines that only auto rod motion is stopped with no failure in a power cabinet on affected bank.

B. Incorrect: The logic cabinet urgent failure stops all rod motion – auto, manual and bank select. Plausible if the examinee determines that only auto rod motion is stopped with no failure in a power cabinet on affected bank.

C. Correct: Bank D rods can still be moved with a urgent failure alarm in alarm, but only if it is in on a non-“D” power cabinet and in bank select.

D. Incorrect: The first part is correct. The second part is plausible if the examinee determines that only auto rod motion is stopped.

Question Number: 56

Tier: 2 **Group** 2

K/A: 001 Control Rod Drive System
K4.23 Knowledge of CRDS design feature(s) and/or interlock(s) which provide for the following: Rod motion inhibit

Importance Rating: 3.4/3.8

10 CFR Part 55: (CFR: 41.7)

10CFR55.43.b: Not applicable

K/A Match: Question matches the KA in that it test the inhibit feature of a AC power cabinet failure and its affects on Bank D rods.

Technical Reference: 1-AR-M4-B A-6 Rev 30
AOP-C.01, Rod Control System Malfunctions Rev 22

Proposed references to be provided: None

Learning Objective: OPT200.RDCNT-RPI Obj 6 & 9

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN Bank, ILT 1311 NRC Exam

Comments:

57. 011 K6.04 557

Given the following plant conditions:

- Unit 1 is at 75% RTP and stable.
- Pressurizer Level Control Selector Switch (XS-68-339E) is in the 339/335 position, and level control is in automatic.
- Temperature input to the PZR level control system fails to 530°F.

Which ONE of the following describes the effect this condition would have on the PZR level control system? (Assume **NO** operator action)

A. Charging initially rises to 120 gpm then returns to normal and PZR level stabilizes at a higher value.

B. ✔ Charging initially lowers to minimum flow and indicated PZR level lowers to 25% where it stabilizes.

C. Charging lowers to minimum and indicated PZR level lowers until Letdown isolates, then level rises until the reactor trips.

D. Charging rises to 120 gpm and the PZR level rises until the reactor trips.

The controller uses Tavg as the input for for level setpoint. The programed level ramps from 24.7 to 60 % as Tavg changes from 547-578°F *. If the controller setpoint input (Tavg) failed to a value of 530*°F*, then the controller would sense the level as high and start reducing the charging flow to lower level. The controller has a minimum cap at 24.7% which is where level would be at 547*°F*.*

DISTRACTOR ANALYSIS:

A. ncorrect, Charging would not increase (as explained above) Plausible if candidate confuses which way the charging flow would be affected by the failure and/or because other failures would cause charging flow to increase. Level setpoint failing high would result in this scenario.

B. Correct, the temperature input failure results in the pressurizer level setpoint to drop to 24.7%. The initial level would be 60%, therefore the control system would decrease charging to lower the level from 60% to the 24.7% setpoint.

C. Incorrect, Level would stabilize at 24.7% as explained in above. Plausible because other failures would cause level to drop until letdown isolates at 17%, then pressurizer refills and trip on High level occurs. Controlling channel failing high would result in this scenario.

D. Incorrect, charging does not increase as explained in 'B' above. Plausible because other failures would cause level to increase until pressurizer fills and trip on High level occurs. Controlling channel failing low would result in this scenario.

Question Number: 57

Tier: 2 **Group** 2

K/A: 011 Pressurizer Level Control System (PZR LCS)
K6.04 Knowledge of the effect of a loss or malfunction on the following will have on the PZR LCS: Operation of PZR level controllers

Importance Rating: 3.1/3.1

10 CFR Part 55: (CFR: 41.7 / 45.7)

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA as it gives a malfunction in the stem and requires the examinee to determine the effect on the PZR Level Control system.

Technical Reference: AOP-I.04 Rev 12
T-28 ATT 9, Unit 1 and 2 Cycle Sheet R011-09-2012

Proposed references to be provided: None

Learning Objective: OPL271.AOP-I.04 #12

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN 2004 NRC Exam, ILT 1311 NRC Exam

Comments:

58. 015 A1.01 558

Given the following plant conditions:

- The BOP group has just completed 0-PI-SXX-000-022.2, Calorimetric Calculations, to compare against the ICS value for Core Power to support a startup following a refueling outage for Unit 1.

- However, the engineer used an **incorrect** feedwater temperature that was 20°F LOWER than the actual feedwater temperature.

Which ONE of the following statements below describes the impact of this error?

Calculated power would be ___(1)___ than actual power.

AND

Based on this error, NIS power range channels gain potentiometers would be __(2)__.

A. (1) Lower
   (2) Lowered

B. (1) Lower
   (2) Raised

C. (1) Higher
   (2) Lowered

D✔ (1) Higher
   (2) Raised

DISTRACTOR ANALYSIS:

A. *Incorrect, the first part is plausible if the examinee applies the lower feedwater temperature as raising feedwater enthalpy in calculating actual effect on power. The second part is plausible if the examinee reverses how the NI gains will be adjusted.*

B. *Incorrect, the first part is plausible if the examinee applies the lower feedwater temperature as raising feedwater enthalpy in calculating actual effect on power. The second part is correct. The NI gains would be raised to match calculated power.*

C. *Incorrect, the first part is correct. The second part is plausible if the examinee reverses how the NI gains will be adjusted.*

D. *Correct, $Q = M_{fw}(h_S - h_{fw})$ FW Temp is proportional to FW enthalpy, since a lower FW temperature is given, the enthalpy will be lower and it can be seen that calculated power would be higher. The NI gains would be raised to match calculated power.*

Question Number: 58

Tier: 2 **Group** 2

K/A: 015 Nuclear Instrumentation System
A1.01 Ability to predict and/or monitor changes in parameters to prevent exceeding design limits) associated with operating the NIS controls including: NIS calibration by heat balance

Importance Rating: 3.5/3.8

10 CFR Part 55: (CFR: 41.5 . 45.5)

10CFR55.43.b: Not applicable

K/A Match: This question meets the KA in that it gives a situation where a heat balance calculation based on parameters caused adjustments to NIS that were incorrect.

Technical Reference: 0-PI-SXX-000-022.2, Calorimetric Calculations Rev 2

Proposed references to be provided: None

Learning Objective: OPT200.NIS Obj 5 & 8

Question Source:

New	X
Modified Bank	
Bank	

Question History: New for ILT 1311 NRC Exam

Comments: This question is based on OE from the Kewaunee Nuclear Power Plant where thermal limits were exceeded based on an error in the calorimetric calculation.

59. 028 K5.04 059

Given the following plant conditions:

- Unit 1 was operating at 100% RTP when a small break LOCA resulted in a reactor trip and safety injection.

- The crew is now performing E-1, "Loss of Reactor or Secondary Coolant," and is determining if the Hydrogen Recombiners are to be placed in service.

- After the 5 minute warmup, the Containment Hydrogen analyzers 1-H2I-43-200 and 1-H2I-43-210 indicate 0.4%.

Assuming conditions do not change, which ONE of the following identifies the hydrogen mitigation systems that will be in service when E-1 is completed?

A. ✔ ONLY the hydrogen igniters.

B. ONLY the hydrogen recombiners.

C. BOTH the hydrogen igniters and the hydrogen recombiners.

D. NEITHER the hydrogen igniters nor the hydrogen recombiners.

DISTRACTOR ANALYSIS:

A. Correct, The hydrogen igniters would have been placed in service during the performance of E-0/ES-0.5 Appendix D and the recombiners would not be placed in service because the hydrogen concentration is below the minimum value of 0.5% required for placing them in service.

B. Incorrect, Plausible because the hydrogen recombiners are placed in service during performance of E-1, but only if the hydrogen concentration greater than 0.5% and lower than 6.0%. The current value of 0.5% could be misapplied to the operation of the recombiners and igniters.

C. Incorrect, Plausible because both the recombiners and igniters would be in service if the hydrogen concentration at been 0.5% when checked during performance of E-1.

D. Incorrect, Plausible because the concentration at 0.4% is below the concentration of hydrogen to be flammable and there is a concentration range where the recombiners are placed in service and if outside the range on either side they are not placed in service. This also plausible as the procedure used to be written that you waited till H2% > .5% which would have made D correct. IN addition, if in appendix D does not energized igniters if H2 > 6%.

Question Number: 59

Tier: 2 **Group** 2

K/A: 028 Hydrogen Recombiner and Purge Control System (HRPS)
K5.04 Knowledge of the operational implications of the following concepts as they apply to the HRPS: The selective removal of hydrogen

Importance Rating: 2.6/3.2

10 CFR Part 55: (CFR: 41.5 / 45.7)

10CFR55.43.b: Not applicable

K/A Match: K/A is matched because the question requires applying supplied data to the procedural requirements to determine the impact on the operation of the hydrogen removal systems.

Technical Reference: E-0, Reactor Trip or Safety Injection, Rev 35
E-1, Loss of Reactor or Secondary Coolant, Rev 26
ES-0.5, Equipment Verifications Rev 7

Proposed references to be provided: None

Learning Objective: OPL271E-1 Obj 9

Question Source:

New	
Modified Bank	
Bank	X

Question History: New for WBN 10/2011 NRC Exam, SQN ILT 1311 NRC Exam

Comments:

60. 041 K2.02 560

Given the following plant conditions:

- Unit 1 is operating at 10% RTP.
- The Main turbine is being warmed up in preparation to sync with the grid.

Which ONE of the following would be a DIRECT result if the input breaker for Vital Instrument Power Board 1-IV was to trip open?

A. Reactor Trips.

B. ✔ Steam Dumps fail closed.

C. Charging pump suction swaps to the RWST.

D. Pressurizer level indicator 1-LI-68-320 fails LOW.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible since in accordance with AOP-P.03, the reactor will trip on a loss of vital instrument bus 1-I.

B. Correct, In accordance with AOP-P.03, with power lost to the 1-IV instrument bus, the steam dumps will lose power to the control and interlock relays. Thus the steam dumps would fail closed due to this power loss.

C. Incorrect, Plausible since, in accordance with AOP-P.03, the charging pump suction automatically swaps to the RWST if either vital instrument bus 1-I or 1-II is lost.

D. Incorrect, Plausible as this instrument will fail low if bus 1-III is lost.

Question Number: 60

Tier: 2 **Group** 2

K/A: 041 Steam Dump System (SDS) and Turbine Bypass Control
K2.02 Knowledge of bus power supplies to the following:
ICS inverter breakers. (120 VAC Inverter breakers)

Importance Rating: 2.8 / 2.8

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: This question matches to K/A by testing the candidates knowledge of the power supply to Steam dump system.

Technical Reference: AOP-P.03, Loss of Unit 1 Vital Instrument Power Board Rev 25

Proposed references to be provided: None

Learning Objective: OPT200.SDCS Obj 6

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN back question with C distractor changed to improve plausibility.

Comments:

61. 045 K3.01 661

Given the following plant conditions:

- Unit 1 is performing a power ascension in accordance with 0-GO-5, "Normal Power Operation" and is at 35% RTP.
- 1A-A MFP is currently in service.
- Control rods are in AUTOMATIC.
- An EHC system failure occurs, causing the main turbine to trip.

Which ONE of the following parameter values is <u>expected</u> for the event in progress?

A. ✔ S/G Narrow Range level at 38% and lowering slowly to 33%.

B. PZR pressure at 2210 psig and rising slowly to 2235 psig.

C. RCS Tavg 555°F and lowering to 552°F.

D. PZR level 35% and lowering to 31%

<u>DISTRACTOR ANALYSIS:</u>

A. Correct, SG level control program senses off from PT-73, first stage pressure which is now zero. At zero program level is 33%

B. Incorrect, plausible if the examinee does not understand that pressure will at first go high on a load rejection, until rod control, steam dumps and PZR sprays effects take place.

C. Incorrect, plausible as temperature is high and trending down, however it is trending to 548°F with the combination of rods and dumps. Plausible as the RX trip steam dump controller will control temperature at 552°F.

D. Incorrect, plausible if examinee miscalculates PZR level.

Question Number: 61

Tier: 2 **Group** 2

K/A: 045 Main Turbine Generator (MT/G) System
K3.01 Knowledge of the effect that a loss or malfunction of the MT/G system will have on the following: Remainder of the plant

Importance Rating: 2.9/3.2

10 CFR Part 55: (CFR: 41.7 / 45.6)

10CFR55.43.b: Not applicable

K/A Match: K/A is matched because the question requires the ability to determine the effects of several parameters of the rest of the plant followng a main turbine trip.

Technical Reference: TI-28, Att 9, Unit 1 & 2 Cycle Data Sheet R11-09-2012

Proposed references to be provided: None

Learning Objective: OPT200.MTGC # 5

Question Source:

New	X
Modified Bank	
Bank	

Question History: SQN ILT 1311 NRC Exam

Comments:

62. 055 A3.03 562

Given the following plant conditions:

- Unit 1 is at 60% RTP with shutdown in progress due to S/G #3 tube leakage identified.
- The Condenser Vacuum Pump Discharge filters have been installed.
- 1-HS-2-255, COND VAC PUMP EXH FILTER BYPASS, is in P-auto.
- A leak on the condenser vacuum breaker develops leakage equal to 30 scfm.
- The following alarms are received at approximately the same time:
- 1-M-3A, E-3, PDIS-2-255 COND VAC PMPS EXH FILTER DIFF PRESS HI.
- 1-RA-90-99A CNDS VAC PMP LO RNG AIR EXH MON HIGH RAD.

Which ONE of the following identifies the status of 1-FCV-2-255, Condenser Vacuum Pump Exhaust Filter Bypass Flow Control Isol?

The bypass valve _____.

A. ✔ would have opened AUTOMATICALLY due to the high D/P setpoint across the filter.

B. would have opened AUTOMATICALLY due to high CVP discharge flowrate.

C. would be prevented from opening AUTOMATICALLY or MANUALLY.

D. would be prevented from AUTOMATICALLY opening, however valve could be opened MANUALLY using control switch.

DISTRACTOR ANALYSIS:

A. Correct, When CVP discharge filter train is installed, FCV-2-255 is designed to open automatically on a high filter DP of 5.5 in/water increasing.

B. Incorrect, Plausible due to requirement to open the bypass if the flow rate exceeds 45 scfm even when the filters are not installed to prevent the instrument malfunction alarms cause by the high back pressure in the exhaust stack. This is a precaution in the system operating instruction.

C. Incorrect, Plausible due to candidate could think the bypass valve would be prevented from opening to ensure all release gas went through the monitor to ensure release is monitored.

D. Incorrect, Plausible due to candidate could think the bypass valve would be prevented from opening in automatic to ensure all release gas went through the monitor, but would allow operator control in manual.

Question Number: 62

Tier: 2 **Group** 2

K/A: 055 Condenser Air Removal System (CARS)
A3.03 Ability to monitor automatic operation of the CARS, including:
Automatic diversion of CARS exhaust

Importance Rating: 2.5*/2.7*

10 CFR Part 55: (CFR: 41.7 / 45.5)

10CFR55.43.b: Not applicable

K/A Match: Question matches KA in tha it gives stem conditions that cause an effect on CARS and examines on automatic diversion of the exhaust.

Technical Reference: 1-AR-M3-A, E-3 Rev 16
1-SO-2-9, Condenser Vacuum and Turbine Steam Seal System Operation Rev 28

Proposed references to be provided: None

Learning Objective: OPT200.CONDVAC #4

Question Source:

New	
Modified Bank	
Bank	X

Question History: 2008 SQN NRC Exam, ILT 1311 NRC Exam

Comments:

63. 056 A2.04 063

Given the following plant conditions:

- Unit 1 is operating at 100% RTP.
- NO. 3 HTR Drain Tank Pump trips on overcurrent.
- An automatic runback occurred.
- MFP Inlet Pressure, 1-PI-2-129 is 280 psig.

Which ONE of the following completes the statement below?

Once the runback is complete, turbine load should be no higher than ___(1)___ and the crew will ___(2)___ to reduce turbine load further.

