QUESTIONS REPORT
for 2010 Feb RO exam

007 EA1.10 001

Given the following:

- Unit 2 is at 2% power preparing to place the first MFPT in service when a reactor trip occurs.
- Reactor Trip Breaker B (RTB) fails to open.

Which ONE of the following identifies how steam generator (SG) pressure will be controlled when the transition is made to ES-0.1, "Reactor Trip Response?"

SG pressure will be controlled by the steam dump valves modulating due to ...

A. the error between turbine impulse pressure and Auctioneered High Tavg, and the steam dumps could be controlled in manual without repositioning the steam dump mode selector switch.

B. the error between turbine impulse pressure and Auctioneered High Tavg and if manual control was required the steam dump mode selector switch would have to be repositioned.

C. the error between a setpoint pressure and the Main Steam Header pressure, and the steam dumps could be controlled in manual without repositioning the the steam dump mode selector switch.

D. the error between a setpoint pressure and the Main Steam Header pressure and if manual control was required the steam dump mode selector switch would have to be repositioned.

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Incorrect, The steam generator pressures would not be controlled by the error between turbine impulse pressure and Auctioneered High Tavg because the dumps would be in the steam pressure mode and manual control is only available in the Steam Pressure mode. Plausible because if the reactor trip had of occurred at a higher power level then the steam pressures would have been controlled by the error between turbine impulse pressure and Auctioneered High Tavg due to the failure of the reactor trip breaker B dump and mode switch would be required to be repositioned but for this question setup, not positioning the steam dump mode switch is correct.*

B. *Incorrect, The steam generator pressures would not be controlled by the error between turbine impulse pressure and Auctioneered High Tavg because the dumps would be in the steam pressure mode and manual control is only available in the Steam Pressure mode. Plausible because if the reactor trip had of occurred at a higher power level then the steam pressures would have been controlled by the error between turbine impulse pressure and Auctioneered High Tavg due to the failure of the reactor trip breaker B dump and mode switch would be required to be repositioned.*

C. *Correct, The steam generator pressures would be controlled by the error between a setpoint pressure and the Main Steam Header pressure, and the steam dumps could be controlled in manual without repositioning the steam dump mode control switch because at the low power level the "Steam Pressure" mode of control would be in service.*

D. *Incorrect, The steam generator pressures would be controlled by the error between a setpoint pressure and the Main Steam Header pressure, and the steam dumps mode switch would not have to be repositioned because at the low power level, the "Steam Pressure" mode of control would be in service. Plausible because the method steam generator pressure control is correct and if the reactor trip had of occurred at a higher power level then the steam dump mode switch would be required to be repositioned.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 1

Tier: 1 **Group** 1

K/A: 007 EA1.10
Reactor Trip
EA1 Ability to operate and monitor the following as they apply to a reactor trip:
EA1.10 S/G pressure .

Importance Rating: 3.7 / 3.7

10 CFR Part 55: 41.7 / 45.5 / 45.6

10CFR55.43.b: Not applicable

K/A Match: Ap[plicant must demonstrate the knowledge of how the steam generator pressures would be controlled following a reactor trip and knowleadge of requried actions if manual control was required

Technical Reference: ES-0.1, Reactor Trip Response, Rev 32
0-SO-1-2, STEAM DUMP SYSTEM, Rev 0011
0-GO-4, Power Ascension from Less Than 5% Reactor Power to 30% Reactor Power, Rev 0062

Proposed references to be provided: None

Learning Objective: OPT200.SDCS
4. Describe the following items for each major component in the Steam Dump Control System as described in this lesson:
   e. Component operation
   f. Controls

Question Source:

New	X
Modified Bank	
Bank	

Question History:

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

009 EK1.01 002

Given the following:

- A small break LOCA has occurred.
- SI pumps fail to start.
- RCS Hot Legs and the Reactor Vessel Head have voided.
- RCS Pressure is 1200 psig.
- RCP's are tripped in accordance with the EOP network.
- Assume that all other ECCS equipment operates as required.

Which ONE of the following describes the current method of cooling the core?

A. Break flow is the only core cooling method available.

B✔ Break flow and reflux boiling are providing core cooling.

C. No core cooling mechanism exists at the present time.

D. Natural Circulation is the principle means of core cooling.

DISTRACTOR ANALYSIS:

A. Incorrect. Plausible since first part of answer is correct, however the initial conditions due not exclude a S/G heat sink to supplement the heat removal taking place at these conditions.

B. Correct. Initial conditions would indicate that break and reflux boiling are both taking place removing decay heat from the core.

C. Incorrect. Plausible if candidate determines that since SI pumps are off that a makeup mechanism to the RCS is not avaliable. However a heat sink, with break flow cooling and reflux boiling, still exists.

D. Incorrect. Plausible if candidate does not recognize that steam voiding in the hot legs and vessel head does not allow natural circulation.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 2

Tier: 1 **Group** 1

K/A: 009 Small Break LOCA
EK1.01 Knowledge of the operational implications of the following concepts as they apply to the Small Break LOCA:
Natural Circulation and cooling, including reflux boiling.

Importance Rating: 4.2/4.7

10 CFR Part 55: 41.8

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A because it asks the candidate to determine the method of RCS heat removal during a Small Break LOCA.

Technical Reference: EPM-3-ES-0.3, Basis Document for ES-0.3 Natural Circulation Cooldown with Steam Void in Vessel (with RVLIS), Rev 2

Proposed references to be provided: None

Learning Objective: OPL271ES-0.3 obj 7

Question Source:

New	
Modified Bank	
Bank	X

Question History:

Comments:

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

011 EK2.02 003

Given the following:

- Unit 1 is initially at 100% power.
- A large break LOCA occurs.
- The crew is currently implementing ES-1.3, "Transfer to RHR Containment Sump."
- Both RHR pumps' suction automatic switchover is complete.
- All steps are complete through isolating charging pump suction from RWST.
- The crew is ready to close 1-FCV-63-5, SI pump suction from RWST.
- RHR pump 1A-A trips.

Which ONE of the following identifies the correct crew response?

A. Close 1-FCV-63-5 and continue with instruction.

B. Close 1-FCV-63-72, Train A Containment Sump valve and continue with instruction.

C. Stop SIP 1A-A only, Place control switch in Pull-to-Lock and continue with instruction.

D. Stop SIP 1A-A and CCP 1A-A, Place control switches in Pull-to-Lock and continue with instruction.

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Incorrect, Plausible since either RHR pump can supply adequate suction for both trains of ECCS pumps, operators are directed to only operate 1 train of ECCS during recirc mode to prevent possible damage to both trains if the only remaining RHR pump were to fail.*

B. *Incorrect, 1-FCV-63-72, Train A Containment Sump valve, would not be closed. Plausible since this valve is part of the flow path for the tripped pump, however there no direction or need to close this valve.*

C. *Incorrect, the SIP 1A-A would not be the only pump stopped. Plausible because the SIP 1A-A and the RHR pump 1A-A are on the same equipment train and the RHR pumps do supply suction to the SIPs during sump recirculation operations.*

D. *Correct, From ES-1.3 step 14 (continuous monitoring step) if 1 RHR trips, the operators are instructed to stop the affected train SIP and CCP. Even though both trains of ECCS pumps can be provided suction from either RHR pump, it has been decided that a conservative action is appropriate so that a subsequent failure of the only remaining RHR would not damage both CCPs and SIPs.*

Question Number: 3

Tier: 1 **Group** 1

K/A: 011 Large Break LOCA
EK2.02 Knowledge of the interrelations between the and the following Large Break LOCA:
Pumps

Importance Rating: 2.6*/2.7*

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: Applicant is required to apply the affect of the trip of one of the ECCS pumps taking suction from the containment sump during a LOCA and how the trip will relate to the remaining pumps supplying water to cool the core. Also must apply procedure requirement of allowing only 1 train of ECCS if only 1 RHR is available when on containment recirculation.

QUESTIONS REPORT
for 2010 Feb RO exam

Technical Reference: ES-1.3, Transfer to RHR Containment Sump, Rev 15, EPM-ES-1.3, step 14.

Proposed references to be provided: None

Learning Objective: OPT200.ECCS B.5.d
Describe the operation of the ECCS as it relates to the following:
d. How a component failure will affect system operation
OPL271ES-1.3 B.5.6 a&b
Given a set of initial plant conditions use ES-1.3 to correctly:
a. Identify required actions
b. Respond to Contigencies

Question Source:

New	____
Modified Bank	____
Bank	x

Question History: WBN question 011 EK 2.02 002 with some minor changes

Comments: Reworded stem to consolodate operate actions.
Changed correct answer to D due to continuous action step (14) which requires only 1 train of ECCS with only 1 RHR pump available.

Source:	BANK	Source If Bank:	WBN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

015 AK1.01 004

Given the following:

- 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."
- Ten minutes after the trip, the following conditions exist:
    - SG 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 describes the status of RCS heat removal for the current plant conditions?