A. ✔ (1) 77
(2) need

B. (1) 77
(2) NOT need

C. (1) 81
(2) need

D. (1) 81
(2) NOT need

DISTRACTOR ANALYSIS:

A. Correct, the HDT low flow runback for Unit 1 runs the turbine back to less than 77%. Since MFP inlet pressure is < 320 psig the crew will need to further reduce turbine load IAW AOP-S.04, Condensate or Heater Drains Malfunction.

B. Incorrect, the first part is correct. The second part is plausible as there are two pressures given as MFW pump pressures – 320 psig for action to reduce turbine power and 250 psig as the pressure where MFW pumps experience severe cavitation.

C. Incorrect, the first part is plausible as 81 % turbine power is the setpoint above which the runback will occur for Unit 1.

D. Incorrect, the first part is plausible as 81 % turbine power is the setpoint above which the runback will occur for Unit 1. The second part is plausible as there are two pressures given as MFW pump pressures – 320 psig for action to reduce turbine power and 250 psig as the pressure where MFW pumps experience severe cavitation.

Question Number: 63

Tier: 2 **Group** 2

K/A: 056 Condensate System
A2.04 Ability to (a) predict the impacts of the following malfunctions or operations on the Condensate System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of condensate pumps

Importance Rating: 2.6/2.8*

10 CFR Part 55: (CFR: 41.5 / 43.5 / 45.3 / 45.13)

10CFR55.43.b: Not applicable

K/A Match: The question meets the KA in that it gives stem indications of a loss of #3 HDT pump with the resultant runback to compensate for the loss of condensate flow. The examinee is then required to predict after runback power level and understand that actions still need to be taken based on feedwater inlet pressure.

Technical Reference: AOP-S.04, Condensate or Heater Drains Malfunction. Rev 21

Proposed references to be provided: None

Learning Objective: OPL271. AOPS.04 # 3 & 7

Question Source:

New	X
Modified Bank	
Bank	

Question History: New for SQN ILT 1311 NRC Exam

Comments:

64. 072 A4.01 564

Given the following plant conditions:

- A source check is being performed on radiation monitor 0-RM-90-103, "Spent Fuel Pit Radiation Monitor."

Which ONE of the following completes the following statement?

When the radiation monitor control switch is positioned to the CHECK SOURCE position the ___(1)___ and the High Rad relay ___(2)___ be automatically blocked.

	___(1)___	___(2)___
A. ✔	indicator will deflect upscale	will **NOT**
B.	indicator will deflect upscale	will
C.	operate light will extinguish	will **NOT**
D.	operate light will extinguish	will

DISTRACTOR ANALYSIS:

A. CORRECT, If the 0-RM-90-103 is source checked the indicator will deflect upscale if the check is successful. The high rad relay will not be automatically blocked by placing the control to the CHECK SOURCE position. To prevent the potential for an automatic actuation, the monitor would have to be manually blocked.

B. Incorrect, If the 0-RM-90-103 is source checked the indicator will deflect upscale if the check is successful but the high rad relay being automatically blocked by placing the control to the CHECK SOURCE position is not correct. Plausible because the indicator will deflect upscale during the source check and the instrument can be manually blocked.

C. Incorrect, Placing the control switch on 0-RM-90-103 to the CHECK SOURCE position does not cause the operate light to extinguish and the high rad relay not being automatically blocked by placing the control to the CHECK SOURCE position is correct. Plausible because the operate light does extinguish when the control switch is placed to the TRIP ADJ postion and the instrument not being blocked is correct.

D. Incorrect, Placing the control switch on 0-RM-90-103 to the CHECK SOURCE position does not cause the operate light to illuminate and the high rad relay being automatically blocked by placing the control to the CHECK SOURCE position is not correct. Plausible because the operate light does extinguish when the control switch is placed to the TRIP ADJ postion and the instrument can be manually blocked.

Question Number: 64

Tier: 2 **Group** 2

K/A: 072 Area Radiation Monitoring (ARM) System
A4.01 Ability to manually operate and/or monitor in the control room: Alarm and interlock setpoint checks and adjustments.

Importance Rating: 3.0 / 3.3

10 CFR Part 55: 41.7, 45.5 to 45.8

10CFR55.43.b: not applicable

K/A Match: This question matches the K/A by having the candidate monitor the expected response to an ARM being source checked and the expected system response during the test.

Technical Reference: RCI-01, Radiation Protection Program, Rev. 67

Proposed references to be provided: None

Learning Objective: OPT200.RM Obj 6.d

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN bank question

Comments:

65. 075 G2.4.1 665

Given the following plant conditions:

- Unit 2 is operating at 100% RTP when 2A Condenser Circulating Water Pump trips.
- Annunciator "PS-2-7B CONDENSER VACUUM LOW" alarms.
- Operators implement AOP-S.02, "Loss of Condenser Vacuum."
- At 0900 Condenser backpressure is 2.7 psia and rising.
- At 0905 Condenser backpressure is 2.8 psia and slowly rising.

In accordance with AOP-S.02, which ONE of the following completes the statements below?

The C-9 CONDENSER INTERLOCK permissive light is ___(1)___ .

AND

A manual reactor trip ___(2)___ required.

A. (1) extinguished
(2) is

B. (1) LIT
(2) is NOT

C. (1) extinguished
(2) is NOT

D✔ (1) LIT
(2) is

DISTRACTOR ANALYSIS:

A. Incorrect. First part is incorrect. The C9 permissive light is lit since condenser backpressure is less than 2.9. This is plausible if the novice operator does not recall the values for this permissive. Second part is correct. AOP-S.02 requires turbine trip if load is greater than 30% and condenser backpressure greater than 2.7 for 5 mins.

B. Incorrect. First part is correct. The C9 permissive light is lit since condenser backpressure is less than 2.9. Second part is incorrect. AOP-S.02 requires turbine trip if load is greater than 30% and condenser backpressure greater than 2.7 for 5 mins. This is plausible since a manual trip is required when greater than 3.5, regardless of the time, and current pressure is only 2.8.

C. Correct. First part is incorrect (see item A). Second part is incorrect (see item B).

D. Correct. First part is correct. The C9 permissive light is lit since condenser backpressure is less than 2.9. Second part is correct. AOP-S.02 requires turbine trip if load is greater than 30% and condenser backpressure greater than 2.7 for 5 mins.

Question Number: 65

Tier: 2 **Group** 2

K/A: 075 Circulating Water System
G2.4.1 Knowledge of EOP entry conditions and immediate action steps.

Importance Rating: 4.6/4.8

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

10CFR55.43.b: Not applicable

K/A Match: The question matches the KA in that it gives conditions that require immediate actions and entry into the EOP network.

Technical Reference: AOP-S.02, Loss Of Condenser Vacuum, Rev 13
1-AR-M4-A E-6, Rev 15
1-AR-M2-C C-6, Rev 23

Proposed references to be provided: None

Learning Objective: OPL271AOP-S.02 # 2 & 4

Question Source:

New	
Modified Bank	
Bank	X

Question History: Used on the ILT 1009 NRC Exam, ILT 1311 NRC Exam

Comments:

66. G 2.1.32 566

Given the following plant conditions:

- Unit 1 is starting up after a refueling outage.
- The Condenser Circulating Water (CCW) system is being started up.
- At 0800, CCW pump 1A was started and immediately secured due to AUO reporting water issuing from an open vent valve.
- At 0810, CCW pump 1A was restarted and reached rated speed but subsequently tripped.
- At 0820, the cause of the trip was identified and repaired.

In accordance with GOI-6, "Apparatus Operations", which ONE of the following identifies the earliest time that CCW pump 1A is allowed to be restarted?

A. 0820

B. 0830

C. 0845

D. ✔ 0855

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible if candidate thinks that pump can be restarted right away, however the pump has had two successive starts. In accordance with GOI-6, Section B.B the motor will require a 45 min cooldown before another start is allowed.

B. Incorrect, Plausible, the pump has had two successive starts. This value would be a misapplication of the 20 minutes referenced for normal or no-load conditions.

C. Incorrect, Plausible since it could be determined that the first start would no longer be considered since the "45 min cooldown" time requirement had elapsed.

D. Correct, Per guidance in GOI-6, Section B.B for motor > 200 hp, since the pump has had two successive starts, a 45 minute ccoldown is required prior to another start (0810 + 45 min = 0855).

Question Number: 66

Tier: 3 **Group** n/a

K/A: G 2.1.32 Ability to explain and apply system limits and precautions

Importance Rating: 3.7 / 3.8

10 CFR Part 55: 41.10

10CFR55.43.b: Not applicable

K/A Match: Question matches the K/A by having the candidates determine and apply the required start duty cycle times as a precaution for starting large motors in accordance with GOI-6 Apparatus Operations.

Technical Reference: GOI-6, Apparatus Operations, R154

Proposed references to be provided: None

Learning Objective: OPL271.GOI-6 #8

Cognitive Level:

Higher	
Lower	X

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN ILT1009 NRC Exam, SQN ILT 1311 NRC

Comments:

67. G 2.1.45 467

Given the following plant conditions:

- Unit 1 is at 100% RTP.
- The following alarms are received on 1-M-5A:
  - TS-68-2M/N RC LOOPS T AVG/AUCT T AVG DEVN HIGH-LOW (A-6)
  - TS-68-2A/B REACTOR COOLANT LOOPS ΔT DEVN HIGH-LOW (B-6)
  - TS-68-2P/Q REAC COOL LOOPS T REF T AUCT HIGH-LOW (C-6)
  - NARROW RANGE RTD FAILURE LOOP 3 (E-6)

Which ONE of the following would identify both;

(1) the loop 3 RTD that has failed

AND

(2) an alternate indication which would confirm the cause of these alarms?

A. ✔ (1) Tcold failed HIGH
(2) Control Rods Insert

B. (1) Tcold failed HIGH
(2) OTΔT Setpoint rises

C. (1) Thot failed HIGH
(2) Control Rods Insert

D. (1) Thot failed HIGH
(2) OTΔT Setpoint rises

DISTRACTOR ANALYSIS:

A. Correct. First part is correct. Any Tcold failure will cause the NR RTD FAILURE alarm to actuate. Second part is correct. Tcold failing high will cause Tave to be higher and will become the highest Tave (Auctioneered High Tave) and will be higher than Tref. Rods will insert to match Tave and Tref.

B. Incorrect. First part is correct (see item A). Second part is incorrect. Tcold failing high will causes Tave for Loop 3 to be high, which causes the OTΔT setpoint to lower (be closer to the actual ΔT). This is plausible since the novice operator commonly confuses the direction of the "setpoint" as it relates to the direction of the failure.

C. Incorrect. First part is incorrect. Failure of both Thot RTDs is required to cause the NR RTD FAILURE alarm to actuate. This is plausible since only one Tcold failure is require for this alarm and it is a common alarm. Second part is correct. Thot failing high will cause Tave to be higher and will become the highest Tave and will be higher than Tref. Rods would insert to match Tave if both Thot RTDs failed.

D. Incorrect. First part is incorrect (see item C). Second part is incorrect. Thot failing high will cause Tave to be higher and will become the highest Tave (Auctioneered High Tave). This causes the OTΔT setpoint to lower (be closer to the actual ΔT). This is plausible since the novice operator commonly confuses the direction of the "setpoint" as it relates to the direction of the failure.

Question Number: 67

Tier: 3 **Group** n/a

K/A: G 2.1.45 Conduct of Operations
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 / 43.5 / 45.4

10CFR55.43.b: not applicable

K/A Match: KA is matched because the question requires knowledge of how to use a diverse indications to confirm the response of a temperature instrument malfunction.

Technical Reference: 1-AR-M5-A (A-6, B-6, C-6 and E-6) R37

Proposed references to be provided: None

Learning Objective: OPL271AOP-I.02 Obj #8 and 9.

Question Source:

New	X
Modified Bank	
Bank	

Question History: New for SQN ILT 1311 NRC Exam

Comments:

68. G 2.2.14 568

In accordance with NPG-SPP-10.1, "System Status Control", work activities that change the status of components are authorized and documented by _____ .

A. ✔ System Operating Instructions, Temporary Alterations and Work Order Documents.

B. Surveillance Instructions, Operating Logs and Temporary Alterations.

C. System Operating Instructions, Clearances and Standing Orders.

D. Surveillance Instructions, Work Order Documents and Standing Orders.

DISTRACTOR ANALYSIS:

A. Correct, Step 3.5.1 of SPP-10.1 identifies that Clearances, Work Orders, Approved plant procedures and Temporary Alterations as the approved methods of documenting changes in configuration status.

B. Incorrect, Surveillance Instructions and Temporary Alterations are correct, but Operating Logs is not an approved method of documenting changes in status control. Plausible as the instructions for Log Keeping is contained in an approved procedure (OPDP-1) and system status information is required to be logged.

C. Incorrect, SOIs and Clearances are correct, but Standing Orders is not an proved method of documenting changes in status control. OPDP-1 states that they are informative in nature and do not provide plant operating instructions or replace procedures. Plausible as the instructions for using Standing Orders is included in an approved procedure (OPDP-1) and Standing Orders sometimes contain instructions for actions to maintain equipment operability.

D. Incorrect, Surveillance Instructions and Work Documents are correct, but Standing Orders is not an proved method of documenting changes in status control. OPDP-1 states that they are informative in nature and do not provide plant operating instructions or replace procedures. Plausible as the instructions for using Standing Orders is included in an approved procedure (OPDP-1) and Standing Orders sometimes contain instructions for actions to maintain equipment operability.

Question Number: 68

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

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having the candidate determine the correct response to finding a valve out of position while performing/reviewing a valve lineup.

Technical Reference: SPP-10.1, System Status Control, Rev 0004

Proposed references to be provided: None

Learning Objective: OPL271SPP-10.1 Obj #2
Identify the Four (4) Work Documents approved to authorize and document a change of status of components.

Cognitive Level:

Higher	
Lower	X

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN bank question

Comments:

69. G 2.2.22 569

Given the following plant conditions:

- Unit 1 RCS preparing for a startup with the RCS at 540°F.

Which ONE of the following completes the statements below?

The RCS Pressure Tech Specification Safety Limit is ___(1)___.

AND

Violation of SL 2.1.2, "RCS Pressure SL", requires the pressure to be reduced to less than the limit within ___(2)___ from the time the limit was violated.

	___(1)___	___(2)___
A.	2485 psig	5 minutes
B.	2485 psig	1 hour
C. ✔	2735 psig	5 minutes
D.	2735 psig	1 hour

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible since this is the setpoint of the RCS safety valves and can be easily applied as the TS Safety Limit setpoint and with the unit in Mode 3, the pressure is required to be restored to less than the limit within 5 minutes.

B. Incorrect, Plausible since this is the setpoint of the RCS safety valves and can be easily applied as the TS Safety Limit setpoint and 1 hour would be correct if the unit had been in Mode 1 or 2.

C. Correct, Tech Specs identify the RCS pressure Safety Limit to be 2735 psig and a violation of the RCS pressure Safety Limit in Mode 3 requires the pressure to be restored within 5 minutes.

D. Incorrect, Plausible the RCS pressure Safety Limit is 2735 psig and 1 hour would be correct if the unit had been in Mode 1 or 2.

Question Number: 69

Tier: 3 **Group:** n/a

K/A: G 2.2.22
Knowledge of limiting conditions for operations and safety limits.

Importance Rating: 4.0 / 4.7

10 CFR Part 55: 41.5 / 43.2 / 45.2

10CFR55.43.b: Not applicable

K/A Match: K/A is matched because the question requires knowledge of Tech Spec Safety Limits and actions required if the RCS Pressure SL is violated.

Technical Reference: Unit 1 Tech Spec 2.1.2, RCS Safety Limit and Bases

Proposed references to be provided: None

Learning Objective: OPT200.TS-INTRO, Technical Specifications R5, #11 & 13

Cognitive Level:

Higher	
Lower	X

Question Source:

New	
Modified Bank	
Bank	X

Question History: WBN bank question T/S0200.05 003 modified for use on the WBN 03/2013 NRC exam. SQN ILT 1311 NRC Exam.

Comments:

70. G 2.2.38 070

Given the following plant conditions:

- Unit 1 is operating at 100% RTP.
- Control Rod H-8 drops into the core.
- Unit 1 remains at power and no automatic protective or operator actions have occurred.
- The OATC reports that during the initial stages of the event Pressurizer pressure had dropped to 2195 psig before recovering to normal.

Which ONE of the following completes the statements below?

During this event, the Tech Spec DNB limit ___(1)___ exceeded.

AND

Tech Spec 3.1.3 "Moveable Control Assemblies," requires Reactor Power to be a maximum of ___(2)___ within 1 hour, unless the rod is realigned.

A. (1) was
(2) 85%

B. ✔ (1) was
(2) 75%

C. (1) was **NOT**
(2) 85%

D. (1) was **NOT**
(2) 75%

DISTRACTOR ANALYSIS:

A. *Incorrect, Plausible since the first part is correct. The DNB tech spec limit is 2220 psia. Also the Tech Spec for Moveable Control Assemblies requires that reactor power be reduced to ≤ 75% within 1 hour and reactor trip setpoints must be reduced to ≤ 85%. Since both requirements are in the same paragraph in Tech Spec the candidate made get confused as to which power level applies.*

B. *Correct, IAW Tech Spec 3.2.5, DNB Parameters, PZR pressure must remain ≥ 2220 psia while in Mode 1. Therefore with pressure at 2195 psig the DNB LCO would be in affect. Also Tech Spec 3.1.3.1 requires that reactor power be reduced to ≤ 75% within 1 hour.*

C. *Incorrect, Plausible if the candidate does not recognize the fact that the DNB parameter for pressure was exceeded and setpoint for reactor power is ≤ 75% within 1 hour. ≤ 85% applies to the reactor trip setpoints not the maximum power level.*

D. *Incorrect, Plausible if the candidate does not recognize the fact that the DNB parameter for pressure was exceeded and the power level for maximum power level is ≤ 75%.*

Question Number: 70

Tier: 3 **Group** ____

K/A: G 2.2.38 Knowledge of conditions and limitations in the facility license.

Importance Rating: 3.6 / 4.5

10 CFR Part 55: 41.7 / 41.10

10CFR55.43.b: not applicable

K/A Match: This question matches the K/A by having the candidate recall the Tech Spec limits for DNB parameters and the Tech Spec limit on reactor power for a dropped rod. This demonstrates that they have knowledge of these Tech Spec items as stated in Tech Specs and Tech Specs are part of the facility license.

Technical Reference: Tech Spec 3.2.5 Ammendment 138
Tech Spec 3.1.3.1 Moveable Control Assemblies Ammendment 215.

Proposed references to be provided: None

Learning Objective: OPT200.TS-APP # 3 & 4

Question Source:

New	____
Modified Bank	____
Bank	X

Question History: SQN ILT 1201 NRC exam. ILT 1311 NRC Exam

Comments:

71. G 2.3.13 571

Given the following plant conditions:

- A batch release of the Monitor Tank is in progress through the Liquid Radwaste System using the normal effluent flow path.
- "0-RA-90-122A WDS LIQ EFF MON HIGH RAD" (M12-B, C-1) annunciator alarms.
- Rad monitor 0-RA-90-122A is determined to be INOPERABLE.

Which ONE of the following completes the following statements?

The release will ___(1)___ terminate.

AND

After two independent required batch samples are obtained, and the release is reinitiated, periodic sampling during the release ___(2)___ required.

A. (1) require manual actions to
(2) is

B. (1) require manual actions to
(2) is NOT

C. (1) automatically
(2) is

D. ✔ (1) automatically
(2) is NOT

DISTRACTOR ANALYSIS:

A. *Incorrect. First part incorrect. This radiation alarm will cause the release to automatically terminate. This is plausible since there are rad monitors, that monitor release to environment, that does not initiate automatic termination (Turbine Bldg sump). Second part is incorrect. Periodic samples are not required. This is plausible since the ODCM does requires periodic sample be taken to allow continued releases when some rad monitors are inoperable (e.g. SGBD Effluent Line RM-90-120A Action 31 requires samples once ever 12 or 24 hrs base upon the level of 1-131 Dose Equivalent).*

B. *Incorrect. First part is incorrect (see item A). Second part is correct. ODCM Table 1.1-1 Action 30 does not require periodic sampling during the release.*

C. *Incorrect. First part is correct. This radiation alarm will cause the release to automatically terminate. Second part is incorrect (see item A).*

D. *Correct. First part is correct. This radiation alarm will cause the release to automatically terminate. Second part is correct. ODCM Table 1.1-1 Action 30 does not require periodic sampling during the release.*

Question Number: 71

Tier: 3 **Group** ____

K/A: G 2.3.13 Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.

Importance Rating: 3.4 / 3.8

10 CFR Part 55: 41.12

10CFR55.43.b: not applicable

K/A Match: This question matches the K/A by having the candidate demonstate knowledge of the radiological procedural requirements for starting, stopping and monitoring radioactive liquid releases.

Technical Reference: 0-AR-M12-B C-1 Rev 29
ODCM Sect 1.1.1 Action 30 Rev 58

Proposed references to be provided: None

Learning Objective: OPT200.ODCM obj. B.e

Question Source:

New	____
Modified Bank	____
Bank	X

Question History: SQN bank

Comments:

72. G 2.3.14 672

Given the following plant conditions:

- The site is in a General Emergency with a large break LOCA in progress.

Which ONE of the following completes the following statements?

The Main Control Room Intake Monitors 0-RM-90-125 & 126 ___(1)___ isolated.

AND

If Main Control Room Intake Emergency Monitors 0-RM-90-205 and/or 206 alarm, they ___(2)___ send an automatic start signal to the MCR Emergency Pressurization fans.

A. ✔ (1) are
(2) will NOT

B. (1) are NOT
(2) will

C. (1) are NOT
(2) will NOT

D. (1) are
(2) will

DISTRACTOR ANALYSIS:

A. Correct. First part is correct. 0-RM-90-125/126 are rad monitiors that monitors CR intake air during normal operation. Since an SI has occurred, a CRI has been initiated which closes dampers 105A and 106A close and isolates the normal rad monitors. Second part is correct. 0-RM-90-205/206 only provide monitoring functions and do not provide signals for automatic actions. Also, the MCR Emergency Pressurization fans are already running due to the SI signal.

B. Incorrect. First part is incorrect. Since an SI has occurred, a CRI has been initiated which closes dampers 105A and 106A close and isolates the normal rad monitors.. This is plausible since it can logically be assumed that rad monitors would not be automatically isolated. Second part is incorrect. 0-RM-90-205/206 only provide monitoring functions and do not provide signals for automatic actions. This is plausible since other rad monitors (e.g. 125/126) do provide signals for automatic actions.

C. Incorrect. First part is incorrect (see item B). Second part is correct. 0-RM-90-205/206 only provide monitoring functions and do not provide signals for automatic actions.

D. Incorrect. First part is correct (see item A). Second part is incorrect (see item B).

Question Number: 72

Tier: 3 **Group** n/a

K/A: G 2.3 Radiation Control
2.3.14 Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.

Importance Rating: 3.4 / 3.8

10 CFR Part 55: 41.12 / 43.4 / 45.10

10CFR55.43.b: Not applicable

K/A Match: This matches the K/A since the candidate must evaluate conditions and recognize the source of radiation and actions which are taken to mitigate the hazard

Technical Reference: AR 1- M12-A window E-3, Rev 52
0-SO-30-1, Control Building Heating, Air Conditioning and Ventilation, Rev 38
0-SO-30-2, Control Room Isolation, Rev 15
1, 2-47W611-31-1, Rev 28
1, 2-47W611-31-2, Rev 4

Proposed references to be provided: None

Learning Objective: OPT200.CBVENT Obj 3
Given plant conditions, Determine if any of the following CBVENT system alarms would be present and describe actions required by the ARP: 0-XA-55-12A E3, 0-RA-90-205A MCR EMERG INTAKE MON HI RAD

Cognitive Level:

Higher	
Lower	X

Question Source:

New	
Modified Bank	
Bank	X

Question History: WBN bank question G2.1.3.14 072 used on AUDIT 08/2010. SQN ILT 1311 NRC Exam.

Comments: WBN bank question G2.3.14 072 was also used on the 5/2008 exam

73. G 2.3.4 573

In accordance with EPIP-15, which ONE of the following individuals must authorize emergency exposure limits in excess 10CFR20 limits?

A. Radcon Manager

B. ✔ Site Emergency Director

C. Plant Manager

D. Site Vice President

DISTRACTOR ANALYSIS:

A. Incorrect, per EPIP-15 of the Radiological Emergency plan the Site Emergency Director must authorize emergency dose limits in excess of TVA admin limits and 10 CFR 20. Examinee may select since the Radcon Manager is responsible for completing the paperwork and he must authorize exceeding the limit during non-emergency conditions.

B. Correct, With a projected dose of 1.5E+5 mr/hr, the total dose to respond to this emergency condition is 15 Rem.((1.5E+5 mR/hr / 60 minutes) x 6 minutes). Per EPIP-15 of the Radiological Emergency plan the Site Emergency Director must authorize emergency dose limits in excess of TVA administrative limits and 10 CFR 20.

C. Incorrect, per EPIP-15 of the Radiological Emergency plan the Site Emergency Director must authorize emergency dose limits in excess of TVA admin limits and 10 CFR 20. Examinee may select since Plant Manager must approve exceeding 5R during non -emergency conditions.

D. Incorrect, per EPIP-15 of the Radiological Emergency plan the Site Emergency Director must authorize emergency dose limits in excess of TVA admin limits and 10 CFR 20. Examinee may select since Site Vice President is the highest management level position staffed in the TSC during an event and additional approval must authorized prior exceeding 5 R during non-emergency conditions.

Question Number: 73

Tier: 3 **Group** n/a

K/A: G 2.3 Radiation Control
2.3.4 Knowledge of radiation exposure limits under normal or emergency conditions.

Importance Rating: 3.2 / 3.7

10 CFR Part 55: 41.12 / 43.4 / 45.10

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having the candidate identify that an emergency exposure will have to be authorized before task can be performed and who is required to authorize the exposure.

Technical Reference: EPIP-15, Emergency Exposure Guidelines, Rev 9

Proposed references to be provided: None

Learning Objective: OPL271REP Obj B.1.f rev 4

Cognitive Level:

Higher	
Lower	X

Question Source:

New	
Modified Bank	
Bank	X

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

Comments:

74. G 2.4.20 574

Given the following plant conditions:

- Unit 1 was operating at 100% RTP when a LOCA occurs.
- Safety Injection automatically initiated but the reactor failed to trip and the operating crew was unable to trip the reactor from the MCR handswitches.
- FR-S.1, "Nuclear Power Generation/ATWS," has been entered.
- During performance of FR-S.1 Step 3, the following conditions exist:
  - Containment pressure is 3.0 psig and rising.
  - RCS pressure is 1160 psig and dropping.
  - Reactor power is 9% and dropping.

Which ONE of the following completes the statement below?

The RCPs are ___(1)___ to be tripped because ___(2)___.

	___(1)___	___(2)___
A.	required	of the small break LOCA design basis requirements
B.	required	a phase B has occurred
C.	**NOT** required	Immediate Operator Actions have not been completed
D✔	**NOT** required	reduced RCS heat removal could challenge fuel integrity

DISTRACTOR ANALYSIS:

A. *Incorrect, Plausible because the RCPs are normally tripped during performance of the EOPs when the RCS pressure drops to less than 1200 psig and ECCS injection flow exist due to the small break LOCA requirements. These conditions do exist in this question, but the background document identifies 'An ATWS is not a design basis event; therefore the licensing requirement to trip the RCPs within a timely manner to remain within the small-break LOCA design basis is not applicable.'*

B. *Incorrect, Plausible because the RCPs are normally tripped during performance of the EOPs when the normal running support systems are not satisfied. In this question a Containment Phase B has been initiated which has isolated the CCS for the motor bearing coolers and the ERCW to the RCP motor coolers. This exception is discussed in the background document...' If reactor power is greater than 5%, the RCPs should not be tripped even if all normal running conditions are not satisfied.*

C. *Incorrect, Plausible because additional actions are normally not addressed until after IOA have been completed during peformance of the EOPs and plausible because the background discusses the applicability of the Caution during performance of the IOAs as being a knowledge action. Additionally, the stem identifies that the IOAs have been completed by placing the procedure at step 3.*
KNOWLEDGE:
This caution is applicable during the performance of the Immediate Action Steps and should be known by the operator without availability of the written guideline.

D. *Correct, As shown below, the background document states that for the conditions in the question, the RCPS should not be tripped because 'manually tripping the RCPs during some ATWS events could result in reduced heat removal and a challenge to fuel integrity. This is true even though the RCS pressure is less than the minimum pressure requiring the pumps to be stopped due to small break LOCA criteria requirements and the normal pump support systems have been isolated due to Hi-Hi containment pressure.*

FRS.1 Basis Document For FR-S.1 Nuclear Power Generation/ATWS Rev 10

CAUTION: RCPs should not be tripped with reactor power GREATER THAN 5%.
PURPOSE: To inform the operator that the RCPs should not be tripped even if all normal running conditions are not satisfied
BASIS:
During an ATWS, RCP operation could be beneficial by temporarily cooling the core under voided RCS conditions. If reactor power is greater than 5%, the RCPs should not be tripped even if all normal running conditions are not satisfied. Manually tripping the RCPs during some ATWS events could result in reduced heat removal and a challenge to fuel integrity. An ATWS is not a design basis event; therefore the licensing requirement to trip the RCPs within a timely manner to remain within the small-break LOCA design basis is not applicable.

Question Number: 74

Tier: 3 **Group:** _____

K/A: G2.4 Emergency Procedures / Plan
2.4.20 Knowledge of the operational implications of EOP warnings, cautions, and notes.

Importance Rating: 3.8 / 4.3

10 CFR Part 55: 41.10 / 43.5 / 45.13

10CFR55.43.b: Not applicable

K/A Match: K/A is matched because the question requires knowledge of the operational implication of a Caution in the EOP for an ATWS related to stopping the RCPs.

Technical Reference: FR-S.1, "Nuclear Power Generation/ATWS, Revision 23
EPM-3-FR-S.1 Basis Document for FR-S.1 Nuclear Power Generation / ATWS, Revision 10

Proposed references to be provided: None

Learning Objective: OPL271FR-S.1, FR-S.1 Nuclear Generation/ATWS #3, 4, 5 & 6.

Cognitive Level:

Higher	
Lower	X

Question Source:

New	
Modified Bank	
Bank	X

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

Comments:

75. G 2.4.25 575

Given the following plant conditions:

- Both Units in service at 100% RTP.
- An alarm is received on 0-M-29, Fire Detection System.
- The CRO determines the alarm to be Cross Zone alarms from Zones 522 and Zone 523, both in Unit 2 Aux Building Supply Duct.

Which ONE of the following identifies how the Aux Bldg Fans are automatically affected and the requirements for dispatching the Fire Brigade?

A. Only the supply fans trip;
Immediately dispatch the Fire Brigade without confirming the alarms are valid.

B. Only the supply fans trip;
Confirm the alarms are valid prior to dispatching the Fire Brigade.

C. ✔ All supply and exhaust fans trip;
Immediately dispatch the Fire Brigade without confirming the alarms are valid.

D. All supply and exhaust fans trip;
Confirm the alarms are valid prior to dispatching the Fire Brigade.

DISTRACTOR ANALYSIS:

A. Incorrect,Both the supply and exhaust fans will trip (not just the supply fans) but the Fire Brigade is dispatched immediately. Plausible because the detectors are only indicating trouble on the supply ductwork on one unit and immediately dispatching the Fire Brigade is correct.

B. Incorrect, Both the supply and exhaust fans will trip (not just the supply fans) and 0-AR-M-29 directs the Fire Brigade to be immediately dispatched if a cross zone alarm is received, not after a fire is confirmed. Plausible because the detectors are only indicating trouble on the one unit supply ductwork and if the detection signal had not been cross zoned, the alarm would be confirmed as real prior to dispatching the Fire Brigade.