A. Heat removal via natural circulation is not established at this time.

B. Heat removal is via forced circulation and the condenser steam dumps.

C. Heat removal is via natural circulation and the condenser steam dumps.

D. Heat removal is via natural circulation and both the condenser and 10% atmospheric steam dumps.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible if candidate does not recognize that natural circulation has been established.

B. Incorrect, Plausible if candidate does not recognize that due to loss of component cooling water the RCPs are tripped.

C. Correct, Per EA-68-6, Monitoring Natural Circulation Conditions, natural circulation has been established.

D. Incorrect, Plausible if candidate does not recognize that condenser steam dumps alone are maintaining RCS temperature.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 04

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-0.2, Obj 6

Question Source:

New	
Modified Bank	
Bank	X

Question History: From Diablo Canyon -2007 RO exam

Comments:

Source:	BANK	Source If Bank:	DIABLO CANYON
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

022 AA1.07 005

Given the following:

- Unit 2 at 100% power.
- Letdown was removed from service to repair a leak.
- Excess Letdown is in service.
- A LOCA occurs and the crew initiates a Reactor Trip and Safety Injection.
- Containment pressure is currently 1 psig and slowly rising.

Which ONE of the following describes how excess letdown flow will be affected?

A. Phase A Containment Isolation will isolate the Seal Water Return Line and 2-FCV-62-59, Excess Letdown Divert, will automatically route excess letdown flow to the RCDT.

B. Phase A Containment Isolation will isolate the Seal Water Return Line Valves, 2-FCV-62-61 and 2-FCV-62-63, causing excess letdown flow to be routed to the PRT via the seal return line relief valve.

C. Excess letdown flow will continue until containment pressure rises to 1.5 psig causing Excess Letdown Isolation valves, 2-FCV-62-54 and 2-FCV-62-55 to close.

D. Excess letdown flow will continue until Phase B Containment Isolation isolates the Excess Letdown Isolation valves, 2-FCV-62-54 and 2-FCV-62-55.

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Incorrect, 2-FCV-62-59, Excess Letdown Divert, will route excess letdown flow to the RCDT if placed in the DIVERT position but a safety injection will not cause the routing to the RCDT (Excess flow path will be to the PRT.) Plausible because the seal return line does isolate when the Safety injection is initiated and 2-FCV-62-59 can be positioned to the RCDT.*

B. *Correct, The excess letdown is routed into the seal return line before the line leaves containment. the seal return line isolates on a Phase A isolation signal which is generated by a safety injection. The Excess letdown and seal return flow is then routed to the PRT by way of a relief valve on the seal return line.*

C. *Incorrect, Excess letdown flow will not continue until containment pressure rises to 1.5 psig. The seal return valve will close when the SI is initiated. Plausible because the seal return line actually receives its signal from containment Phase A isolation which is generated by the safety injection signal and 1.5 psig is an automatic safety injection signal.*

D. *Incorrect, Excess letdown flow will not continue until containment pressure rises to Phase B setpoint. The seal return valve will close when the SI is initiated. plausible because other valves do receive an isolation signal when Phase B pressure is reached.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 5

Tier: 1 **Group** 1

K/A: 022 AA1.07
Loss of Reactor Coolant Makeup
Ability to operate and / or monitor the following as they apply to the Loss of Reactor Coolant Makeup:
Excess letdown containment isolation valve switches and indicators

Importance Rating: 2.8* / 2.7*

10 CFR Part 55: 41.7 / 45.5 / 45.6

10CFR55.43.b: Not applicable

K/A Match: Applicant is required to determine how containment isolation signals affect the excess letdown flow path.

Technical Reference: 1-47W809-1 R74
1,2-47W813-1 R53
2-47W611-62-1 R4

Proposed references to be provided: None

Learning Objective: OPT200.CVCS
4. Describe the following characteristics of each major component in the CVCS system:
e. Component Operation
i. Protective features (including setpoints)

Question Source:

New	X
Modified Bank	
Bank	

Question History: New question for 2/2010 exam

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

025 AK3.02 006

Given the following:

- 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 psi 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?

A. 380 psig, to prevent LTOP from initiating.

B. 410 psig, to ensure RCP #1 seals are not damaged.

C✓ 450 psig, to prevent inventory loss through the suction relief valve.

D. 600 psig, to prevent over-pressurization of the PRT.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible since this is the pressure at which actions are dictated in AOP-R.03 to be taken and attempt to control RCS pressure at this value, but this pressure is not the setpoint directed by AOP where RHR is to be isolated.

B. Incorrect, This is the pressure setpoint of RHR Pressure Hi alarm, but this pressure is not the pressure where RHR is directed to be isolated. Plausible since this action is in AOP-R.03 but to check for 200 psid.

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

D. Incorrect, This is the design pressure of the system, AOP-R.03 directs isolation at 450 psi. Plausible since the RHR suction and discharge relief valves go to PRT.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 6

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 34; AOP-R.03 rev 21; SQN-21; 0-SO-74-1, Residual Heat Removal System, Rev 68 OPT200.RHR Rev 3

Proposed references to be provided: None

Learning Objective: OPL271AOP-R.03 Obj 6

Question Source:

New	X
Modified Bank	
Bank	

Question History:

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

027 AA1.03 007

Given the following:

- Reactor at 85% RTP stable conditions for 10 days.
- Both Pressurizer Spray Valve Controllers in MANUAL and output set to "0".
- All other systems and controllers in normal alignment.

Which ONE of the following would be the immediate effect if the Pressurizer Master Pressure Controller output fails to 100%?

A. Pressurizer Pressure HI alarm, and Actual pressurizer pressure starts to rise.

B✔ Pressurizer Pressure HI alarm, and Actual pressurizer pressure starts to drop.

C. Pressurizer Pressure LO alarm, and Actual pressurizer pressure starts to rise.

D. Pressurizer Pressure LO alarm, and Actual pressurizer pressure starts to drop.

DISTRACTOR ANALYSIS:

A. Incorrect, The Hi pressure alarm is actuated. Heaters do not energize but plausible because if it did the pressure would start to rise and high pressure alarm could come in because the spray valves are in manual and will not open.

B. Correct, The Hi pressure alarm is actuated by the output of the controller as the output is increased, variable heaters all deenergize, with NO heaters the pressurizer pressure will start to drop due to ambient losses and pressurizer spray bypass flow.

C. Incorrect, low pressure alarm comes from the output of the controller dropping and the controller output is being raised to 100%, Heaters do not energize (but if they did the pressure would rise). Plausible to conclude that raising controller output could result in raising pressure.

D. Incorrect, low pressure alarm comes from the output of the controller dropping and the controller output is being raised to 100%, Heaters do deenergize and the pressure does drop. Plausible to conclude that the heater would deenergize causing pressure to lower and the low pressure alarm to come in.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 7

Tier: 1 **Group** 1

K/A: APE 027 AA1.03
Pressurizer Pressure Control System Malfunction, Ability to operate and / or Monitor the following as they apply to the Pressurizer Pressure Control Malfunction: Pressure Control when on a steam bubble.

Importance Rating: 3.6/3.5

10 CFR Part 55: 41.7 / 45.5 / 45.6

10CFR55.43.b:

K/A Match: This question matches the K/A by having the candidate determine the plant response if the master pressure controller fails while at power.

Technical Reference: AOP-I.04, Pressurizer Instrument and Control Malfunctions R9

Proposed references to be provided: None

Learning Objective: OPT200.PZRPCS B.4, B.5

Question Source: SQN Bank

New	
Modified Bank	
Bank	X

Question History: SQN NRC Exam 1/2008

Comments: Modified stem to have the pressure controller malfunction to meet KA

Source:	BANK	Source If Bank:	SQN BANK
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

029 EK2.06 008

Given the following:

- Unit 1 at 100% power with SSPS testing in progress on Train "A."
- Reactor Trip Breaker "A" is open.
- A transient occurs that requires a reactor trip.
- The OATC attempts to trip the reactor but the reactor fails to trip.

Which ONE of the choices completes the statement below relative to failure of the reactor trip and bypass breakers that would have caused the reactor **NOT** to trip and the local action(s) required to trip the reactor?

The Reactor Trip & Bypass Breakers (RTB & BYA) 125V dc trip coils failed to ____(1)____ and to trip the reactor locally ____(2)____.