C. CORRECT, Separation relays are used to cause the both the supply and exhaust fans to trip if smoke is detected by the cross zone detector in the supply ductwork of either unit. 0-AR-M-29 directs the Fire Brigade to be immediately dispatched if a cross zone alarm is received.

D. Incorrect, Both the supply and exhaust fans will trip if smoke is detected by the cross zone detector in the ductwork of either unit. 0-AR-M-29 directs the Fire Brigade to be immediately dispatched if a cross zone alarm is received, not after a fire is confirmed. Plausible because both the supply and exhaust fans tripping is correct and if the detection signal had not been cross zoned , the alarm would be confirmed as real prior to dispatching the Fire Brigade.

Question Number: 75

Tier: 3 **Group** ____

K/A: G 2.4 Emergency Procedures / Plan
2.4.25 Knowledge of fire protection procedures.

Importance Rating: 3.3 / 3.7

10 CFR Part 55: 41.10 / 43.5 / 45.13

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having the candidate demonstrate knowledge of the station AR and AOP for plant fires.

Technical Reference: 0-AR-M-29, Cross Zones R9
AOP N.01, Plant Fires R37

Proposed references to be provided: None

Learning Objective: OPL271.AOP-N.01 #3
OPT200.ABVENT #4 & 5

Question Source:

New	____
Modified Bank	____
Bank	X

Question History: SQN ILT 0909 NRC Exam, SQN 1311 NRC Exam

Comments:

You have completed the test!

76. 008 AG2.1.7 576

Given the following plant conditions:

- Unit 1 is at 100% RTP when a pressurizer safety valve failed open.
- The operator manually tripped the reactor and initiated a safety injection.
- When the crew transitions to E-1, "Loss of Secondary or Reactor Coolant", the following plant conditions are observed:
  - PZR pressure 1580 psig and lowering
  - Containment pressure reached 2.6 psig and is now stable.
- Just prior to performing step 14, "Initiate evaluation of plant status:" as PZR pressure reached 1280 psig (its lowest recorded value) the PZR safety valve has closed.
- Current plant conditions are:
  - Pressurizer level is 100%
  - PZR pressure 1390 psig and rising
  - RCS subcooling is 42°F
  - All four SG levels at 33% narrow range and stable
  - Containment pressure is 2.4 psig and slowly lowering

Which ONE of the following identifies the required procedure implementation and operation of the RCPs for the above conditions?

A. ✔ Transition from E-1 to ES-1.1, SI Termination;
The RCPs will have remained running throughout the event.

B. Transition from E-1 to ES-1.1, SI Termination;
The RCP(s) would have been shutdown, but will be restarted in ES-1.1, SI Termination.

C. Continue E-1 until a transition is directed to ES-1.2, Post LOCA Cooldown;
The RCPs will have remained running throughout the event.

D. Continue E-1 until a transition is directed to ES-1.2, Post LOCA Cooldown;
The RCP(s) would have been shutdown, but will be restarted in ES-1.2, Post LOCA Cooldown.

DISTRACTOR ANALYSIS:

A. Correct, with the safety valve reclosed and the conditions as identified in the stem, SI termination criteria is met. While the crew would be beyond the step in E-1 that first checks for SI termination and beyond the followup step for checking the criteria, the SI termination step is a continuous action step and if the criteria is met the transition is to be made. Subcooling is greater than the 40^{o}F setpoint, pressurizer level is above the 10% setpoint, heat sink is established and RCS pressure rising meet the entry conditions for ES-1.1. Containment pressure did not rise to the automatic initiation setpoint of 2.8 psig (Phase B) nor did the RCS pressure drop to the 1250 psig setpoint, so the RCP trip criteria was not met and the pumps remained in service.

B. Incorrect, With the conditions identified in the stem, the SI termination criteria is met and a transition to ES-1.1 is required. The RCP trip criteria was not met and the pumps would have remained in service throughout the even. Plausible because the transition to ES-1.1 is the correct transition and if the RCPs had been stopped they would be restarted in ES-1.1.

C. Incorrect, While ES-1.2 would be entered if E-1 was continued, the conditions identified in the stem indicate SI termination criteria is met and a transition to ES-1.1 is required. The RCP trip criteria was not met and the pumps would have remained in service through out the event. Plausible because the transition to ES-1.2 would be the correct transition if the SI could not be terminated and the RCPs remaining in service through out the event is correct.

D. Incorrect, While ES-1.2 would be entered if E-1 was continued, the conditions identified in the stem indicate SI termination criteria is met and a transition to ES-1.1 is required. Because the RCP trip criteria was not met, the pumps would have remained in service through out the event. Plausible because the transition to ES-1.2 would be the correct transition if the SI could not be terminated and if the RCPs had been stopped they would be restarted in ES-1.2.

Question Number: 76

Tier: 1 **Group** 1

K/A: 008 Pressurizer Vapor Space Accident
AG2.1.7 Ability to evaluate plant performance and make operational judgements based on opertating characteristics, reactor behavior, and instrument interpretations.

Importance Rating: 4.4 / 4.7

10 CFR Part 55: 41.5

10CFR55.43.b: 5

K/A Match: This question matches the K/A by having the candidate evaluate the plant conditions that are presented and make an operational decision as to the next actions that will be required. SRO due to evaluating plant conditions and selecting the appropriate procedures to mitigate the event.

Technical Reference: E-1, Loss of Reactor Or Secondary Coolant, Rev 23
ES-1.1, SI Termination, Rev 10
ES-1.2, Post LOCA Cooldown, Rev 17

Proposed references to be provided: None

Learning Objective: OPL271E-1 rev 3
obj. 12. Describe the conditions and reason for transitions within E-1.

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN bank question used on 01/2009 NRC exam. SQN ILT 1311 NRC Exam

Comments:

77. 011 EA2.05 677

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) in accordance with ECA-1.1, an action 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.*

Question Number: 77

Tier: 1 **Group** 1

K/A: 011 Large Break LOCA
EA2.05 Ability to determine or interpret the following as they apply to a Large Break LOCA:
Significance of charging pump operation.

Importance Rating: 3.3 / 3.7

10 CFR Part 55: n/a

10CFR55.43.b: 5

K/A Match: This question matches the K/A by having the candidate recall the most significant reason to keep a CCP running during the recovery phase of a Large Break LOCA. 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	X
Modified Bank	
Bank	

Question History: New question writen for 1311 ILT exam

Comments:

78. 025 AA2.01 578

Given the following plant conditions:

- Unit 1 is in Mode 6 with the reactor vessel head being de-tensioned.
- The following plant parameters:
  - RHR pump 1A-A is in service with flow at 3000 gpm.
  - 1A-A RHR pump amps = 20 amps
  - RHR discharge pressure = 80 psig
  - RCS pressure 0 psig.

- An equipment malfunction occurs which results in the following plant parameters:
  - 1A-A RHR pump flow = 0 gpm
  - 1A-A RHR pump amps = 3 amps
  - RHR discharge pressure = 10 psig

Which ONE of the following identifies both;

(1) the equipment malfunction that occurred

AND

(2) in accordance with Tech Spec 3.9.8, "Residual Heat Removal and Coolant Circulation", bases, the requirement for having two RHR loops OPERABLE?

	(1)	(2)
A. ✔	1A-A RHR pump shaft shear	to ensure a single failure of an RHR loop does NOT result in a complete loss of residual heat removal capability.
B.	1A-A RHR pump shaft shear	to ensure adequate time is provided to initiate emergency procedures to cool the core.
C.	FCV-63-93, RHR Cold leg injection to Loops 2 & 3 closed	to ensure adequate time is provided to initiate emergency procedures to cool the core.
D.	FCV-63-93, RHR Cold leg injection to Loops 2 & 3 closed	to ensure a single failure of an RHR loop does NOT result in a complete loss of residual heat removal capability.

DISTRACTOR ANALYSIS:

A. Correct, Amps will lower for a shaft shear and will be much less than normal running amps. In accordance with T.S. 3.9.8.1 bases part 2) sufficient coolant circulation is maintained through the reactor core to minimize the effects of a boron dilution incident and prevent boron stratification.

B. Incorrect, Plausible since amps will lower for a shaft shear and will be much less than normal running amps. Also plausible since the Tech Spec basis for RHR loops Operable during refueling include providing time to initiate emergency procedures to mitigate the accident, however this is basis for RHR loops during times when plant in Mode 6 with 23 ft of water above the core basis not when the plant has just detenioned the Rx vessel head.

C. Incorrect, Plausible if the candidate determines that lowered amps would be an indication of lowered flow caused by closing the loop injection valve, also plausible if the candidate does not recall where the loop flow is measured and determines that the flow is downstream of the injection valve. Also plausible since the Tech Spec basis for RHR loops Operable during refueling include providing time to initiate emergency procedures to mitigate the accident, however this is basis for RHR loops during times when plant in Mode 6 with 23 ft of water above the core basis not when the plant has just detenioned the Rx vessel head.

D. Incorrect, Plausible if the candidate determines that lowered amps would be an indication of lowered flow caused by closing the loop injection valve, also plausible if the candidate does not recall where the loop flow is measured and determines that the flow is downstream of the injection valve. Also plausible since the second part is correct.

Question Number: 78

Tier: 1 **Group** 1

K/A: 025 Loss of Residual Heat Removal (RHR) System
AA2.01 Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System:
Proper amperage of running LPI/decay heat removal/RHR pump(s).

Importance Rating: 2.7 / 2.9

10 CFR Part 55: 43.5 / 45.13

10CFR55.43.b: 5

K/A Match: KA is matched because the questions requires ability to identify off normal conditions of RHR pump amperes and the cause of those conditions. Also is SRO because it requires the knowledge of Tech Spec bases for RHR loop operation during refueling conditions.

Technical Reference: Tech Spec. 3.9.8.1, Refueling Operations - Residual Heat Removal and Coolant Circulation amend 305

Proposed references to be provided: None

Learning Objective: OPTSTG200.RHR rev 8
Obj. 11
Obj. 13 b

Question Source:

New	X
Modified Bank	
Bank	

Question History: New question for ILT 1311 exam.

Comments:

79. 056 AG2.2.40 779

Given the following plant conditions:

- Unit 2 is at 100% RTP.
- Unit 1 is at 547°F and 2250 psig, reactor trip breakers are OPEN.
- The A-A EGTS fan is tagged out for maintenance.
- CSST "B" is tagged out for tap changer maintenance.
- At 0800,on 11/18 a malfunction in the switchyard causes off-site power to be lost to CSST "A."

If the above conditions associated with CSST "A" remain unchanged, in accordance with Tech Spec, which ONE of the following identifies the latest time Unit 2 would be required to in HOT STANDBY?

REFERENCE PROVIDED

A. 1400 on 11/18

B. 1500 on 11/18

C. ✔ 1600 on 11/18

D. 1400 on 11/25

DISTRACTOR ANALYSIS:

A. Incorrect. Plausible if the candidate applies Tech Spec 3.0.3 to this condition. With the second train of EGTS inoperable the candidate may logically conclude that the unit needs to be shutdown immediately and does not apply the 1 hr preparation time allowed in T.S. 3.0.3, thus (6hrs = 6 hrs from 0800 on 11/18)

B. Incorrect. Plausible if the candidate thinks that since both trains of EGTS are inoperable and applies the time limit of Tech Spec 3.0.3 (1 hr + 6 hrs = 7 hrs from 0800 on 11/18)

C. Correct. With the "A" CSST de-energized, Start Bus 1A is de-energized. This will cause a loss of normal power to Shutdown board 1B-B. DG 1B-B will start and re-energize the shutdown board. This failure will only initially affect Unit 1. However with the normal power supply inoperable for 1B1 SD Board, the B-B EGTS fan is inoperable per T.S. 3.0.5. Since EGTS is a shared system then Unit 2 will apply T.S. 3.0.5 and needs to be in Hot Standby in 8 hrs. (2 hrs + 6 hrs = 8 hrs from 0800 on 11/18)

D. Incorrect. Plausible if the candidate does not recognize that a Tech Spec 3.0.5 shutdown is required and applies the requirements of Tech Spec 3.6.1.8 which is a 7 day LCO action time plus 6 hrs, thus 1400 on 11/25.

Question Number: 79

Tier: 1 **Group** 1

K/A: 056 Loss of Offsite Power
AG2.2.40 Ability to apply Technical Specifications for a system.

Importance Rating: 3.4 / 4.7

10 CFR Part 55: 41.10 / 43.2 / 43.5 / 45.3

10CFR55.43.b: 2

K/A Match: Question provides a loss of Off site power and the allowances for applying Tech Specs.
This question tests the SRO knowledge of TS requiring evaluation of operability of EGTS system and application of Tech Spec 3.6.1.8 and generic Tech Spec 3.0.5

Technical Reference: TS SR 4.0.2
TS LCO 3.6.1.8 Emergency Gas Treatment System - EGTS- Cleanup System

Proposed references to be provided: Tech Spec 3.6.1.8 "Emergency Gas Treatment System - EGTS- Cleanup System" amend 263 page 3/4 6-13

Learning Objective: OPT200.TS-APP Obj 3

Question Source:

New	X
Modified Bank	
Bank	

Question History: New for SQN ILT 1311

Comments:

80. 065 AA2.06 680

Given the following plant conditions:

- Unit 1 is at 82% RTP during a plant startup.
- A loss of Essential and Non-Essential Control Air has occurred.
- The crew is attempting to restore Control Air in accordance with AOP-M.02, "Loss of Control Air."
- S/G NR levels are 13% and lowering.
- PZR level is 70% and rising.
- RCS temperature is 572°F and rising.

Based on the current plant conditions, in accordance with AOP-M.02, which ONE of the following indentifies:

(1) the reason a reactor trip is required,

AND

(2) if the action(s) required to control RCS temperature in AOP-M.02 can be performed concurrently with E-0?

A. (1) loss of S/G level control
(2) yes

B. (1) loss of S/G level control
(2) no

C. (1) loss of PZR level control
(2) yes

D. (1) loss of PZR level control
(2) no

DISTRACTOR ANALYSIS:

A. *Correct, In accordance with AOP-M.02, if SG levels are not being maintained on program (which is 33%), the operators are directed that if SG levels are approaching an auto trip setpoint (which is 10%) then they are to trip the reactor and go to E-0 while continuing with this procedure. (sect 2.2 step 3) Thus E-0 and AOP-M.02 are to be implemented concurrently.*

B. *Incorrect, Plausible since the guidance in accordance with AOP-M.02, if PZR level is greater than 70% then action is to evaluate a plant shutdown and if level approaches 92% then manually trip reactor. (sect 2.2 step 20) The candidates could confused the guidance for controlled shutdown vs reactor trip. Also plausible if the candidate thinks that their are to GO TO E-0 and not complete the actions of AOP.M.02 concurrently.*

C. *Incorrect, Plausible since the guidance in accordance with AOP-M.02, if PZR level is greater than 70% then action is to evaluate a plant shutdown and if level approaches 92% then manually trip reactor. (sect 2.2 step 20) The candidates could confused the guidance for controlled shutdown vs reactor trip. Also plausible since the second part is correct, E-0 and AOP-M.02 are to be implemented concurrently.*

D. *Incorrect, Plausible since the guidance in accordance with AOP-M.02, if PZR level is greater than 70% then action is to evaluate a plant shutdown and if level approaches 92% then manually trip reactor. Also plausible if the candidate thinks that their are to GO TO E-0 and not complete the actions of AOP.M.02 concurrently.*

Question Number: 80

Tier: 1 **Group** 1

K/A: 065 Loss of Instrument Air
AA2.06 Ability to determine or interpret the following as they apply to a Loss of Instrument Air;
When to trip the reactor if instrument air pressure is de-creasing.

Importance Rating: 3.6 / 4.2

10 CFR Part 55: n/a

10CFR55.43.b: 5

K/A Match: This question matches the K/A by having the candidates determine when the Reactor would be tripped on a loss of instrument air. Also SRO by having the candidate analyze the conditions in the stem and determine the correct procedures to use to mitigate the Loss of Instrument Air.

Technical Reference: AOP-M.02, Loss of Inst Air, rev 19
E-0

Proposed references to be provided: None

Learning Objective: OPL271AOP-M.02, obj. 7

Question Source:

New	
Modified Bank	
Bank	X

Question History: NRC question used on 04/2007 NRC exam, SQN ILT 1311 NRC Exam

Comments:

81. W/E04 EG2.4.18 581

Given the following plant conditions:

- The Unit 1 crew enters ECA-1.2, "LOCA Outside Containment."
- When ECA-1.2 is complete the following conditions exist:
  - CNMT pressure is 0.1 psig and stable.
  - RWST level is 70% and lowering.
  - CETs are indicating 510°F and stable.
  - RCS pressure is 800 psig and lowering.
  - RVLIS is 46% and slowly rising.

Which ONE of the following completes the statements below?

The crew is required to transition to ___(1)___ .

AND

The Emergency Plan Classification for this event is a(n) ___(2)___ .

REFERENCE PROVIDED

A. (1) E-1, "Loss of Reactor or Secondary Coolant"
   (2) Site Area Emergency

B. (1) ECA-1.1, "Loss of RHR Sump Recirculation"
   (2) Alert

C. (1) E-1, "Loss of Reactor or Secondary Coolant"
   (2) Alert

D. ✔ (1) ECA-1.1, "Loss of RHR Sump Recirculation"
   (2) Site Area Emergency

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible because ensuring RHR is isolated first is correct and if the RCS pressure had been rising instead of lowering, the correct transition would be to E-1. Also the second part is correct.

B. Incorrect, Plausible since EPM-3-ECA-1.2 identifies a rupture or break outside containment is most probable to occur in the Low pressure RHR System piping. With the RCS pressure dropping, the break has not been isolated and the procedure will direct a transition to ECA-1.1. Also plausible if the candidate misses the Loss of Containment 1.3.2 due to missing the criteria of no changing CNMT parameters then they would choose an Alert based on Loss of RCS barrier.

C. Incorrect, Plausible because sequentially isolating the RHR cold leg injection paths is performed in the procedure but after the RHR suction is isolated and if the RCS pressure had been rising, the correct transition would be to E-1. Also plausible if the candidate misses the Loss of Containment 1.3.2 due to missing the criteria of no changing CNMT parameters then they would choose an Alert based on Loss of RCS barrier.

D. Correct, EPM-3-ECA-1.2 identifies a rupture or break outside containment is most probable to occur in the Low pressure RHR System piping. With the RCS pressure dropping, the break has not been isolated and the correct procedure transition would be to ECA-1.1. Also with a LOCA is progress and no change in CNMT pressure or sump level it is a Loss of Containment Barrier 1.3.2 and with a RCS leak which results < 40°F subcooling, that would be a Loss of RCS Barrier 1.2.2. With the Loss of 2 Barriers a Site Area Emergency would be declared.

Question Number: 81

Tier: 1 **Group** 1

K/A: W/E04 LOCA Outside Containment
G 2.4.18 Knowledge of specific bases for EOPs.

Importance Rating: 3.3 / 4.0

10 CFR Part 55: 41.10 / 43.5 / 45.13

10CFR55.43.b: 5

K/A Match: KA is matched because the question requires knowledge of the mitigation strategies of the procedure for responding to a LOCA outside containment and the ability to assess conditions and make the correct transition from the procedure. Also SRO due to assessing plant conditions and selection of appropriate procedure to mitigate the event and the EPIP classification of this event.

Technical Reference: ECA-1.2, "LOCA Outside Containment, Revision 10
EPM-3-ECA-1.2 Basis document for ECA-1.2 LOCA Outside Containment. rev 2
EPIP-1, Emergency Plan Classification Matrix, rev 49

Proposed references to be provided: EPIP-1 Classification Matrix pg 11 & 12

Learning Objective: OPL271ECA-2.1 obj 5 & 7

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN bank exam question which has been rewritten to include EPIP classification of the event. (Used on 1201 exam)SQN ILT 1311 NRC Exam

Comments:

82. 069 AG2.1.23 682

Given the following plant conditions:

- Unit 1 is at 100% RTP.
- At 0900 the local leak rate test on the lower containment air lock test was performed following a containment entry and was **NOT** satisfactory.
- System Engineering reports that U1 overall containment leakage rate acceptance criteria is **NOT** met.
- At 1800 Unit 1 remains at 100% RTP.

Which ONE of the following identifies:

(1) if you are in compliance with Tech Spec

AND

(2) the Tech Spec basis for the maximum allowed total containment leakage (L_a)?

REFERENCE PROVIDED

A. (1) no
(2) To prevent exceeding the design capability of the EGTS

B. (1) yes
(2) To prevent exceeding the design capability of the EGTS

C✔ (1) no
(2) To prevent exceeding 10CFR100 limits at the site boundary

D. (1) yes
(2) To prevent exceeding 10CFR100 limits at the site boundary

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible since the 1 hr LCO is correct, and leakage from the containment into the annulus is processed by the EGTS trains before release.

B. Incorrect, Plausible if the candidate determined that the 24 hr LCO action of T.S. 3.6.1.3.b applied to an inoperable air lock and and leakage from the containment into the annulus is processed by the EGTS trains before release.

C. Correct, With the overall containment leakage greater than allowable T.S. 3.6.1.3 footnote (2) states that T.S. 3.6.1.1 Containment Intergrity is to be applied which has a 1 hour action statement. Also, in accordance with Tech Spec basis, the containment allowable leakage limit prevents exceeding 10CFR100 limits.

D. Incorrect, Plausible if candidate determined that the 24 hr LCO action of T.S. 3.6.1.3.b is the only applicable specification and the containment allowable leakage limit prevents exceeding 10CFR100 limits..

Question Number: 85

Tier: 1 **Group** 2

K/A: 069 Loss of Containment Integrity
AG 2.1.23 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: n/a

10CFR55.43.b: 5

K/A Match: This question matches the K/A by having the candidate integrate procedure data and determine that Tech Spec action is required (this has a 1 hr LCO action statement). The question is SRO because it requires knowlege of Tech Spec 3.6.1.3 and Tech Spec 3.6.1.1 basis.

Technical Reference: T.S. 3.6.1.3, T.S. 3.6.1.1 and Basis
0-SI-SLT-000-160.0 rev 0004

Proposed references to be provided: Tech Spec 3.6.1.3 Containment Airlocks, Ammend 301 (pg 3/4 6-7)

Learning Objective: OPTSTG200.CNTMTSTRUCTURE
obj 10 Using Technical Specifications, Technical Requirements Manual, and the ODCM,
a. List from memory, Containment Structure LCOs and/or Technical Requirements having action times ≤ one hour.
b. Explain applicable Containment Structure LCO, Technical Requirements and ODCM bases.

Cognitive Level:

Higher	X
Lower	

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN bank question written for 1009 SRO NRC exam, SQN ILT 1311 NRC Exam.

Comments:

83. 076 AG2.4.46 583

Given the following plant conditions:

- Unit 1 is at 100% RTP.
- At 0800 a dropped rod occurred.
- At 1200 the rod was recovered and power was restored to 100% RTP.
- At 1215 the following alarms were received panel 1-M12-A:
  - 1-RA-90-1A, "AUX BLDG AREA RAD MONITOR HIGH," (A-7)
  - 1-RA-90-59A, "RX BLDG AREA RAD MON HIGH," (B-3)

- At 1300 on 11/25 RCS Activity was determined to be 28 microcuries/gram DOSE EQUIVALENT I-131.

Which ONE of the following completes the statements below?

In accordance with AOP-R.06, "High RCS Activity," 1-RA-90-1A annunciator in alarm ___(1)___ consistent with the given plant conditions.

AND

In accordance with Tech Spec 3.4.8, "Specific Activity," the unit is required to be placed in Mode 3, with Tave < 500°F, NO later than ___(2)___ .

REFERENCE PROVIDED

A. (1) is
   (2) 1900 on 11/27

B. (1) is
   (2) 1900 on 11/25

C. (1) is NOT
   (2) 1900 on 11/27

D. (1) is NOT
   (2) 1900 on 11/25

DISTRACTOR ANALYSIS:

A. *Incorrect, Plausible since the first part is correct, In accordance with AOP-R.06, both the 1-RA-90-1A and 1-RA-90-59A are listed as probable symptoms of high RCS activity. Also plausible if the candidate appies the requirement of >.35 microcuries/gram for 48 hrs. Thus 1300 + 48 hrs + 6 hrs = 1900 hrs on 9/27 vs the same day.*

B. *Correct, In accordance with AOP-R.06, both the 1-RA-90-1A and 1-RA-90-59A are listed as probable symptoms of high RCS activity, thus consistent with plant conditions. Also since the RCS activity has exceeded the limit line of Tech Spec figure 3.4-1, then in accordance with action "a" the reactor is to be in at least HOT STANDBY with Tavg less than $500^{o}F$ within 6 hrs. Thus (1300 + 6 hrs = 1900) on the same day.*

C. *Incorrect, Plausible if the candidate does not think that the Hi rad alarm on 1-RA-90-1A (an Aux Bldg alarm) would not be present if the hi activity is only in the RCS (thus only the Rx Bldg would be affected). The candidate could also think that 1-RA-90-106 or 90-112 should be in alarm instead. Also plausible since the second part is correct.*

D. *Incorrect, Plausible if the candidate does not think that the Hi rad alarm on 1-RA-90-1A (an Aux Bldg alarm) would be present if the hi activity is only in the RCS (thus only the Rx Bldg would be affected). The candidate could also think that 1-RA-90-106 or 90-112 should be in alarm instead. Also plausible if the candidate applies the requirement of >.35 microcuries/gram for 48 hrs. Thus 1300 + 48 hrs + 6 hrs = 1900 hrs on 9/27 vs the same day.*

Question Number: 83

Tier: 1 **Group** 2

K/A: 076 High Reactor Coolant Activity
AG2.4.46 Ability to verify that the alarms are consistent with the plant conditions.

Importance Rating: 4.2 / 4.2

10 CFR Part 55: 41.10

10CFR55.43.b: 2

K/A Match: This question matches the K/A by having the candidate analyze the alarms given and determine if the alarms are consistent with the plant conditions. Also SRO by testing the candidates knowledge of Tech Spec and bases for high RCS activity.

Technical Reference: AOP-R.06 High RCS Activity, rev 11
Tech Spec 3.4.8, Specific Activity Amend 301

Proposed references to be provided: Tech Spec 3.4.8 and Figure 3.4-1

Learning Objective: OPL271AOP-R.06 rev 2
Obj. 7 Describe the Tech Spec and TRM actions applicable during the performance of AOP-R.06.

Question Source:

New	X
Modified Bank	
Bank	

Question History: New question developed for SQN ILT 1311 NRC Exam

Comments:

84. W/E03 EA2.1 684

Given the following plant conditions:

- Unit 1 was tripped from 100% RTP due to a Small Break LOCA.
- Containment pressure peaked at 2.9 psig.
- The crew is performing ES-1.2, "Post LOCA Cooldown and Depressurization."
- The crew is evaluating step 37, "Determine if RHR should be placed in service:"
- The following parameters exist:
  - Both RHR pumps are stopped.
  - Normal charging has been established.
  - PZR level is 28% and stable.
  - RCP #2 is the only RCP running.
  - RCS pressure - 290 psig and slowly trending down.
  - RCS temperature - 340°F and slowly trending down.
  - Containment pressure - 1.1 psig and slowly trending down.
  - RCS cooldown rate is 75°F/hr.

Which ONE of the following complete the statements below?

The maximum cooldown rate allowed during the performance of ES-1.2 ___(1)___ being exceeded.

AND

With the above conditions, the SRO will direct the crew to ___(2)___ with TSC concurrence.

A. (1) is
   (2) transfer to ES-1.4, "Transfer to Hot Leg Recirculation",

B. (1) is
   (2) place RHR in service in accordance with EA-74-1, "Placing RHR Shutdown Cooling in Service,"

C. (1) is NOT
   (2) transfer to ES-1.4, "Transfer to Hot Leg Recirculation",

D. ✔ (1) is NOT
   (2) place RHR in service in accordance with EA-74-1, "Placing RHR Shutdown Cooling in Service,"

DISTRACTOR ANALYSIS:

A. *Incorrect, Plausible if the candidate mis-applies the cooldown rate, since 50 °F/hr is the cooldown limit in certain conditions within the EOP network and they would thus think that the cooldown rate has been exceeded. Also, the second part is plausible as the next step, if RHR conditions are not established, would have the crew transition to ES-1.4 to now consider (step 38) if hot leg recirculation is required with consultation with the TSC.*

B. *Incorrect, Plausible if the candidate mis-applies the cooldown rate, since 50 °F/hr is the cooldown limit in certain conditions within the EOP network and they would thus think that the cooldown rate has been exceeded. Also plausible since the second part is correct.*

C. *Incorrect, Plausible since the maximum cooldown rate is 100°F/hr based on guidance from ES-1.2 and is correct. The second part is plausible as the next step if RHR conditions are not established and since the event is deep into the recovery is to now consider (step 38) if hot leg recirculation is required with consultation with the TSC.*

D. *Correct, In accordance with ES-1.2, the Maximum cooldown rate is 100°F/hr thus for the given conditions the maximum cooldown rate has not been exceeded. Also, the necessary conditions to establish RHR in accordance with ES-1.2, have been established. Thus with TSC concurrence, RHR would be established per EA-74-1.*

Question Number: 84

Tier: 1 **Group** 2

K/A: WE 03 LOCA Cooldown and Depressurization
EA 2.1 Ability to determine and interpret the following as they apply to the (LOCA Cooldown and Depressurization):
Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Importance Rating: 3.4 / 4.2

10 CFR Part 55: n/a

10CFR55.43.b: 5

K/A Match: This question matches the K/A by requiring the candidate to analyze the data presented during the LOCA Coodown and Depressurization to determine if proper cooldown rate has been established and whether or not RHR can be placed in service per EA-74-1. SRO by requiring the candidate to assess plant conditions and select the appropriate procedure to mitigate the accident.

Technical Reference: ES-1.2, Post LOCA Cooldown and Depressurization, Rev 18

Proposed references to be provided: None

Learning Objective: OPL271ES-1.2 rev 2
Obj 7 Describe the conditions and reason for transitions within this procedure and transitions to other procedures.

Question Source:

New	X
Modified Bank	
Bank	

Question History: New question written for SQN ILT 1311 NRC Exam

Comments:

85. W/E07 EA2.2 585

Given the following plant conditions:

- While operating at 100% RTP, a small break LOCA occurred on Unit 1.
- The operating crew has progressed through the emergency instructions and has placed RHR Train A in service in accordance with EA-74-1, "Placing RHR Shutdown Cooling In Service," during performance of ES-1.2, "Post LOCA Cooldown and Depressurization."
- The STA identifies a YELLOW path to FR-C.3, "Saturated Core Cooling," and the SRO makes the transition.

Which ONE of the following completes the statements below?

The basis of FR-C.3 is to ___(1)___.

AND

After entering FR-C.3, a transition to AOP-R.03, "RHR System Malfunctions," ___(2)___ be directed.

	(1)	(2)
A.	establish RCS cooling via SGs	will
B.	establish RCS cooling via SGs	will **NOT**
C.	restore subcooling using ECCS	will
D.	restore subcooling using ECCS	will **NOT**

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible because FR-C.2, "Degraded Core Cooling," does use the secondary to cool the RCS and the transition to AOP-R.03 is correct.

B. Incorrect, Plausible because FR-C.2, "Degraded Core Cooling," does use the secondary to cool the RCS and because normally an FRG will transition to another procedure in the EOP versus a transition to an AOP.