	(1)	(2)
A.	energize	only one breaker must be open
B.	energize	both breakers must be open
C.	de-energize	only one breaker must be open
D.	de-energize	both breakers must be open

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Correct, the shunt trip coils should be energized from the reactor trip hand switches (and from the SSPS for the reactor trip breaker) and if this did not occur then one of the two breaker trip devices would not function, thus contributing to the ATWS along with whatever caused the UV coil on the breakers to also fail to trip the breakers. Opening either one of the breakers would cause the reactor to trip.*

B. *Incorrect, The failure to energize the reactor trip breaker shunt coils contributing to the reactor failing to trip is correct but both breakers do not have to be open to cause a reactor trip, only one has to be opened. Plausible because the failure to energize the shunt coils is correct and the breakers scheme could be mistaken to be in parallel instead of series because there is a bypass breaker in parallel with each reactor trip breaker*

C. *Incorrect, The the reactor trip switch actuation (and SSPS signal for RTB) energizes the shunt trip coils to cause a trip, so the failure would be to energize not failure to de-energize and the reactor would trip when either breaker was opened. Plausible because the failure to deenergize the coils would be correct concerning the undervoltage coils and the reactor tripping after either of the breakers opening is correct.*

D. *Incorrect, The the reactor trip switch actuation (and SSPS signal for RTB) energizes the shunt trip coils to cause a trip, so the failure would be to energize not failure to de-energize and the reactor trip would not required both breakers to be open. It would trip when either breaker was opened. Plausible because the failure to deenergize the coils would be correct concerning the undervoltage coils and the breakers scheme could be mistaken to be in parallel instead of series because there is a bypass breaker in parallel with each reactor trip breaker*

Question Number: 8

Tier: 1 **Group** 1

K/A: 029 EK2.06
Anticipated Transient Without Scram (ATWS)
Knowledge of the interrelations between the and the following an ATWS:
Breakers, relays, and disconnects

Importance Rating: 2.9* / 3.1*

10 CFR Part 55: 41.7 / 45.7

10CFR55.43.b: Not applicable

K/A Match: Applicant is required demonstrate the knowledge of how the reactor trip breakers and relays that control their operation are related to the reactor trip system if malfunctions occur and actions required to disconnect the power to control rods locally during an ATWS event.

QUESTIONS REPORT
for 2010 Feb RO exam

Technical Reference: 1,2-45N699-1 R10
1,2-47w611-99-1 R11

Proposed references to be provided: None

Learning Objective: OPT200RPS

3. Explain the purpose/function of each major component in the flow path of the Reactor Protection & Engineered Safety Features Actuation Systems as illustrated on a simplified system drawing.
4. Describe the following characteristics of each major component in the Reactor Protection & Engineered Safety Features Actuation Systems:
   c. Support equipment and systems
5. Describe the operation of the Reactor Protection and Engineered Safety Features Actuation Systems:
   e. How a support system failure will affect system operation.

Question Source:

New	
Modified Bank	X
Bank	

Question History: SQN bank question E-0-B.0 001modified and modeled on question used on Diablo Canyon 2007 exam

Comments:

Source:	BANK MOD	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

038 EA2.06 009

Given the following:

- Unit 2 was operating at 100% rated thermal power.
- The plant was tripped and SI was actuated due to a SGTR in #3 SG.
- The crew is currently implementing ES-3.1, "Post-SGTR Cooldown Using Backfill."
- The following boron concentrations have just been reported by Chemistry:

  - RCS required boron for Cold Shutdown - 1750 ppm
  - Current RCS boron concentration - 1800 ppm
  - Ruptured SG boron concentration - 1200 ppm

Which ONE of the following will be directed by the procedure before continuing with the cooldown?

A. Establish continuous boration flow of > 35 gpm from the BAT.

B. Ensure #3 RCP is running to provide adequate mixing in the ruptured SG loop.

C. Transition to ES-3.2, "Post SGTR Cooldown Using Blowdown," to prevent diluting the RCS.

D. Add boron to ruptured SG using secondary boron injection until ruptured SG boron at least 1750 ppm.

DISTRACTOR ANALYSIS:

A. Correct, step 4.e. Check one of the following conditions met: ruptured SG boron conc less than minimum RCS boron required for shutdown margin then step 4.f. "Establish continuous boration flow greater than 35 gpm from BAT"

B. Incorrect, Plausible since previous caution in ES-3.1 states the inadvertant criticality could occur if the first RCP started is in a ruptured SG loop following a natuarl circulation cooldown. However since offsite power was not lost RCPs are still running so no need for further mixing.

C. Incorrect, Plausible since this would prevent ruptured SG water from backfilling into the RCS but this is not the quidance provided in the procedure.

D. Incorrect, Plausible since on U-2, boron is added to the secondary side for chemistry control, however this is not the guidance provided in the procedure.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 9

Tier: 1 **Group** 1

K/A: 038 Steam Generator Tube Rupture (SGTR)
EA2.06 Ablility to determine or interpret the following as they apply to a SGTR:
Shutdown margins and required boron concentrations.

Importance Rating: 3.8 / 4.4

10 CFR Part 55: 41.10 (43.5)

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by requiring the candidate to determine if the boron concentration in the ruptured SG is adequate for backfill operations and what needs to be done if not.

Technical Reference: ES-3.1, Post-SGTR Cooldown Using Backfill, Rev.10

Proposed references to be provided: None

Learning Objective: OPL271ES-3.1 Objective 6

Question Source:

New	X
Modified Bank	
Bank	

Question History: New question for 02/2010 ILT exam

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

040 AK1.04 010

Given the following:

- Unit 2 experiences a steam line break accident and subsequent cooldown resulting in plant operation to the left of Limit A on F-0.4, "Pressurized Thermal Shock."

Which ONE of the following describes the potential consequences to the reactor vessel?

A. Fatigue stresses from the rapid cooldown may cause cracking of CRDM penetration welds.

B. An existing flaw could grow and may lead to a loss of vessel integrity.

C. It may result in creation of a flaw in the beltline region of the vessel wall.

D. Failure of the vessel could occur, since the nil-ductility temperature increases with increasing pressure.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible since CRDM welds have been known to leak, but major concern is brittle fracture of the reactor vessel during accident conditions.

B. Correct, From F-0.4 basis, large uncontrolled cool down, which puts the vessel temperature at or near the RT-NDT temperature, along with high RCS pressure could cause an existing flaw to propagate leading to failure of the reactor vessel during accident conditions.

C. Incorrect, Plausible but the cooldown alone does not create a flaw, it would only aid in possible propagation if a flaw already existed.

D. Incorrect, Plausible since RT-NDT does change over life, but NDT does not vary based on RCS pressure, only neutron fluence.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 10

Tier: 1 **Group** 1

K/A: 040 Steam Line Rupture
AK1.04 Knowledge of the operational implications of the following concepts as they apply to Steam Line Rupture:
Nil Ductility Temperature

Importance Rating: 3.2/3.6

10 CFR Part 55: 41.8

10CFR55.43.b: Not applicable

K/A Match: this questions tests whether the candidate is knowledgeable about NDT and how the RED path temperature , based on rapid cooldown, applies to RT-NDT and whether pressure affects RT-NDT.

Technical Reference: EPM-3-FR-0, Basis Document For FR-P.1 Pressurized Thermal Shock, Rev 4.
FR-P.1, Pressurized Thermal Shock, Rev 13.
1-FR-0, Status Trees, Rev 1

Proposed references to be provided: None

Learning Objective: OPL271FR-P.1 obj 2

Question Source:

New	
Modified Bank	
Bank	X

Question History: from WBN bank (FR-P.1-B.2.B 001)

Comments:

Source:	BANK	Source If Bank:	WBN
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

054 AG2.1.31 011

Given the following:

- Unit 1 at 6% power, startup in progress in accordance with GO-4, "Power Ascension from Less than 5 Percent Reactor Power to 30% Reactor Power."
- The MFW Bypass Reg valves are controlling steam generator levels in AUTO.
- Main Feed Pump (MFP) 1A in service.
- Motor Driven Auxiliary Feedwater Pumps have been stopped and placed in A-P AUTO.
- An inadvertent Feedwater Isolation occurs.

Which ONE of the following identifies the status of the MFW Bypass Reg Valves and the expected SG level trend?

A. MFW Bypass Reg Valves would be closed ;
SG levels rising.

B✔ MFW Bypass Reg Valves would be closed;
SG levels lowering.

C. MFW Bypass Reg Valves would be opening;
SG levels rising.

D. MFW Bypass Reg Valves would be opening;
SG levels lowering.

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Incorrect, The valves would be closed due to the FWI, even with the SG levels dropping and Bypass reg valve controllers sending signal to open the valves. The AFW pumps would start due MFP 1B having control power on its trip bus and being in the tripped state resulting in both MFPTs tripped and the AFW would attempt to control SG levels, however with power level above the capability of AFW , the levels would continue to drop. A reactor trip would be required, following by a transition to ES-0.1 where the plant would be stabilized. Plausible because all the AFW pumps would be running however the power level is greater than the capacity of the pumps.*

B. *Correct, The valves would be closed due to the FWI, even with the SG levels dropping and Bypass reg valve controllers sending signal to open the valves. The AFW pumps would start due MFP 1B having control power on its trip bus and being in the tripped state resulting in both MFPTs tripped and the AFW would attempt to control SG levels, however with power level above the capability of AFW , the levels would continue to drop.*

C. *Incorrect, Due to SG levels dropping, Bypass reg valve controllers would be a sending signal to open the valves but the FWI would have the valves closed. The AFW pumps would start due MFP 1B having control power on its trip bus and be in the tripped state resulting in both MFPTs tripped which starts AFW pumps. Plausible because the bypass reg valve would normally be responding to the low S/G levels by modulating opening. Because there is a FWI valve downstream, the candidate may not realize the bypass reg valve is also isolated and because the AFW system does not have the capacity to maintain SG levels.*

D. *Incorrect, Due to SG levels dropping, Bypass reg valve controllers would be sending a signal to open the valves but the FWI would have the valves closed. The AFW pumps would start due MFP 1B having control power on its trip bus and be in the tripped state resulting in both MFPTs tripped which starts AFW pumps. Plausible because the bypass reg valve would normally be responding to the low S/G levels by modulating opening. Because there is a FWI valve downstream, the candidate may not realize the bypass reg valve is also isolated.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 11

Tier: 1 **Group** 1

K/A: 054 AG 2.1.31
Loss of Main Feedwater
Ability to locate control room switches, controls and indications, and to determine that they correctly reflect the desired plant conditions.

Importance Rating: 4.6/4.3

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 expected response MFW valves following an inadvertant feedwater isolation.

Technical Reference: AOP-S.1, Loss of Normal Feedwater, Rev 14

Proposed references to be provided: None

Learning Objective: OPT200.MFW-B.4, OPL271AOP-S.01 B2

Question Source:

New	
Modified Bank	X
Bank	

Question History: modified from a question on the SRO portion of 2008 ILT exam

Comments:

Source:	BANK MOD	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

056 AK3.01 012

Given the following:

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

Assuming all equipment operates as designed, which ONE of the following describes...

(1) the conditions at the time of the SI signal

and

(2) the expected automatic actions following the SI signal?

	CONDITIONS	**EXPECTED AUTOMATIC ACTIONS**
A.	CCPs tripped due to blackout.	CCP Pumps sequence on ~2 seconds after shutdown board voltage is restored.
B.	CCPs tripped due to blackout.	CCPs sequence on ~2 seconds after the SI signal is received.
C.	ERCW pumps tripped due to blackout.	Selected ERCW pumps sequence on ~15 seconds after shutdown board voltage is restored.
D✓	ERCW pumps tripped due to blackout.	Selected ERCW pumps sequence on ~15 seconds after the SI signal is received.

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Incorrect, the CCP pumps do strip initially but have already sequenced back on at time 2 seconds and will not strip again on a SI signal alone. The CPPs do sequence on 2 seconds after SD board voltage is restored, however in this case they will not re-sequence on with the SI. This distracter is plausible because CCPs do strip and do sequence on in 2 seconds with a BO signal.*

B. *Incorrect, the CCP pumps do strip initially but have already sequenced back on at time 2 seconds and will not strip again on a SI signal alone. The CPPs do sequence on 2 seconds after SD board voltage is restored, however in this case they will not re-sequence on with the SI. This distractor is plausible because CCPs do strip and do sequence on in 2 seconds but not with the SI.*

C. *Incorrect, ERCW pumps strip on BO and sequence on at time 15 seconds. The second part of this distracter is incorrect as the timer resets and the ERCW will start 15 seconds after the SI signal is developed. This is plausible as the first part of the distracter is correct and the pump does sequence on in 15 seconds.*

D. *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.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 12

Tier: 1 **Group** 1

K/A: 056 AK3.01, Loss of Offsite Power:
Knowledge of the reasons for the following as they apply to the loss of Offsite Power: Order and time to initiation of power for the load sequencer.

Importance Rating: 3.5 / 3.9

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

10CFR55.43.b:

K/A Match: This question matches K/A by having candidate determine the Status of CCPs and ERCW pumps following a loss of offsite power and a subsequent SI and the expected timed sequence for restart of the equipment.

Technical Reference: AOP-P.01, Loss of Offsite Power, Rev 24, App. B
1,2-45N765-12 R4
1,2-45N765-15 R24
1,2-45N765-3 R22

Proposed references to be provided: None

Learning Objective: OPT200.DG Obj B.4.f & i
OPT200.RPS, Obj B.4.f & i

Question Source:

New	
Modified Bank	
Bank	X

Question History:

Comments: Modified question by changing distracter 'A' to refer to CCP as well to achieve psychometic balance.

Source:	BANK	Source If Bank:	SQN BANK
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

057 AA2.16 013

Given the following:

- Unit 1 is at 100% RTP.
- A loss of the 120V Vital instrument Power Board 1-II occurs.
- Pressurizer Level Control Level Selector Switch is in the 339/320 position.

Which one of the following describes the actions required to control CVCS?

Take manual control of _____.

A. 1-FCV-62-93, Charging Flow Control Valve, to control pressurizer level at 25%.

B. 1-FCV-62-93, Charging Flow Control Valve, to control pressurizer level at 60%.

C. 1-FCV-62-89, Charging Seal Water Flow Control Valve, to reduce seal injection to less than 11 gpm.

D. 1-FCV-62-89, Charging Seal Water Flow Control Valve, to control seal injection greater than 6 gpm.

DISTRACTOR ANALYSIS:

A. Correct. Charging flow controller 1-HIC-62-93 will not function in automatic. Therefore, the operator must take manual control to reduce charging flow to lower pressurizer level to ~ 25% since this is no-load program level following a Reactor Trip.

B. Incorrect. Rx trip would occur thus PZR level would be maintianed at 25%, not 60% which is normal level. Plausible if candidate does not realize the required PZR level to maintain for plant conditions.

C. Incorrect. Seal injection flow control valve is not affected by a loss of the 1-II board. Plausible because this valve is affected by a loss of the 1-I board.

D. Incorrect. Seal injection flow control valve is not affected by a loss of the 1-II board. Plausible because this valve is affected by a loss of the 1-I board.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 13

Tier: 1 **Group** 1

K/A: 057 Loss of Vital AC Instrumentation Bus
AA2.16 Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrumentation Bus:
Normal and abnormal PZR level for various modes of operation.

Importance Rating: 3.0/3.1

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 loss of a vital AC instrument bus has on the automatic PZR level control system and valves.

Technical Reference: AOP-P.03, Loss of Unit 1 Vital Instrumetn Power Board, Rev 21

Proposed references to be provided: None

Learning Objective: OPL271AOP-P.03 Obj 3, 10

Question Source:

New	
Modified Bank	
Bank	X

Question History: New for 2008 class

Comments:

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

062 AG2.4.9 014

Given the following:

- Both Units are operating at 100% rated thermal power.

If a total loss of ERCW occurred, which ONE of the following describes the Shutdown / Cooldown strategy in AOP-M.01, "Loss of Essential Raw Cooling Water?"

A. Trip both Units, implement E-0, "Reactor Trip or Safety Injection" and place the units in Mode 5.

B. Enter T.S 3.0.3 on Both Units, Commence a Shutdown on Both Units, concurrently, using O-GO-5, "Normal Power Operation."

C. Enter T.S 3.0.3 on Both Units, Perform a rapid shutdown on each unit, one at a time, using AOP-C.03, "Rapid Shutdown or Load Reduction."

D. Trip both Units, do NOT implement E-0, "Reactor Trip or Safety Injection," perform cooldown as directed by AOP-M.01.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible since a loss of flow in both trains of ERCW would affect both units, however specific guideance in AOP-M.01 informs the operators not implement E-0.

B. Incorrect, Plausible since loss of both ERCW trains would put both units in Tech Spec 3.0.3. This would require both units to be shutdown, AOP-M.01 directs the operators to trip the units, not just do a controlled shutdown to Hot Standby.

C. Incorrect, Plausible since loss of both ERCW trains would put both units in Tech Spec 3.0.3. This would require both units to be shutdown, AOP-M.01 directs the operators to trip the units, not just do a controlled shutdown to Hot Standby.

D. Correct, Per the direction in AOP-M.01 sect 2.12 Trip both Units, do not implement E-0 strategy but stay in AOP-M.01, perform cooldown as directed by AOP unless directed otherwise by TSC .

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 14

Tier: 1 **Group** 1

K/A: 062 AG 2.4.9
Loss of Nuclear Service Water
.9 Knowledge of low power/ shutdown implications in accident (e.g., Loss of coolant accident or loss of residual heat removal) mitigation strategies.

Importance Rating: 3.8 / 4.2

10 CFR Part 55: 41.10

10CFR55.43.b: Not applicable

K/A Match: This questions asks the candidate about accident mitigation strategy within AOP-M.01 for a loss of both trains of ERCW (this is essentially a loss of the ultimate heat for plant components.

Technical Reference: AOP-M.01, Loss of Essential Raw Cooling Water, Rev 20

Proposed references to be provided: None

Learning Objective: OPL271AOP-M.01 obj 5

Question Source:

New	X
Modified Bank	
Bank	

Question History:

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

065 AK3.04 015

Which ONE of the following identifies the pressure that Aux Air Compressor B-B starts and 0-FCV-32-85 "Train B Control Air Supply" closes on a loss of pressure in the Control & Service Air system and why?

A. B-B starts at 77 psig and 0-FCV-32-85 closes at 69 psig to ensure ABGTS will have a reliable source of instrument air under all design basis accident conditions.

B. B-B starts at 77 psig and 0-FCV-32-85 closes at 50 psig to ensure that a leak in the Essential air header in CNMT will **not** effect the Control Room Vent Dampers during accident conditions.

C. B-B starts at 90 psig and 0-FCV-32-85 closes at 69 psig to ensure that a reliable source of air is provided to the MFW regulation valves during all postulated transient conditions.