*C. Correct, FR-C.3 attempts to increase the ECCS flow and reduce the loss of primary coolant. Both of these actions will result in restoring a minimum of RCS subcooling. The WOG background description states "Primarily, concern for core cooling arises when the RCS reaches saturation due to a loss of RCS inventory. Without adequate makeup, the continued loss of inventory will cause the core to partially uncover. Guideline FR-C.3 has been developed to address this concern. The operator is instructed to begin safety injection and check for any open RCS vent path in an attempt to stop the loss of RCS inventory." The first step in FR-C.3 directs "IF RHR in shutdown cooling mode, THEN ** GO TO AOP-R.03, RHR System Malfunctions.*

D. Incorrect, Plausible because the purpose of FR-C.3 is to restore RCS subcooling using the ECCS. Also, because normally an FRG will transition to another procedure in the EOP versus a transition to an AOP.

Question Number: 85

Tier: 1 **Group:** 2

K/A: W/E07 Saturated Core Cooling
EA2.2 Ability to determine and interpret the following as they apply to the (Saturated Core Cooling):
Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Importance Rating: 3.3 / 3.9

10 CFR Part 55: na

10CFR55.43.b: 5

K/A Match: K/A is matched because the question requires knowledge of the specific bases of EOP FR-C.3. SRO because question requires candidate to assess plant conditions and select appropriate procedures to mitigate the accident.

SRO ONLY: The question requires knowledge of diagnostic steps and decision points in the emergency operating procedures (EOP) that involve transitions to event specific subprocedures or emergency

SRO ONLY: The question requires knowledge of diagnostic steps and decision points in the emergency operating procedures (EOP) that involve transitions to event specific subprocedures or emergency contingency procedures. It requires assessing plant conditions and then selecting a procedure to mitigate, recover, or with which to proceed. One area of SRO level knowledge (with respect to selecting a procedure) is knowledge of the content of the procedure versus knowledge of the procedure's overall mitigative strategy or purpose.

Technical Reference: FR-C.3, Saturated Core Cooling, Revision 0009
EPM-3-FR-C.3, Basis Document for FR-C.3 Saturated Core Cooling, Rev. 3

Proposed references to be provided: None

Learning Objective: OPL271FR-C.3 rev 2
5. Descibe the bases for all limits, notes, cautions and steps of FR-C.3.

Cognitive Level:

Higher	X
Lower	

Question Source:

New	
Modified Bank	
Bank	X

Question History: Bank question written for the WBN 03/2013 NRC exam.
SQN ILT 1311 NRC Exam

Comments:

86. 005 A2.01 586

Given the following plant conditions:

- Unit 1 is performing a plant shutdown in accordance with 0-GO-7, "Unit Shutdown From Hot Standby To Cold Shutdown."
- When the 1B-B RHR pump was started for boron sampling, it experienced excessive vibration and is tagged out of service.

- Current plant conditions are:

  - RCS temperature = 260°F
  - RCS pressure = 325 psig
  - SG conditions:

#1	#2	#3	#4
5% Wide Range	20% Narrow Range	8% Narrow Range	15% Wide Range
RCP Tagged	RCP Running	RCP available	RCP Tagged

- During post work review, I&C technicians report to the WCC SRO that the flow transmitter for 1-FCV-74-12A, RHR Pump 1A Mini-flow valve, has failed high.

Which ONE of the following completes the statements below?

Prior to taking any operator action the 1A-A RHR pump is ___(1)___

AND

in accordance with Tech Spec 3.4.1.3, "Reactor Coolant System - Shutdown," bases, the LCO requirements for this specification ___(2)___ being met.

A. (1) OPERABLE
   (2) are

B. (1) OPERABLE
   (2) are NOT

C. (1) INOPERABLE
   (2) are

D. (1) INOPERABLE
   (2) are NOT

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible if the candidate does not recognize that the miniflow valve will not open on a low flow condition thus may cause excessive pump heating and damage. Also plausible since the second part is correct.

B. Incorrect, Plausible if the candidate does not recognize that the miniflow valve will not open on a low flow condition thus may cause excessive pump heating and damage. Also plausible if the candidate does not recognize that SG #3 is above 10% WR (but thinks it needs to be above 10% NR) thus there are two remaining cooling loops. According to the basis to meet single failure criteria there needs to be 2 operable loops for decay heat removal. With two SGs being above the required level (10% WR) and having an operable RCP then criteria is being met.

C. Correct, 1-FIS-74-12A, is the flow transmitter for the miniflow valve 1-FCV-74-12. This valve opens during low flow conditions to ensure that at least 500 gpm flow passes through the RHR pump to prevent pump damage. With this flow transmitter failed high, the recirc valve would not open automatically during low flow conditions and could result in RHR pump damage from overheating. Also in accordance with T.S. 3.4.1.3 during mode 4 at least 2 heat removal loops must be operable. To make an RCS loop operable in accordance with the surveillance 4.4.1.3.2 a minimum of 10% WR level is required for a loop to be considered operable. There are currently 2 RCS loops Operable. Thus with the 1A-A RHR pump inoperable then the requirements are being met.

D. Incorrect, Plausible since the first part is correct. Also plausible if the candidate does not recognize that SG #3 is above 10% WR (but thinks it needs to be above 10% NR) thus there are two remaining cooling loops. According to the basis to meet single failure criteria there needs to be 2 operable loops for decay heat removal. With two SGs being above the required level (10% WR) and having an operable RCP then criteria is being met.

Question Number: 86

Tier: 2 **Group** 1

K/A: 005 Residual Heat Removal System (RHR)
A2.01 Ability to (a) predict the impacts of the following malfunctions or operations on the RHR system, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:
Failure modes for pressure, flow, pump motor amps, motor temperature, and tank level instrumentation.

Importance Rating: 2.7 / 2.9

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 effects of an instrument failure on the RHR system and based on those effects determine if the minimum Tech Spec requirements are being met. SRO by determining equipment operability and knowledge of Tech Spec basis to determine if intent of the specification is being met.

Technical Reference: Tech Spec 3.4.1.3, Reactor Coolant System - Shutdown

Proposed references to be provided: None

Learning Objective: OPTSTG200.RHR rev 8
Obj. 8.c.
Obj.13.b

Question Source:

New	X
Modified Bank	
Bank	

Question History: New question written for SQN ILT 1311 NRC Exam.

Comments:

87. 008 G2.4.30 487

Given the following plant conditions:

- Both Units are at 100% RTP.
- At 0900 on 11/24, the 1B-B CCS pump is aligned to the B header in accordance with 0-SO-70-1," Component Cooling Water System "B" Train," to allow required breaker maintenance on C-S CCS pump normal supply breaker.
- At 0800 on 11/27, it is determined that the breaker for the C-S CCS pump will not be available for 48 hrs.

In accordance with NPG-SPP-03.5, "Regulatory Reporting Requirements," which ONE of the following identifies the Unit(s), if any, whose operating conditions, is/are required to be reported to the NRC within 4 hrs?

REFERENCE PROVIDED

A. Neither Unit

B. Unit 1 ONLY

C. ✔ Unit 2 ONLY

D. Both Unit 1 & Unit 2

DISTRACTOR ANALYSIS:

A. *Incorrect, Plausible if the candidate thinks that since supplying the B header from the 1B-B pump would allowed continued operation of both Units, that neither unit would be affected and no report is required. However since the Unit 2 SI sequencer cannot start the 1B-B CCS, it is not a creditted pump on Unit 2 and thus Unit 2 is required to enter Tech Spec 2.7.3 which is a 72 hr LCO action time. Thus if the candidate only uses the Tech Spec 3.7.3 reference they could determine that neither unit would be required to make a 4 hr report to the NRC.*

B. *Incorrect, Plausible if the candidate thinks that aligning the 1B-B CCS to the B header would affect the A CCS header for Unit 1 and thus require Unit 1 to enter Tech Spec 3.7.3. Thus after 72 hrs Unit 1 would be required to perform a shutdown which is a 4 hr report in accordance with NPG-SPP-03.5. However Unit 2 is in the 72 hr LCO not Unit 1.*

C. *Correct, When 1B-B CCS pump is aligned to the B CCS and the C-S CCS pump is unavailable, in accordance with 0-SO-70-1 the B header is available and is supplying cooling to both Units. However since the Unit 2 SI sequencer cannot start the 1B-B CCS during a LOCA condition, Unit 2 cannot take credit for the B train of CCS during an accident. Therefore Unit 2 is required to enter Tech Spec 3.7.3 for a loop of CCS inoperable. If the B loop in inoperable for 72 hrs then a Tech Spec required shutdown is required. In accordance with NPG-SPP-03.5, a Tech Spec required shutdown is a 4 hr reportable event to the NRC for Unit 2.*

D. *Incorrect, Plausible if the candidate thinks that aligning 1B-B would place Unit 1 in Tech Spec 3.7.3 for an Inoperable A loop and Loop B inoperable on Unit 2. Therefore they would determine that both Units would be in Tech Spec 3.7.3 and require a shutdown of both Units.*

Question Number: 87

Tier: 2 **Group** 1

K/A: 008 Component Cooling Water (CCW) System
G2.4.30 Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.

Importance Rating: 2.7 / 4.1

10 CFR Part 55: (CFR: 41.10 / 43.5 / 45.11)

10CFR55.43.b: 5

K/A Match: This question matches the K/A by requiring the candidate to determine CCS system operability for each unit and knowledge of external notifications as a result of a required plant shutdown. SRO because of determining system operability and Regulatory notifications are task specific to a Senior Reactor Operator

Technical Reference: NPG-SPP-3.5, Regulatory Reporting Requirements, Appendix A, rev 0008
0-SO-70-1, rev 0043

Proposed references to be provided: Tech Spec 3.7.3 Amend 12 (pg 3/4 7-12)
NPG-SPP-03.5, rev 0005 (all)

Learning Objective: OPL271SPP-3.5 obj. B.3

Question Source:

New	X
Modified Bank	
Bank	

Question History: Question written for SQN ILT 1311 NRC Exam.

Comments:

88. 026 G2.2.25 588

Given the following plant conditions:

- Unit 1 is being shutdown for refueling.
  - RCS Tavg = 250°F
  - PZR pressure = 325 psig
  - #2 RCP is running
  - The "1B" train of RHR is being placed in service per 0-SO-74-1, "Residual Heat Removal System."

In accordance with Tech Spec 3.6.2.1, "Containment Spray Subsystems,"

(1) RHR spray operability _____ required for this plant condition

AND

(2) the action(s) that is/are required by 0-SO-74-1, to comply with Tech Spec 3.6.2.1, bases?

A. (1) is
(2) Close FCV-74-3, RHR Pump A suction isolation.

B. (1) is
(2) Ensure RHR pump A is aligned for auto start or an operator is standing by panel M6 to manually start the pump if required.

C. (1) is NOT
(2) Close FCV-74-3, RHR Pump A suction isolation.

D. (1) is NOT
(2) Ensure RHR pump A is aligned for auto start or an operator is standing by panel M6 to manually start the pump if required.

DISTRACTOR ANALYSIS:

A. *Incorrect, Plausible if the candidate does not recognize that although Containment spray is required for Modes 1,2,3 and 4, RHR spray is NOT required in Mode 4. Also plausible since the first part is correct, 0-SO-74-1 has the opposite train RHR pump is placed in pull-to-lock and its suction valve is closed.*

B. *Incorrect, Plausible if the candidate does not recognize that although Containment spray is required for Modes 1,2,3 and 4, RHR spray is NOT required in Mode 4. Also plausible since part of the direction given in 0-SO-74-1 has a dedicated assigned at M6 if only 1 train of RHR is OPERABLE, this guidance if for stopping the running pump if suction lost not to prevent overheating the common suction line.*

C. *Correct, In accordance with T.S 3.6.2.1 the RHR spray trains are NOT required to be operable in Mode 4, thus no action required. Also in accordance with T.S. bases, local operator action may be required to cool the common suction line for Containment Spray and RHR if RHR was in service at the time of a LOCA, due to RCS temperatures greater than 190 °F. Thus per 0-SO-74-1, if RCS temp is >190°F, the opposite train RHR pump is placed in Pull-to-lock with the suction valve closed to prevent heating of the common suction piping. This elevated temperature may result in the CNMT spray pumps not having enough NPSH during startup if a LOCA was to occur.*

D. *Incorrect, Plausible since the first part is correct. Also plausible since part of the direction given in 0-SO-74-1 has a dedicated assigned at M6 if only 1 train of RHR is OPERABLE, this guidance if for stopping the running pump if suction lost not to prevent overheating the common suction line.*

Question Number: 88

Tier: 2 **Group** 1

K/A: 026 Containment Spray System (CSS)
G2.2.25 Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.

Importance Rating: 3.2 / 4.2

10 CFR Part 55: 41.5/41.7

10CFR55.43.b: 2

K/A Match: This question matches the K/A by having the candidate recall actions that are addressed in the Containment Spray System Tech Spec bases. Also SRO due to requiring specific knowledge of actions addressed by T. S. 3.6.2.1 bases.

Technical Reference: Tech Spec 3.6.2.1, Containment Spray Subsystems, bases ammend 323.

Proposed references to be provided: None

Learning Objective: OPL200CS rev 9
Obj. 11. b & c

Question Source:

New	X
Modified Bank	
Bank	

Question History: New question written for the 1311 ILT NRC exam

Comments:

89. 062 A2.07 589

Given the following plant conditions:

- Units 1 and 2 are operating at 100% RTP.
- The intertie transformer is OOS.
- While removing the Widow's Creek 500 kV line from service, a human performance error results in a complete loss of the 500kV switchyard.

Which ONE of the following completes the statements below?

In accordance with Tech Spec 3.8.1, "AC Sources and Onsite Power Distribution Systems" bases, Offsite power is Operable for ___(1)___.

AND

The procedure that you will direct the crew to use to mitigate the event on Unit 1 is ___(2)___.

A. (1) Unit 2 ONLY
   (2) AOP-P.01, "Loss of Offsite Power"

B. ✔ (1) both Unit 1 and Unit 2
   (2) ES-0.1, "Reactor Trip Response."

C. (1) Unit 2 ONLY
   (2) ES-0.1, "Reactor Trip Response."

D. (1) both Unit 1 and Unit 2
   (2) AOP-P.01, "Loss of Offsite Power"

DISTRACTOR ANALYSIS:

A. *Incorrect, Plausible if the candidate incorrectly analyzes the sources of Offsite power and applies case 2 in the T.S. basis, which has the normal source from 500 kV swithyard through USST A and USST B for Unit 1 and 161 kV switchyard to USST 2A and USST 2B. Also plausible if the candidate determines that AOP-P.07 would be used to restore 500 kV power, however AOP-P.07 provides actions for a loss of all Off-site which would mean 161 kV power since that is power supply to the start buses.*

B. *Correct, In accordance with T.S. 3.8.1 bases, there are 4 alignments which meet the criteria for two offsite power sources being Operable. For this case Two offsite power sources coming from 161 kV transmission network through CSST A and CSST C will meet the criteria, thus Offsite power is Operable to both Units. With the intertie breaker OOS the 161 kV switchyard is not affected by the 500 kV loss. Thus if 500 kV switchyard is lost, then only Unit 1 is effected in that there is no output for unit 1 main generator and the unit will trip. After the Unit 1 trip, the crew would proceed to ES-0.1 for plant stabilization.*

C. *Incorrect, Plausible if the candidate incorrectly analyzes the sources of Offsite power and applies case 2 in the T.S. basis, which has the normal source from 500 kV swithyard through USST A and USST B for Unit 1 and 161 kV switchyard to USST 2A and USST 2B. Also plausible since the second part is correct.*

D. *Incorrect, Plausible since the first part is correct. Also plausible if the candidate determines that AOP-P.07 would be used to restore 500 kV power, however AOP-P.07 provides actions for a loss of all Off-site which would mean 161 kV power since that is power supply to the start buses.*

Question Number: 89

Tier: 2 **Group** 1

K/A: 062 AC Electrical Distribution
A2.07 Ability to (a) predict the impacts of the following malfunctions or operations on the AC Electrical Distribution System, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:
Consequences of opening a disconnect under load.

Importance Rating: 3.0 / 3.4

10 CFR Part 55:

10CFR55.43.b: 2, 5

K/A Match: This question matches the K/A by having the candidate determine the consequences of operating a disconnect under load in the 500kV switchyard. SRO by having the candidate analyze the conditions, determine the Operability of Offsite power for each unit, and determine the appropriate procedure to mitgate the event .