D. B-B starts at 90 psig and 0-FCV-32-85 closes at 88 psig to ensure that a reliable source of breathing air provided to personnel working in airborne contaminated environments.

DISTRACTOR ANALYSIS:

A. Correct, Aux air compressor B-B starts at 77 psig to supplement the normal supply of essential air on deceaseing pressure. If supply pressure continues to lower, at 69 psig,0-FCV-32-85 closes to isolate the normal control air supply to B essental air header to ensure that non-essential air and essential air are seperated and essential air is supplied solely from B-B aux compressor. This is the design basis accident operation of the system.

B. Incorrect, Plausible since the Aux compressor start pressure is correct, the isolation pressure wrong . This isolation pressure is associated with the Auto isolation of Essential and non-essential air to CNMT, thus making the reason for 50 psig correct however a different valve closes at 50 psig.

C. Incorrect, Plausible since this is the start pressure of the standby control air compressor. If candidate associates the reason with standby air compressors which do supply the MFW reg valves.

D. Incorrect, Plausible since the candidate may apply the normal start pressure of the standby control air compressor. Also the isolation pressure is wrong but plausible since this is the isolation pressure for Service air system which also supplies Breathing air.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 15

Tier: 1 **Group** 1

K/A: 065 AK3.04
Loss of Instrument Air
AK3.04 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: 41.5

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having the candidate determine at which pressure the Aux Air compressor starts and when essential air is isolated from normal control air

Technical Reference: OPT200.CSA, Rev 3
AOP-M.02, Loss of Control Air, Rev 14

Proposed references to be provided: None

Learning Objective: OPT200.CSA B4.c, e & g

Question Source:

New	X
Modified Bank	
Bank	

Question History: developed for 02/10 NRC exam

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

077 AG2.2.44 016

Given the following:

- Unit 1 is operating at 100% rated thermal power.
- Alarm A-6 on 1-XA-55-1A, "GEN EXCITER FIELD OVERCURRENT" has just been received.
- The generator voltage regulator is taken to manual in an attempt to stabilize main generator output.
- The Nuclear Offsite Power - Grid Status Forecast for Sequoyah is currently Green (no offsite power risks exist for Sequoyah).

Which ONE of the following identifies the maximum generator output voltage allowed and if the South East Load Dispatcher (SELD) needs to be notified?

A. Maximum Gen voltage is 24.8 kV, SELD needs to be notified immediately if the generator voltage regulator is taken to manual.

B. Maximum Gen voltage is 22.8 kV, SELD needs to be notified immediately to evaluate off-site voltage power requirements.

C. Maximum Gen voltage is 24.8 kV, SELD needs to be notified only if the generator voltage cannot be stabilized.

D. Maximum Gen voltage is 22.8 kV, SELD does not need to be notified in this case.

DISTRACTOR ANALYSIS:

A. Correct, inaccordance with GOI-6 sect F.3.2 maximum generator voltage is 24.8 kV and in accordance with AR-M1-A alarm response 7.2, SELD must be notified if auto voltage regulator is not being used.

B. Incorrect, Plausible since the contact information is correct, however 22.8 kV is the minimum voltage not the maximum.

C. Incorrect, Plausible since the voltage value is correct and from GOI-6 Section F the load dispatcher is to be notified any time the voltage regulator is taken out of auto.

D. Incorrect, Plausible if the candidate did not recognize that voltage is minimum vs. maximum, and load dispatcher is to be made aware if voltage regulator taken out of auto.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 16

Tier: 1 **Group** 1

K/A: 077 AG 2.2.44
077 Generator Voltage and Electrical Grid Disturbances
AG 2.2.44 Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.

Importance Rating: 4.2 / 4.4

10 CFR Part 55: 41.5

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having the candidate determine what the maximum allowable Gen voltage can be and what actions would be required

Technical Reference: GOI-6, Apparatus Operation, Rev 130, Section E, F
1-AR-M-1, Generators and Transformers 1-XA-55-1A, Rev 41

Proposed references to be provided: None

Learning Objective: OPT200.GEN obj 5.b.d

Question Source:

New	X
Modified Bank	
Bank	

Question History:

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

WE04 EA2.2 017

Given the following plant conditions:

- A LOCA outside containment has resulted in RCS Subcooling dropping to 0°F.
- The operating crew is performing the actions of ECA-1.2, "LOCA Outside Containment."
- Actions are being taken to isolate the leak.

In accordance with ECA-1.2 "LOCA Outside Containment," which ONE of the following actions is required and what would be the indication used to confirm the LOCA has been isolated?

A. Isolate SI pump Cold Leg Injection
Pressurizer level rising

B. Isolate SI pump Cold Leg Injection
RCS pressure rising

C. Isolate RHR Cold Leg Injection
Pressurizer level rising

D✓ Isolate RHR Cold Leg Injection
RCS pressure rising

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Incorrect; Plausible because portions of SI discharge piping have a design pressure of 1750 psig which is ~ 500 psig below normal system pressure. This is not part of the isolation strategy for ECA-1.2. Also, Pressurizer level rising is plausible since the student could reason that it may be rising if the leak was isolated. The procedure directs the use of RCS pressure increasing as the method used to indicate the leak has been isolated.*

B. *Incorrect; Plausible because portions of SI discharge piping have a design pressure of 1750 psig which is ~ 500 psig below normal system pressure. Also the procedure directs the use of RCS pressure increasing as the method to indicate the leak has been isolated.*

C. *Incorrect; Plausible because isolation of RHR Cold Leg injection is a strategy contained in the procedure to isolate a LOCA outside CNMT. Pressurizer level rising is a plausible indication since the student could reason that it may be rising if the leak was isolated. The procedure directs the use of RCS pressure increasing as the method used to indicate the leak has been isolated.*

D. *Correct; Isolation of RHR Cold Leg injection is a strategy contained in the procedure to isolate a LOCA outside CNMT. The procedure directs the use of RCS pressure increasing as the method used to indicate the leak has been isolated.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 17

Tier: 1 **Group** 1

K/A: W/E04 EA2.2
Ability to determine and interpret the following as they apply to the (LOCA Outside CTMT): Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Importance Rating: 3.6 / 4.2

10 CFR Part 55: 41.7 / 45.5 / 45.6

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having the candidate determine the correct actions given a LOCA outside CNMT and the expected plant response for the actions taken.

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

Proposed references to be provided: None

Learning Objective: OPL271ECA-1.2, B.3, B.5

Question Source: ECA-1.2-B.5 002 SQN Bank

New	
Modified Bank	
Bank	X

Question History:

Comments:

Source:	BANK	Source If Bank:	SQN BANK
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

WE05 EK2.2 018

Given the following:

- The crew is implementing FR-H.1, "Loss of Secondary Heat Sink."
- CST level is 25%.

Which ONE of the following describes the correct order of priority for:

(1) the source of feedwater to SGs

and

(2) the condition of the SGs that are to be fed?

A. (1) MDAFW, TDAFW, MFW, Condensate
(2) Intact, Ruptured, Faulted

B. (1) TDAFW, MFW, Condensate, MDAFW from ERCW
(2) Intact, Ruptured only

C. (1) MDAFW, TDAFW, MFW, Condensate
(2) Intact, Faulted only

D. (1) MDAFW, MFW, Condensate, TDAFW from ERCW
(2) Intact, Ruptured, Faulted

DISTRACTOR ANALYSIS:

A. Correct, Step 7 of FR-H.1 lists the priority of SG to feed and following steps list order of preference for source of feedwater.

B. Incorrect, Plausible if candidate determines that normal MDAFW was not available thus TDAFW normal option, then MFW , Condensate and MDAFW with Essential Raw Water cooling, which is the emergency backup source for MDAFW.

C. Incorrect, Plausible if candidate assumes that a Ruptured SG would not be feed due to spread of contamination when SG is steamed for heat removal.

D. Incorrect, Plausible if candidate assumes that TDAFW with Essential Raw Water cooling supplying the suction would be last resort before feed and bleed. This is not an authorized source of makeup to SGs in FR-H.1

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 18

Tier: 1 **Group** 1

K/A: W/E05 EK2.2 Loss of Secondary Heat Sink
Knowledge of the interrelationships between the (loss of Secondary Heat Sink) 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: 3.9 / 4.2

10 CFR Part 55: 41.10

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A due to having the candidate identify the sources of water for secondary heat removal following a loss of MFW event and has the candidate recall the order of priority for sources of makeup water and order of SGs to be fed.

Technical Reference: FR-H.1 Loss of Secondary Heat Sink, Rev 17

Proposed references to be provided: None

Learning Objective: OPL271FR-H.1 Obj 6

Question Source:

New	
Modified Bank	X
Bank	

Question History: Similar to question from DC Cook 2006 NRC Exam

Comments:

Source:	BANK MOD	Source If Bank:	COOK 2006
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

028 AK2.02 019

Given the following plant conditions:

- Unit 1 is at 100% RTP.
- Pressurizer Level Control Selector Switch, 1-XS-339E, is selected to the LI-68-339/320 position.

Which ONE of the following failures would result in a reactor trip in the shortest time assuming all systems respond as designed and there is NO operator action?