Technical Reference: Tech Spec 3.8.1.1, AC Sources - Operating, Ammend 332 bases

Proposed references to be provided: None

Learning Objective: OPT200.SWYD rev 3
Obj. 8. Given specific plant conditions, Analyze the effect that a loss or malfunction of the following will have on the Switchyard.
c. Transmission lines

Question Source:

New	X
Modified Bank	
Bank	

Question History: New question written for SQN ILT 1311 NRC Exam.

Comments:

90. 063 G2.4.31 590

Given the following plant conditions:

- Unit 1 is in Mode 3.
- The following alarms are received in the control room panel 1M-C:
  - "125V DC VITAL CHGR II FAILURE OR VITAL BAT II DISCHARGE" (B4)
  - "125V DC VITAL BAT BD II ABNORMAL" (B5)
- Battery Board II Voltage indicates 119 VDC.

Based on the above conditions,

in accordance with Tech Spec 3.8.2.3, "D.C. Distribution - Operating," Battery Board II is ___(1)___ ,

AND

in accordance with 0-SO-250-1, "125 Volt dc Vital Battery Boards" ___(2)___ .

A. (1) INOPERABLE
   (2) align the Spare Charger

B. (1) INOPERABLE
   (2) Reduce Battery loading

C. (1) OPERABLE
   (2) Align the Spare Charger

D. (1) OPERABLE
   (2) Reduce Battery loading

DISTRACTOR ANALYSIS:

A. Correct, In accordance with T.S. 3.8.2.3, surveillance, with bus voltage less than 125 VDC, the battery board is INOPERABLE. Also the guidance provided in 0-SO-250-1 is to align the spare charger to the bus to correct the low voltage condition.

B. Incorrect, Plausible because the first part is correct.In accordance with T.S. 3.8.2.3, surveillance with bus voltage less than 125 VDC, thus the batt board is INOPERABLE. Also plausible if the candidates did not recognize that the charger output breaker is open and determine that by lowering the load on the bus they would raise the voltage.

C. Incorrect, Plausible since the bus is not inoperable just because the charger is disconnected, however it is inoperable because the voltage is below 125 Vdc. Also plausible since the second part is correct.

D. Incorrect, Plausible since the bus is not inoperable just because the charger is disconnected, however it is inoperable because the voltage is below 125 Vdc. Also plausible if the candidates did not recognize that the charger output breaker is open and determine that by lowering the load on the bus they would raise the voltage

Question Number: 90

Tier: 2 **Group** 1

K/A: 063 DC Electrical Distribution
G2.4.31 Knowledge of annunciator alarms, indications, or response procedures.

Importance Rating: 3.6 / 4.0

10 CFR Part 55: 41.10

10CFR55.43.b: 5

K/A Match: This question matches the K/A by having the candidate assess the alarms provided in the stem and determine what type of failure/malfunction has occurred and determine what type of action is required by the alarm procedures. SRO by assessing the plant conditions and selecting the appropriate section of a procedure which will correct the conditions. Also requires detailed knowledge of the selected procedure to be able to determine the correct actions.

Technical Reference: 1-AR-M1-C (B-4) rev 0045
1-AR-M1-C (B-5) rev 0045
0-SO-250-1, 125 Volt DC Vital Power System. rev 54

Proposed references to be provided: None

Learning Objective: OPL271AOP-P.02 rev 2
Obj. 13

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN bank question, SQN ILT 1311 NRC Exam

Comments:

91. 002 G2.2.37 591

Given the following plant conditions:

- Unit 1 is in Mode 3 following a planned shutdown for maintenance.
- The unit is being cooled down in accordance with GO-7, "Unit Cooldown from Hot Standby to Cold Shutdown."
- Current RCS temperature is 465^{o}F and pressurizer pressure 1535 psig.
- A pressurizer PORV spuriously opened.

Which ONE of the following identifies:

(1) the procedure required to be entered to address the failure,

AND

(2) in accordance with Tech Spec 3.4.3 "Safety and Relief Valves - Operating," bases, assuming the PORV can be opened and closed using its control switch, the PORV is _____?

	(1) Procedure	(2) PORV Status
A.	AOP-R.05, "RCS Leak and Leak Source Identification"	Operable
B.	AOP-R.05, "RCS Leak and Leak Source Identification"	Inoperable
C. ✔	AOP-I.04, "Pressurizer Instrument and Control Malfunctions"	Operable
D.	AOP-I.04, "Pressurizer Instrument and Control Malfunctions"	Inoperable

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible because a PORV opened would be an RCS leak but AOP-R.05 is not the procedure with a section containing the Immediate Operator Actions required for addressing a failed open PORV, AOP-I.04 does have the section with the actions. The PORV remains operable if only the automatic circuit is affected. Plausible because AOP-R.05 is the procedure for an RCS leak and the PORV being operable is correct.

B. Incorrect, Plausible because a PORV opened would be an RCS leak but AOP-R.05 is not the procedure with a section containing the Immediate Operator Actions required for addressing a failed open PORV, AOP-I.04 does have the section with the actions. The PORV is not inoperable if only the automatic circuit is affected. Plausible because a failed open PORV is an RCS leak and in other systems failure of an automatic function will cause a component to be inoperable.

C. Correct, AOP-I.04 contains the Immediate Operator Actions in a section for response to a failed open PORV and in accordance with the Tech Spec Bases, the PORV is operable if it is capable of being manually operated to control RCS pressure (automatic operation not required).

D. Incorrect, Plausible because AOP-I.04 contains the Immediate Operator Actions in a section for response to a failed open PORV but the PORV is not inoperable if only the automatic control circuit has a problem. Plausible because AOP-I.04 containing the Immediate Operator Actions in a section for response to a failed open PORV is correct and in other systems failure of an automatic function will cause a component to be inoperable.

Question Number: 91

Tier: 2 **Group** 2

K/A: 002 Reactor Coolant System
G2.2.37 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

K/A Match: This question matches the K/A by having the candidate determine the operability of an RCS safety related piece of equipment (PORV). Also SRO due to requiring the candidate to use knowledge from the Tech Spec basis to make the operability determination.

Technical Reference: AOP-R.05, RCS Leak and Leak Source Identification, rev 18
AOP-I.04, Pressurizer Instrument Malfunctions, rev 12
Tech Spec 3.4.3 bases, Ammend 308

Proposed references to be provided: None

Learning Objective: OPL271AOP-I.04 B.5
Describe the mitigating strategy for the failure that initiated entry into AOP-I.04.

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN bank question used on Sept 2009 NRC exam, SQN ILT 1311 NRC Exam.

Comments:

92. 028 G2.1.32 592

Given the following plant conditions:

- A vapor space LOCA occurred on Unit 1.
- Some fuel damage was experienced during the accident.
- The LOCA has been stopped and the Safety Injection has been terminated.

The operating crew has transitioned to FR-I.3, "Voids in Reactor Vessel," and is currently addressing the steps to prepare for and execute venting the reactor vessel.

The following conditions are reported to exist:

- PRT pressure is 5 psig
- Containment hydrogen concentration is 6.3%
- Containment Pressure is 0.29 psid
- Neither Air Return Fan is available

Which ONE of the following identifies ...

(1) the actions directed by the procedure relative to Hydrogen Recombiner operation

AND

(2) the action that would be directed associated with reactor vessel venting?

	Hydrogen Recombiner	Reactor Vessel Venting
A.	Would be placed in service.	Vent the vessel before transitioning from FR-I.3.
B.	Would be placed in service.	Return to procedure and step in effect without venting the reactor vessel.
C.	Would **NOT** be placed in service.	Vent the vessel before transitioning from FR-I.3.
D. ✔	Would **NOT** be placed in service.	Return to procedure and step in effect without venting the reactor vessel.

DISTRACTOR ANALYSIS

A. Incorrect, the hydrogen concentration is above the limit for placing the recombiner in service for venting the vessel. Plausible because the recombiner would be place is service if the hydrogen concentration had been between 3.0% and 6.0% and with the PRT not ruptured the vessel venting would be to the PRT, not to the containment atmosphere.

B. Incorrect, the hydrogen concentration is above the limit for placing the recombiner in service for venting the vessel. Plausible because the recombiner would be place is service if the hydrogen concentration had been between 3.0% and 6.0% and not venting the reactor vessel correct

C. Incorrect, the recombiner would not be placed in service but the vessel would not be vented. Plausible because not placing the recombiner in service is correct and with the PRT not ruptured the vessel venting would be to the PRT and not to the containment atmosphere.

D. Correct, the recombiner would not be placed in service and FR-1.3 would be transitioned from without venting the vessel. The hydrogen concentration in containment is above the maximum allowed to place the recombiners in service and also above the maximum allowed to vent the reactor vessel.

Question Number: 92

Tier: 2 **Group** 2

K/A: 028 Hydrogen Recombiner and Purge Control System (HRPS)
G2.1.32 Ability to explain and apply system limits and precautions.

Importance Rating: 3.8 / 4.0

10 CFR Part 55: 41.10 / 43.2 / 45.12

10CFR55.42.b: 2, 5

K/A Match: Question requires the applicant to recognize that the hydrogen concentration is high enough to cause detonation with resulting equipment damage in containment if the Recombiner were to be placed in service when the procedure addresses the recombiner operation and recognize the procedure requirements will prevent placing of the recombiner in operation.

Technical Reference: FR-I.3, Voids in Reactor Vessel, Rev 11
E-0, Reactor Trip or Safety Injection, rev 33
ES-0.5 Appendix D Hydrogen Mitigation Actions, rev 4

Proposed references to be provided: None

Learning Objective: OPL271FR-I.3
4. Describe the bases for all limits, notes, cautions, and steps of FR-I.3.
5. Describe the conditions and reason for transitions within this procedure and transitions to other procedures.

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN bank question used on 2010 ILT exam. SQN ILT 1311 NRC Exam.

Comments:

93. 079 A2.01 593

Given the following plant conditions:

- Unit 1 in Mode 3 with the RCS at normal operating temperature and pressure preparing for reactor startup.
- Alarm "PS-32-104 TRAIN A AUX CONTROL AIR PRESS LOW" (M15-B) is actuated.
- Control Air pressure indications are:
  - PI-32-200 Control Air Header pressure is 65 psig and lowering.
  - PI-32-104 Aux Bldg Control air header A pressure is 65 psig and lowering.
  - PI-32-105 Aux Bldg Control air header B pressure lowered to 82 psig and is now rising.

Which ONE of the following completes both statements?

AOP-M.02, "Loss of Instrument Air," directs the crew to ensure ___(1)___ are closed.

AND

In accordance with Tech Spec, the Turbine Driven AFW pump ___(2)___ required to be declared INOPERABLE.

Note:
0-FCV-32-82, Aux. Compsr. A-A Aux. Bldg Isol.
0-FCV-32-85, Aux. Compsr. B-B Aux. Bldg Isol.
1-FCV-32-80, Unit 1 Train A Rx Bldg Isol.
1-FCV-32-102, Unit 1 Train B Rx Bldg Isol.

A. (1) 0-FCV-32-82 and 0-FCV-32-85
   (2) is NOT

B. (1) 1-FCV-32-80 and 1-FCV-32-102
   (2) is

C. (1) 0-FCV-32-82 and 0-FCV-32-85
   (2) is

D. (1) 1-FCV-32-80 and 1-FCV-32-102
   (2) is NOT

DISTRACTOR ANALYSIS:

A. *Correct, The isolation valves should automatically close at 69 psig. With the control header pressure and Aux Bldg control header A at the same pressure with Aux Bldg B header rising it would indicate that at least one of the isolation valves did not go closed. AOP-M.02 would have the operators ensure that the 0-FCV-32-82 & 85 are closed to isolate the leak. The Aux Bldg A header pressure is less than 70 psig. According to the notes in alarm response procedure, the A header would be considered Inoperable. In accordance with the T/S Bases, the loss of a single train of essential air is no more severe than the loss of one of the motor driven trains because the TD Pump can still supply two steam generators, thus the A MD train is inoperable, however the TD AFW pump is not declared Inoperable.*

B. *Incorrect, Plausible if the candidate thinks that 1-FCV-32-102 is also isolated by the AOP-M.02 for leak isolation. This valve would automatically isolate at 50 psig. Also Only the Train A is inoperable due to loss of air to the A MD driven LCVs. The T-D AFW pump can still supply 2 steam generators due to B train of air available, thus the TD pump is Operable.*

C. *Incorrect, Plausible since the first part of is correct. Also the candidate may get confused on whether the TD AFW train is also inoperable, however in accordance with the T/S Bases, the loss of a single train of essential air is no more severe than the loss of one of the motor driven trains because the TD Pump can still supply two steam generators.*

D. *Incorrect, Plausible if the candidate thinks that 1-FCV-32-102 is also isolated by the AOP-M.02 for leak isolation. This valve would automatically isolate at 50 psig. Also the second part is correct, the TD pump is not inoperable.*

Question Number: 93

Tier: 2 **Group** 2

K/A: 079 Station Air
A2.01 Ability to (a) predict the impacts of the following malfunctions or operations on the SAS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:
Cross-connection with IAS

Importance Rating: 2.9 / 3.2

10 CFR Part 55: 41.5 / 43.5 / 45.3 / 45.13

10CFR55.43.b: 2

K/A Match: KA is matched because the question requires the ability to predict the impact a loss of air has on the operability of the AFW system and requires using the information in the bases of the Tech Spec in determining the impact.

Technical Reference: Technical Specification Bases
AOP-M.02, Loss of Control Air, Rev.

Proposed references to be provided: None

Learning Objective: OPL271AOP-M.02 obj 7 & 8

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN bank question with the stem and choices modified.
SQN ILT 1311 NRC Exam.

Comments:

94. G 2.1.42 094

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?

	New Fuel Assemblies within the fuel-handling area	Irradiated Fuel Assemblies within the refueling canal
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.

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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 and 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	
Lower	X

Question Source:

New	
Modified Bank	
Bank	X

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

Comments:

95. G 2.2.15 295

Which ONE of the following completes the statements below (consider each statement separately)?

In accordance with NPG-SPP-10.1, "System Status Control," the ___(1)___ is responsible for authorizing the relaxation of status control.

Maintenance requests that an additional drain valve be opened, which is located inside a clearance isolation boundary. The NPG-SPP-10.1, Attachment 3, "Deviation Tracking Sheet," ___(2)___ an allowable method to track the drain valve position.

A. (1) Plant Manager
(2) is

B. (1) Plant Manager
(2) is NOT

C. ✔ (1) Operations Superintendent
(2) is

D. (1) Operations Superintendent
(2) is NOT

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible if the candidate thinks that plant management above the crew level is required to approve the relaxation of status control and confuses the Plant manager with Operations Superintendent. Also plausible since the second part is correct.

B. Incorrect, Plausible if the candidate thinks that plant management above the crew level is required to approve the relaxation of status control and confuses the Plant manager with Operations Superintendent. The second part is plausible since normally any valve manipulation that occurs inside a relaxed status control area not controlled by a hold or work order would be logged in attachment 3.

C. Correct, In accordance with NPG-SPP-10.1, the Operations Superintendent is responsible for relaxing system status control. Also for valve manipulations which may occur inside a previously established system boundary and/or controlled by a work order, the US is NOT required to log the item. It will be re-aligned to the correct position post mantenance when doing return to service lineupsThe second part is plausible since normally any valve manipulation that occurs inside a relaxed status control area not controlled by a hold or work order would be logged in attachment 3.

D. Incorrect, Plausible since in accordance with NPG-SPP-10.1, the Operations Superintendent is responsible for relaxing system status control. The second part is plausible since normally any valve manipulation that occurs inside a relaxed status control area not controlled by a hold or work order would be logged in attachment 3.

Question Number: 95

Tier: 3 **Group** ____

K/A: G 2.2.15 Equipment Control
Ability to determine the expected plant configuration using design and configuration control documentation, such as drawings, line-ups, tag-outs, etc.