(Consider each failure to occur independently)

A. 1-LT-68-339 fails LOW.

B. 1-LT-68-339 fails HIGH.

C. 1-LT-68-320 fails LOW.

D. 1-LT-68-320 fails HIGH.

DISTRACTOR ANALYSIS:

A. Correct, The stem identifies 1-LT-68-339 as the controlling channel. The instrument failing low would isolate letdown and maximize charging, thus causing the pressurizer high level trip to occur faster than any of the other identifies failures.

B. Incorrect, 1-LT-68-339 failing high would cause charging flow to reduce to minimum, letdown would isolate after the pressurizer dropped to 17 %, then the pressurizer level would slowly rise until it reached the trip high level trip. Plausible because the failure does effect the pressure level control system and conditions in the pressurizer.

C. Incorrect, 1-LT-68-320 failing low would isolate letdown causing pressurizer level to start rising. As the level continued to rise, the charging flow would be reduced until it reached minimum. Pressurizer level would continue to rise but at a slower rate until the hi level trip setpoint was reached. Plausible because the failure does effect the pressure level control system and conditions in the pressurizer.

D. Incorrect, 1-LT-68-320 failing high would cause an alarm due to the indicated hi level, but would not effect letdown or cause a direct change in charging flow. Plausible because the failure is one of the three pressurizer level transmitter that can be selected to to input the level control system and identifying it as failing high maintains question psychometric balance.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 19

Tier: 1 **Group** 2

K/A: 028 AK2.02
Pressurizer (PZR) Level Control Malfunction
Knowledge of the interrelations between the Pressurizer Level Control Malfunctions and the following:
Sensors and detectors

Importance Rating: 2.6 / 2.7

10 CFR Part 55: 41.7 / 45.7

10CFR55.43.b: Not applicable

K/A Match: Applicant must understand the effect of a sensor malfunction on the pressure level control system.

Technical Reference: 1,2-47W611-68-2, Rev 2
1,2-47W611-99-1, Rev 11
AOP-I.04 Pressurizer Instrument and Control Malfunctions, Rev 9

Proposed references to be provided: None

Learning Objective: OPT200.PZRLCS
5. Describe the operation of the Pressurizer Level Control System as it relates to the following:
   f. How a instrument failure will affect system operation

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN Bank question PZR LEVEL-B.12.D 002 with minor wording and format changes

Comments: Deleted 1 bulleted item in stem and rotated choice locations to relocate the correct answer.

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

032 AK2.01 020

Given the following plant conditions:

- Unit 2 is in MODE 6.
- Due to a loss of power, Source Range Monitor (SRM) N-32 has failed LOW resulting in a loss of the audio count rate signal.

Which ONE of the following describes the actions necessary to restore the audio count rate signal to the control room?

A. ✔ Place the audio count rate CHANNEL SELECTOR switch on the front of the Audio Count Rate Drawer to the SR N-31 position.

B. Place the audio count rate CHANNEL SELECTOR switch on the front of the Audio Count Rate Drawer to the SR N-32 position.

C. Place the AMPLIFIER SELECT switch on the rear of the audio count rate drawer assembly to the A1 position.

D. Place the AMPLIFIER SELECT switch on the rear of the audio count rate drawer assembly to the A2 position.

DISTRACTOR ANALYSIS:

A. Correct - Placing the channel selector switch to the SR N31 position places the audio count rate circuit input from Source Range channel N31.

B. Incorrect - Placing the channel selector switch to the SR N32 position selects the inoperable Source Range channel for input the audio count rate circuit. Examinee may confuse this with the other switches on that panel that are used to defeat the inoperable channel.

C. Incorrect - The amplifier select switch is used to select the channel that is supplying audio count rate to containment and does not change the input to the control room audio count rate circuit. The switch is usually in the Normal position which has channel 2 feeding the containment audio count rate circuit. Examinee may select since in Mode 6 is when the AOI for Source Range failure has the operator determine if this switch needs to be transferred and the A1 position would select Source Range N-131.

D. Incorrect - For reason stated above but examinee may select since he/she may confuse with defeat switches on the panel.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 21

Tier: 1 **Group** 2

K/A: 032 Loss of Source Range Nuclear Instrumentation
AK2.01 Knowledge of the interrelations between the loss of Source Range Nuclear Instrumentation and the following:
Power supplies, including proper switch positions.

Importance Rating: 2.7/3.1

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: Question matches K/A because knowledge of power to N-32 would require the manual selection of alternate input to audio count rate drawer vs selection of "defeat" for the failed channel which is normally done for failed NIs.

Technical Reference: AOP-P.04, Loss of Unit 2 Vital Instrument Power Board Appendix A, Rev 26
AOP-I.01, Nuclear Instrument Malfunction, Rev 9

Proposed references to be provided: None

Learning Objective: OPL271AOP-P.04 Obj 8.b

Question Source:

New	____
Modified Bank	____
Bank	X

Question History: 2008 Audit exam

Comments:

Source:	BANK	Source If Bank:	WBN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

033 AA2.12 021

Given the following:

- Unit 1 is in Mode 1 doing a power ascension following a refueling outage.
- During the power ascension N-35 and N-36 have trended as follows:

	N-35	N-36
0800 (6/19)	10%	60%
2000 (6/19)	15%	75%
0800 (6/20)	17%	85%
2000 (6/20)	20%	95%

Which ONE of the following would indicate when, if at all, control board readings for N-35 and N-36 exceeded the maximum allowable channel deviation?

REFERENCE PROVIDED

A. 0800 (6/19)

B. 0800 (6/20)

C. 2000 (6/20)

D. The readings never exceeded the maximum allowable.

DISTRACTOR ANALYSIS:

A. Correct, In accordance with 1-SI-OPS-000-002.0 (shift log) the maximum allowable channel deviation is .75 decades. To determine the readings to be compared the log of the % power readings is used. Thus log (10%) = 1 and log (60%) = 1.778. The difference is greater than .75

B. Incorrect, Plausible, however log (17%) = 1.340 and log (80%) = 1.929. difference is .699

C. Incorrect, Plausible since raw difference is 75%, however log (20%) = 1.301 and log (95%) = 1.977, thus difference is .677

D. Incorrect, Plausible if candidate does not determine that the maximum channel deviation has been exceeded.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 21

Tier: 1 **Group** 2

K/A: 033 Loss of Intermediate Range Nuclear Instrumentation
AA2.12 Ability to determine and interpret the following as they apply to the Loss of Intermediate Range Nuclear Instrumentation:
Maximum allowable channel disagreement

Importance Rating: 2.5*/3.1*

10 CFR Part 55: 41.10

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having candidate compare the readings of intermediate range NIs and determining if the maximum allowable channel disagreement has been exceeded. This will determine if a Nuclear Instrument is failed or inoperable.

Technical Reference: 1-SI-OPS-000-002.0 Shift Log, Rev 93

Proposed references to be provided: 1-SI-OPS-000-002.0 Shift Log

Learning Objective: OPT200.NIS Obj. B.5

Question Source:

New	X
Modified Bank	
Bank	

Question History:

Comments: New question for 02/2010 exam

Source:	NEW	Source If Bank:	
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

036 AG2.4.35 022

Given the following:

- Unit 1 is in Mode 6 with Refueling in progress.
- The refueling SRO in containment reports that there are indications of a 2000 gpm reactor cavity seal leak.
- The crew is implementing AOP-M.04, "Refueling Malfunctions."
- Per Section 2.1, "Reactor Cavity Seal Failure," two operators are dispatched to the Transfer Tube Wafer Valve.

Which ONE of the following identifies:

(1) the position they are directed to place the valve in

and

(2) the operational effects of performing this action?

A. open; to prevent uncovering the fuel in the SFP.

B. open; to preclude flooding out the ventilation ducts on the SFP.

C. closed; to prevent uncovering the fuel in the SFP.

D. closed; to preclude flooding out the ventilation ducts on the SFP.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible if candidate determined that valve is normally closed during refueling ops and would have to be opened. The second part of distractor is correct.

B. Incorrect, Plausible if candidate determined that valve is normally closed during refueling ops and would have to be opened. This is condition is warned about in procedure when opening the transfer tube valve. If Cnmt pressure is slightly higher than Aux Bldg pressure then water would flood into the SFP and possibly get into the vent ducts for SFP ventilation.

C. Correct, Local operator action is required to close the wafer valve to seperate the Rx cavity from the SFP. The Reactor Vessel flange is at 702' 1.5" elevation while the top of the fuel racks in the SFP is 701' 0.75", so if the gate is left open there will be no water left above the racks.

D. Incorrect, Plausible since first part of question is correct, however the level in SFP would have to increase to flood the vent ducts. (a possible condition if CNMT pressure was slightly higher than Aux Bldg pressure.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 22

Tier: 1 **Group** 2

K/A: 036 Fuel Handling Incidents
AG2.4.35 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

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having the operators recall the local operator actions which would be required for a fuel handling accident inside containment and the effects of performing these actions.

Technical Reference: AOP-M.04, Refueling Malfunctions, Rev 9 section 2.1

Proposed references to be provided: None

Learning Objective: OPL271AOP-M.04
5. Summarize the mitigating strategy for the condition that initiated entry into AOPM.04

Question Source:

New	X
Modified Bank	
Bank	

Question History:

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

037 AA1.04 023

Given the following:

- Unit 1 is operating at 100% rated thermal power.
- Alarm 1-RA-90-99A, "CNDS VAC PMP LO RNG AIR EXH MON HIGH RAD," on panel M-12A is in alarm.
- A 5 gpd SG tube leak has been identified on #1 SG.
- Leak rate is being tracked on AOP-R.1, "Steam Generator Tube Leak," Attachment 1, and has been holding steady for the last hour.
- The reading on RM-90-99, Condenser Vacuum Exhaust rapidly rises and goes off-scale High.
- There are no other alarms.
- There is no change in PZR level or Charging flow.

Which ONE of the following describes the cause of the reading on RM-90-99 and the action to be taken?

A. RM-90-99 has failed, notify Chemistry Shift Supervisor, and place RM-90-119 in service as soon as practical.

B. RM-90-99 is indicating a sudden increase in SG tube leakage, requiring an immediate power reduction to be less than 50% power within the next hour.

C. RM-90-99 has failed because the CVP discharge filter is plugged, open FCV-2-255, Condenser Vacuum Pump Exhaust Filter Bypass Flow Control Isolation.

D. RM-90-99 is indicating a sudden increase in SG tube leakage, notify Chemistry Shift Supervisor to have the alarm setpoint rescaled to 30 gpd value.

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Correct, With the lack of any other alarm or plant intication RM-90-99 has failed, as per AOP-R-01 step 3 if rad monitor reading not confirmed then place standby condenser vacuum exhaust in service.*

B. *Incorrect, Plausible if candidate thinks that the reading is valid, however per AOP-R.01, any alarms or readings should be validated by some other form of monitoring, (sampling, blowdown monitor, other plant parameters) and not used solely to direct activity. If a sudden increase is noted, then direction is to reduce power to less than 50% within 1 hr.*

C. *Incorrect, Plausible since this can cause an alarm on RM-90-99, however the CVP discharge filter is not normally lineup and if it was there would be at least two other alarms that would be received. No other alarms was given in stem.*

D. *Incorrect, Plausible since indications are that the leak has stabilized and the direction in AOP-R.01 is to have the alarm rescaled to alert the operator of any other sudden changes.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 23

Tier: 1 **Group** 2

K/A: 037 Steam Generator Tube Leak
AA1.04 Ability to operate and/or monitor the following as they apply to the Steam Generator Tube Leak:
Condensate air ejector exhaust radiation monitor and failure indicator.

Importance Rating: 3.6/3.9

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: Question asks candidate during a SG tube leak condition to identify a failed Condenser Vacuum exhaust monitor and the actions based on that failure.

Technical Reference: 0-AR-M12-A, Rev 53 windows D-3 & D-4
AOP-R.01, Steam generator Tube Leak, Rev 25
Section 2.2

Proposed references to be provided: None

Learning Objective: OPT200.RM B.5

Question Source:

New	X
Modified Bank	
Bank	

Question History: developed for 02/2010 exam

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

068 AK3.12 024

Given the following:

- A fire in the Control Building Spreading Room has occurred.
- The main control room is being evacuated.
- AOP-C.04, "Shutdown From Auxiliary Control Room," is being implemented.

Which ONE of the following correctly describes the sequence of actions outside the main control room and the basis for this sequence?

A. MSIV bypass valve fuses are required to be removed prior to Reactor vessel vent valve fuses. This ensures steam release is terminated, which is a higher priority than stopping head vent flow.

B. SG atmospheric relief valves must be locally throttled open prior to removing MSIV bypass valve fuses. This ensures that a steam relief path exists to prevent SG safety valves from lifting.

C. CCP suction valves must be aligned to RWST prior to restarting a CCP. This ensures that a suction source is available for RCP seal injection.

D. Normal charging flow must be established prior to establishing normal letdown. This ensures cooling is provided to the CVCS non-regenerative heat exchanger.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible since both the MSIV bypass valves and Rx Vessel head vent valve control power fuses are pulled, however the actual order is Rx Vessel head vent first then the MSIV bypass valves. These actions are required to be done within 30 minutes from start of event.

B. Incorrect, Plausible since the MSIV bypass valve control power fuses are removed, however this is an action which is done within 30 minutes from the start of the event. The SG atmospheric dumps do not have to be locally controlled for this action to take place.

C. Correct, Let down is isolated during CR evacuation and there is no assurance that normal makeup to VCT will occur, therefore CCP suction is aligned to the RWST. The requirement in AOP-C.04 is to have the suction valves to the RWST opened with in 10 minutes from start of the event to ensure a supply of seal injection to the RCPs is provided within 13 minutes.

D. Incorrect, Plausibe since this is the reqired sequence of events when establishing normal charging and letdown, however this step does not apply to control room abandonement since normal letdown is not established during this condition.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 24

Tier: 1 **Group** 2

K/A: 068 Control Room Evacuation
AK3.12 Knowledge of the reasons for the following responses as they apply to the Control Room Evacuation:
Required sequence of actions for emergency evacuation of control room.

Importance Rating: 4.1/4.5

10 CFR Part 55: 41.10

10CFR55.43.b: Not applicable

K/A Match: This question asks the candidate to recall the sequence of steps which must be performed within 13 minutes in order to supply RCP seal injection to prevent possible RCP seal failure and introduction of an RCS leak.

Technical Reference: AOP-C.04, Shutdown From Auxiliary Control Room, Rev 18

Proposed references to be provided: None

Learning Objective: OPL271AOP-C.04 Obj 10

Question Source:

New	X
Modified Bank	
Bank	

Question History:

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

WE03 EA2.1 025

Given the following:

- Unit 1 was tripped from 100% power due to a Small Break LOCA.
- The crew is performing ES-1.2, "Post LOCA Cooldown and Depressurization."
- The crew is evaluating the step to determine if RHR can 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 - 330 psig and slowly trending down.
  - RCS temperature - 340°F and slowly trending down.

Which ONE of the following identifies...

(1) the maximum allowed cooldown rate allowed during the performance of ES-1.2,

and

(2) whether RHR can be placed in service with the current conditions in accordance with ES-1.2?

A. (1) 50°F/hr
(2) Conditions do not allow RHR shutdown cooling to be established.

B. (1) 50°F/hr
(2) with TSC concurrence, RHR can be established in accordance with EA-74-1, "Placing RHR is Shutdown Cooling in Service."

C. (1) 100°F/hr
(2) Conditions do not allow RHR shutdown cooling to be established.

D✔ (1) 100°F/hr
(2) with TSC concurrence, RHR can be established in accordance with EA-74-1, "Placing RHR is Shutdown Cooling in Service."

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Incorrect, Plausible if the candidate does not know that the minimum conditions have been established to align RHR with concurrence of TSC, and the maximum cooldown rate allowed is 100°F/hr based on guidance from ES-1.2.*

B. *Incorrect, Plausible since minimum conditions have been established to align RHR with concurrence of TSC, however the maximum cooldown rate allowed is 100°F/hr based on guidance from ES-1.2 .*

C. *Incorrect, Plausible since Maximum cooldown rate is 100°F/hr based on guidance from ES-1.2 , however minimum conditions have been established to align RHR with concurrence of TSC.*

D. *Correct, Maximum cooldown rate is 100°F/hr based on guidance from ES-1.2 and the necessary conditions to establish RHR have been established.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 25

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: 41.10

10CFR55.43.b: Not applicable

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.

Technical Reference: ES-1.2, Post LOCA Cooldown and Depressurization, Rev 17

Proposed references to be provided: None

Learning Objective: OPL271ES-1.2 Obj 5

Question Source:

New	X
Modified Bank	
Bank	

Question History:

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

WE08 EK1.01 026

Given the following:

- While operating at 100% power, Unit 1 has experienced a large steam break.
- The crew is responding to a Red Path on PTS using FR-P.1, "Pressurized Thermal Shock."
- Current plant conditions are:
  - RCS temperature is 250°F and slowly rising
  - PZR pressure is 2000 psi
  - PZR level is 90% and rising

Which ONE of the following would contribute the most to potential for damage to the Reactor vessel during these conditions?
(Consider each seperately)

A. Both RHR pumps are running.

B. Both SI pumps are running.

C. Total AFW flow to the intact SGs is 300 gpm.

D. One (1) CCP is running with CCPIT flowpath.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible if candidate does not realize the pressure of the RCS is much greater than the shutoff head of the RHR pumps.

B. Incorrect, Plausible since SI pumps are to be turned off in FR-P.1, at the current RCS pressure they are not injecting. RCS pressure would not go down, but they would not be making pressure go up.

C. Incorrect, Plausible if candidate thinks this is contributing to the cooldown, however this is below the minimum required AFW flow to maintain SG levels following a trip from 100% power (440 gpm is minimum). thus this would actually be causing RCS temperature to rise.