Importance Rating: 3.9 / 4.3

10 CFR Part 55: 41.10

10CFR55.43.b: 3

K/A Match: This question matches the K/A by having the candidate identify the requirements for maintaining configuration control during shutdown conditions. SRO level by asking the candidate the SRO levels of authority required to relax configuration control.

Technical Reference: NPG-SPP-10.1, System Status Control, rev 0003

Proposed references to be provided: None

Learning Objective: OPL271NPG-SPP-10.1 rev 0
Obj. 1.b & c

Question Source:

New	X
Modified Bank	____
Bank	____

Question History: SQN ILT 1311 NRC Exam

Comments:

96. G 2.2.20 196

Given the following conditions:

- Unit 2 is coming out of a refueling outage.
- 0-SI-SXV-074-203.2, "Full Stroking of RHR Valves 2-FCV-74-1 and 2-FCV-74-2" is being performed.
- Personnel are in position and monitoring valve operation locally.
- 2-FCV-74-1 took 118.8 seconds to open on first cycle.
- 2-FCV-74-1 took 87.5 seconds to close on first cycle.
- Valve operated smoothly and all indication worked properly.

Which ONE of the following identifies the current status of the valve?

REFERENCE PROVIDED

A. Valve opening time is in the ALERT range.
Valve is **INOPERABLE** .

B. ✔ Valve opening time is in the ALERT range.
Valve is **OPERABLE** .

C. Valve closing time is in the ALERT range.
Valve is **OPERABLE** .

D. Valve closing time is in the ALERT range.
Valve is **INOPERABLE** .

DISTRACTOR ANALYSIS:

A. Incorrect. Plausible since the first part is correct for Unit 2. Closing time is in the ALERT range for Unit 1, but is Acceptable for Unit 2. Also plausible since the candidate could decide that the valve is inoperable, however the valve is still operable until such time as a System Engineering Evaluation determines the stroke time to be unacceptable..

B. Correct. Per 0-SI-SXV-074-266.0 Appendix A the valve Opening time for Unit 2 is in the Alert range and the closing time is acceptable. This would require System Engineering to Evaluate the operability of the valve, however the valve is considered OPERABLE until this evaluation is complete.

C. Incorrect. Plausible if the candidate looks at the wrong line in Appendix A. Closing time is in the ALERT range for Unit 1, but is Acceptable for Unit 2. The valve remains operable pending System Engineering evaluation.

D. Incorrect. Plausible if the candidate looks at the wrong line in Appendix A. Also the valve is still operable until such time the System Engineering Evaluation determines the stroke time to be unacceptable.

Question Number: 96

Tier: 3 **Group** ____

K/A: Equipment Control
G 2.2.20 Knowledge of the process for managing troubleshooting activities.

Importance Rating: 2.6 / 3.8

10 CFR Part 55: N\A

10CFR55.43.b: 5

K/A Match: Question meets K/A criteria for managing a troubleshooting activity for a RHR valve stroke in which the closing time falls into the Alert Range. The SRO candidate must know the proper procedure and the requirements therin for the direction to procede.

Technical Reference: 0-SI-SXV-074-266.0, Appendix A
0-SI-SXV-074-203.2

Proposed references to be provided: 0-SI-SXV-074-266.0 pages 1-19 Rev 0018

Learning Objective: OPL271OPDP-8, rev 2
Obj. 10

Question Source:

New	____
Modified Bank	X
Bank	____

Question History: SQN bank question that was modified to increase the plausibility of the distractors and Modified stem data to change answer from "C" to "B". SQN ILT 1311 NRC Exam.

Comments:

97. G 2.3.4 097

Given the following plant conditions:

- A LOCA occurred on Unit 1.
- A Site Area Emergency has been declared.
- The Containment Barrier is intact (i.e. no loss or potential loss of containment).
- The Containment Critical Safety Function Status Tree (FR-Z) is Yellow due to high radiation in containment.
- Containment pressure is 2.1 psig and decreasing.
- There is no release to the environment in progress.
- The "A" train of containment spray is operating normally for plant conditions.
- The "B" containment spray pump tripped, 25 minutes ago, after pump amps were observed to be oscillating.
- Authorization has been given for an emergency responder to receive an emergency exposure of 11 Rem TEDE in order to restore "B" train containment spray.

Which ONE of the following completes the statement below?

The emergency exposure authorization ___(1)___ the requirements of EPIP-15, "Emergency Exposure Guidelines," because ___(2)___.

	(1)	(2)
A.	met	emergency exposure limits can always be authorized during any Site Area Emergency REP classification
B.	violated	emergency exposure limits can only be authorized during a General Emergency REP classification
C.	met	the emergency exposure **was** necessary to maintain critical safety functions
D. ✔	violated	the emergency exposure **was NOT** necessary to maintain critical safety functions

DISTRACTOR ANALYSIS:

A. *Incorrect, Plausible if applicant believes that B train CS is necessary to prevent a release. In accordance with EPIP-15 emergency exposure limits always apply during REP to correct any situation, depending on specific plant conditions. However per EPM-4 Yellow paths are OPTIONAL to the operator therefore not required to maintain critical safety functions. Per Appendix D, the REP does not recognize yellow paths for REP criteria to protect public health.*

B. *Incorrect. Plausible since the action is correct, however the reason is incorrect. Also plausible because there are different restrictions depending on REP classifications and in this case there is no direct threat to public heath.*

C. *Incorrect, Plausible if applicant believes that B train CS is necessary to prevent a release or to maintain FR-Z yellow or restore to green. However "B" train CS is not necessary to maintaining critical safety functions or to protect the public since "A" train is reducing CNMT pressure without it. Per EPM-4 Yellow paths are OPTIONAL to the operator therefore not required to maintain critical safety functions. The REP does not recognize yellow paths for REP criteria to protect public health.*

D. *Correct, "B" train CS is not necessary to maintain critical safety functions or to protect the public. Per EPM-4 Yellow paths are OPTIONAL to the operator therefore not required to maintain critical safety functions. The Radiological Emergency Plan (REP) does not recognize yellow paths for REP criteria to protect public health, thus does not meet requirement for emergency exposures to maintain critical safety functions per EPIP-15.*

Question Number: 97

Tier: 3 **Group** ____

K/A: G 2.3.4 Knowledge of radiation exposure limits under normal or emergency conditions.

Importance Rating: 3.2 / 3.7

10 CFR Part 55: 41.10

10CFR55.43.b: NA

K/A Match: KA is matched because the question tests the knowledge of radiation contol limits and how to apply them during implimentation of the Radiological Emergency Plan.

Technical Reference: EPIP-15, Emergency Exposure Guidelines, Revision 9

Proposed references to be provided: None

Learning Objective: OPL271REP
Discuss the Radiological Emergency Plan
f. Describe the process of authorizing Emergency Radiological Exposures in accordance with EPIP-15

Question Source:

New	____
Modified Bank	____
Bank	X

Question History: SQN ILT 1201 NRC Exam, SQN ILT 1311 NRC Exam.

Comments: Reordered answer and distractors.

98. G 2.3.7 498

Given the following plant conditions:

- A diving operation in the Spent Fuel Pit is planned to commence later in the shift.

Which ONE of the following completes the statements below?

The dive ___(1)___ the requirements of NPG-SPP-07.3, " Work Activity Risk Management Process," to be classified as a HIGH risk activity.

AND

If the rad level in the area of the dive is estimated at 20 Rad/hr, in accordance with RCI-14, "Radiation Work Permit (RWP) Program," the RWP _____ required to be approved by Plant Manager .

	(1)	(2)
A.	meets	is NOT
B.	meets	is
C.	does **NOT** meet	is NOT
D.	does **NOT** meet	is

DISTRACTOR ANALYSIS:

A. *Correct, In accordance with NPG -SPP-07.3, Work Activity Risk Management Process, Attachment 2 Initial Risk Characterization identifies that 'All activities associated with Diving Operations, due to industry operating experience' are to be characterized as HIGH risk. Also in accordance with RCI-14, RADIATION WORK PERMIT (RWP) PROGRAM, 6.1, "A" identifies 'The Plant Manager and Radiation Protection Manager must approve in writing entries into areas where whole body dose rates are ≥ 25 Rad/hour.With the given dose rate of 20 Rad/hr, ONLY the Radiation Protection Manager is required to approve the dose, thus the Plant Manager is NOT required to approve the RWP.*

B. *Incorrect, Plausible since the first part is correct, NPG -SPP-07.3, Work Activity Risk Management Process, Attachment 2 Initial Risk Characterization identifies that 'All activities associated with Diving Operations, due to industry operating experience' are to be characterized as HIGH risk. Also plausible since the candidate could get the dose limits confused and think that both The Plant Manager and Radiation Protection Manager must approve in writing entries into areas where whole body dose rates are = 20 Rad/hour.*

C. *Incorrect, Plausible, because the applicant may recall the criteria on the Site High Focus Risk and Attachment 5 'PWR Operational Risk Review' sheet (RED SHEET) and identify that diving is not on the sheet and for values of < 25 rad/hr the Radiation Protection manager would be the only approval that is required.*

D. *Incorrect, Plausible, because the applicant may recall the criteria on the Site High Focus Risk and Attachment 5 'PWR Operational Risk Review' sheet (RED SHEET) and identify that diving is not on the sheet. Also plausible because the Plant Manager and Radiation Protection manager being required to approve in writing entries into areas where whole body dose rates are = 25 Rad/hour is correct.*

Question Number: 98

Tier: 3 **Group** n/a

K/A: G2.3.7 Radiation Control
Ability to comply with radiation work permit requirements during normal or abnormal conditions.

Importance Rating: 3.5 / 3.6

10 CFR Part 55: 41.12 / 45.10

10CFR55.43.b: Related to item 7.

K/A Match: This question matches the K/A by testing the candidates knowledge of the RWP requirements for entry into high radiation areas and SRO level by testing the candidates knowledge of the risk factor associated with diving operations.

Technical Reference: NPG-SPP-07.3, Work Activity Risk Management Process, Rev. 0005
RCI-14, Radiation Work Permit (RWP) Program, Revision 0052

Proposed references to be provided: None

Learning Objective: OPL271SPP-7.1 obj. 4 & 9

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN ILT 1201 Exam, SQN ILT 1311 NRC Exam

Comments: Question updated based on recent rev of procedure which lowered the dose rate from 50 Rad/hr to 25 Rad/hr for the threshold of requiring duel signatures.

99. G 2.4.35 599

Given the following plant conditions:

0200 - Unit 2 is operating at 100% RTP when implementation of AOP-C.04, "Shutdown from Auxiliary Control Room," was required.
0204 - All main control room actions have been completed and the main control room is evacuated.
0212 - All transfer switches are placed in the required position in accordance with AOP-C.04, Checklist 2, Unit 2 Auxiliary Control Room.
0218 - AUO reports 6.9Kv Shutdown Board equipment is configured in accordance with Checklist 4.

Which ONE of the following completes the statements below?

The conditions require the declaration of a/an ___(1)___ in accordance with the Radiological Emergency Plan.

AND

___(2)___ control is/are available for Pressurizer Backup Heaters 2A-A.

REFERENCE PROVIDED

A. (1) Alert
(2) ONLY manual

B. ✔ (1) Alert
(2) BOTH manual and automatic

C. (1) Site Area Emergency
(2) ONLY manual

D. (1) Site Area Emergency
(2) BOTH manual and automatic

DISTRACTOR ANALYSIS:

A. *Incorrect, Plausible because the declaration of an ALERT is correct. Also plausible since most automatic functions are disabled when the components transfer switch is in the AUX position however the PZR B/U heaters can be operated either manually or in automatic.*

B. *Correct, Because control was transferred (switches on L11A and L11B placed in AUX position as reported by the completion of checklist 2) and control established within the 15 minutes, the required declaration is an ALERT. Also, after 6.9kV Shutdown Board equipment has been configured per Attach 4, the Pressurizer Backup Heaters 1A-A can be operated in either automatic or manual from the control on the breaker door.*

C. *Incorrect, Plausible because the declaration of an SAE would be correct if the candidate thought that control had not been established within the 15 minute allowance and needed to wait for the report from the AUO that checklist 4 had been completed. However by reporting the completion of checklist 2 the AUO has signified that all switches on L11A and L11B have been placed in AUX. Also plausibe since most automatic functions are disabled when the components transfer switch is in the AUX position.*

D. *Incorrect, Plausible because the declaration of an SAE would be correct if candidate thought that control had not been established within the 15 minute allowance and needed to wait for the report from the AUO that checklist 4 had been completed. However by reporting the completion of checklist 2 the AUO has signified that all switches on L11A and L11B have been placed in AUX. Also the heaters having both manual and automatic control after the transfer switch is in the AUX position is correct.*

Question Number: 99

Tier: 3 **Group** n/a

K/A: G 2.4.35 Knowledge of local auxiliary operator tasks during an emergency and the resultant operational effects.

Importance Rating: 3.8 / 4.0

10 CFR Part 55: 41.10 /43.5 /45.13

10CFR55.43.b: 5

K/A Match: This question matches K/A by requiring candidate to know the operational effect of placing 6.9Kv breakers to the aux position. SRO by determining the EPIP Classification associated with abondoning the Main Control Room.

Technical Reference: AOP-C.04, "Shutdown from the Auxiliary Control Room, Revision 18
EPIP-1, Emergency Plan Classification Matrix, Revision 44

Proposed references to be provided: EPIP-1 Section 4 (pgs 25-32)

Learning Objective: OPL271AOP-C.04 obj. 3 & 12
OPL271REP obj. 3

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN bank question (originally DC Cook question) Also WBN question 034 K6.02 stem modified. SQN ILT 1311 NRC Exam.

Comments:

100. G 2.4.38 200

Given the following plant conditions:

- A General Emergency has been declared due to a plant event that resulted in a radiation release.
- The duration of the release is estimated to be 4 hours.
- Wind Direction is from 181 degrees @ 10 mph.
- Dose projections and surveys have not yet been performed

Which ONE of the following identifies the Protective Action Recommendations required in accordance with EPIP-5, "General Emergency?"

REFERENCE PROVIDED

A. Shelter the entire 10 mile EPZ, consider issuance of KI in accordance with the State Plan.

B. Evacuate A1-B1-C1-D1, A2, A3 and B2. Shelter the remainder of the 10 mile EPZ.

C. ✔ Evacuate A1-B1-C1-D1, A2 and B2. Shelter the remainder of the 10 mile EPZ.

D. Evacuate A1-B1-C1-D1, A2, -5, -6, B2, -3, -4. Shelter the remainder of the 10 mile EPZ.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible, since this would be selected if the applicant determines that a short duration release where plant areas cannot be evacuated prior to plume arrival applies.

B. Incorrect, Plausible, since this could be selected if the applicant makes an error selecting the appropriate wind direction limit.

C. Correct, this is the required sectors per Appendix A of EPIP-5 for the conditions given.

D. Incorrect, Plausible since this could be selected by the applicant if they make an error when determining whether or not dose will be exceeded at and beyond the 5 mile radius.

Question Number: 100

Tier: 3 **Group** n/a

K/A: G 2.4 Emergency Procedures/Plan:
2.4.38 Ability to take actions called for in the facility emergency plan, including supporting or acting as emergency coordinator if required.

Importance Rating: 2.4 / 4.4

10 CFR Part 55: 41.10 / 43.5 / 45.11

10CFR55.43.b: 3, 5, SRO task

K/A Match: Question requires the ability to determine the proper Protective Action Recommendation during a General Emergency and is SRO because the SRO (SM) can be the Site Emergency Director.

Technical Reference: EPIP-5, General Emergency, Revision 44

Proposed references to be provided: Appendix A and H of EPIP-5 (3 pages)

Learning Objective: OPL271REP
4. DETERMINE protective action recommendations using appropriate procedures.

Question Source:

New	
Modified Bank	X
Bank	

Question History: SQN bank question G 2.4.38 written for a 2009 audit exam with minor wording changes due to prodcedure revisions., SQN ILT 1211, SQN ILT 1305 Audit, SQN ILT 1311 NRC Exam.

Comments: Modified question stem by changing wind direction which changes the sectors and moved correct answer.

You have completed the test!