D. Correct, 1 CCP with its flowpath through the CCPIT would be injecting >150 gpm into the RCS continuing to hold or raise pressure.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 26

Tier: 1 **Group** 2

K/A: WE 08 Pressurized Thermal Shock
EK1.01 Knowledge of the operational implications of the following concepts as the apply to the (Pressurized Thermal Shock):
Components, capacity, and function of emergency systems.

Importance Rating: 3.5/3.8

10 CFR Part 55: 41.8

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having the candidate determine which components would have the greatest impact on, or cause the greatest increase on, RCS pressure if put into service.

Technical Reference: FR-P.1, Pressuirzed Thermal Shock, Rev 13
1-FR-0, Status Trees, Rev 1

Proposed references to be provided: None

Learning Objective: OPL271FR-P.1 Obj 4 & 6

Question Source:

New	X
Modified Bank	
Bank	

Question History:

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

WE10 EA1.3 027

Given the following:

- A reactor trip from 100% power and loss of Offsite power occurred 1 hour ago.
- ES-0.3, "Natural Circulation Cooldown with Steam Void in Vessel (with RVLIS)," is in progress.
- PZR pressure is 785 psig and being lowered by auxiliary spray.
- Core exit TCs indicate 520°F.
- RVLIS upper plenum range reads 81%.

With NO additional operator action, which ONE of the following identifies the expected response of RVLIS and PZR level?

	RVLIS	**PZR**
A.	Decrease	Increase
B.	Increase	Decrease
C.	Decrease	Decrease
D.	Increase	Increase

DISTRACTOR ANALYSIS:

A. Correct, With aux spray in service as the PZR pressure is decreased the bubble in Rx vessel head will grow. The expected plant response for this condition is that as the bubble in Rx head increases, RVLIS will decrease and PZR level will increase.

B. Incorrect, Plausible if the candidate determines that the bubble in Rx vessel head will decrease with the use of aux spray, thus RVLIS level would increase and PZR level would decrease.

C. Incorrect, Plausible since Rx vessel head bubble would grow causing RVLIS to decrease but PZR level would increase not decrease.

D. Incorrect, Plausible if the candidate determines that the bubble in Rx vessel head will decrease with the use of aux spray, and PZR level would increase wtih the use of aux. spray.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 27

Tier: 1 **Group** 2

K/A: WE10 Natural Circulation with Steam Void in Vessel with/without RVLIS
EA 1.3 Ability to operate and/or monitor the following as they apply to the (Natural Circulation with Steam Void in Vessel with/without RVLIS):
Desired operating results during abnormal and emergency situations.

Importance Rating: 3.4/3.7

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having the candidate determine the expected plant response to lowering RCS pressure during Natural Circulation conditions.

Technical Reference: ES-0.3, Natural Circulation Cooldown with Steam Void in Vessel (with RVLIS), Rev 13

Proposed references to be provided: None

Learning Objective: OPL271ES03 obj. B.2.a
OPL271ES03 obj. B.2.b
OPL271ES03 obj. B.4.a

Question Source:

New	
Modified Bank	
Bank	X

Question History: question from bank question ES-0.3-B.2 001

Comments:

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

003 K5.01 028

If one Reactor Coolant Pump became degraded and RCS total flow fell below the Tech Spec minimum required flow rate, which ONE of the following conditions would occur?

A. Quadrant Power Tilt Ratio limits would be exceeded.

B. Heat Flux Hot Channel Factor limits would be exceeded.

C. Departure from Nucleate Boiling (DNB) limits would be exceeded.

D. Nuclear Enthalpy Rise Hot Channel Factor limits would be exceeded.

DISTRACTOR ANALYSIS:

A. Incorrect, reduced flow rate would not affect the QPTR. TS Basis 3.4.1 states DNB assumes QPTR is in spec, but DNB above the limit does not affect QPTR.

B. Incorrect, Heat Flux Hot Channel Factor is not a concern for a low RCS flow rate. Plausible, since with reduced flow fuel temperatures increase.

C. Correct, IAW the applicable safety analysis, lower RCS flow will cause the core to approach DNB limits. The RCS flow rate normally remains constant during an operational fuel cycle with all pumps running. The minimum RCS flow limit corresponds to that assumed for DNB analyses. A lower RCS flow will cause the core to approach DNB limits.
Operation for significant periods of time outside these DNB limits increases the likelihood of a fuel cladding failure in a DNB limited event. This is the acceptance limit for the RCS DNB parameters. Changes to the unit that could impact these parameters must be assessed for their impact on the DNBR criteria.

D. Incorrect, Nuclear Enthalpy Rise Heat Channel Factor is not a concern for a low RCS flow. Plausible, since the fuel temperature increases with less coolant flow and enthalpy is proportional to temperature.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 28

Tier: 2 **Group** 1

K/A: 003 K5.01
Reactor Coolant Pump System (RCPS)
Knowledge of the operational implications of the following concepts as they apply to the RCPS:
The relationship between the RCPS flow rate and the nuclear reactor core operating parameters (quadrant power tilt, imbalance, DNB rate, local power density, difference in loop T-hot pressure)

Importance Rating: 3.3 / 3.9

10 CFR Part 55: 41.5 / 45.7

10CFR55.42.b: Not applicable

K/A Match: This meets the KA since the RCS flow rate is reduced which affects the DNB parameters. The operational implications are the limits being exceeded. Since this is a knowledge KA, it is written to a memory level and knowledge of Tech Specs vs RCS flow would provide the RO with the knowledge required to answer the question.

Technical Reference: Technical Specification, Power Distribution Limits, 3/4.2.5 DNB parameters, Amendment 138

Proposed references to be provided: None

Learning Objective: OPT200.RCP B.6.a
Describe the administrative controls and limits for the RCP system as explained in this lesson:
State Tech Specs/TRM LCOs that govern the RCPs

Question Source:

New	
Modified Bank	
Bank	X

Question History: Question used on Farley 2009 exam

Comments:

Source:	BANK	Source If Bank:	FARLEY 2009
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

004 A3.05 029

Given the following:

- Unit 2 is at 100% rated thermal power.
- Rod control is in Manual.
- The OATC notices a slow decrease in RCS pressure and Tavg has decreased 1.5°F over the last several minutes.

Which ONE of the following could have contributed to these indications?

A. The inservice mixed bed demineralizer is boron saturated.

B✔ 2-FCV-62-138, Emergency Boration Flow Control valve is leaking by.

C. Primary water makeup flow was 70 gpm during the last Auto makeup to the VCT.

D. A CVCS mixed bed demineralizer with new resin was put in service before being borated.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible if candidate does not realize that a mixed bed ion exchanger that was saturated would be at the current RCS boron concentration and would not add more boron to the system.

B. Correct, If the emergency boration valve was leaking it would add boron directly into the suction of the charging pump and would cause RCS temp to drop due to Rods in manual. As RCS temperature goes down so would Pressure due to the outsurge of water from PZR.

C. Incorrect, Plausible if the candidate does not remember that primary water makeup is 70 gpm during every auto makeup. The boric acid flow is what is varied to get proper blended flow.

D. Incorrect, Plausible if candidate does not realize that a putting new mixed bed ion exchanger in service would reduce RCS boron not cause it to increase.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 29

Tier: 2 **Group** 1

K/A: 004 Chemical and Volume Control System (CVCS)
A3.05 Ability to monitor automatic operation of the CVCS, including:
RCS pressure and temperature

Importance Rating: 3.9/3.9

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: Question determines if candidate knows how CVCS operation can affect normal RCS temperature and pressure by determining that an inadvertant boration has taken place.

Technical Reference: AOP-C.02, Uncontrolled RCS Boron Concentration Changes, Rev 6

Proposed references to be provided: None

Learning Objective: OPT200.CVCS obj 5.d

Question Source:

New	
Modified Bank	
Bank	X

Question History:

Comments:

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

004 A4.13 030

Given the following:

- Unit 1 is operating at 100% power.
- "LS-62-129A/B VOLUME CONTROL TANK LEVEL HI-LOW," alarms on M-6.
- LI-62-129, VCT Level, indicates 35% decreasing.
- LI-62-130, VCT Level, indicates 100% on ICS.

Which ONE of the following describes the effect on the plant?

A. Suction to the operating CCP will align to the RWST when VCT level decreases to 7%.

B. Pressurizer level will decrease to 17% resulting in letdown system isolation and recovery of VCT level.

C. VCT level will continue to decrease until the operator manually aligns LCV-62-118, Letdown Divert to HUT, to the VCT position.

D. Auto makeup will initiate to the VCT when LT-62-129, VCT Level Transmitter, decreases to 20% and will raise VCT level back to 41%.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible if candidate does not know that failure of LT-62-129 or 130 will prevent swapover to RWST.

B. Incorrect, Plausible if candidate thinks that failure will cause charging flow control valve to go to minimum. If that occurred then PZR level would decrease to 17%.

C. Correct, VCT level will continue to drop, since a failure of LT-62-130 will prevent Auto makeup and auto swapover to RWST. Operators must take manual control of Divert valve and select to VCT position.

D. Incorrect, Plausible if candidate thinks that Auto makeup will occur and maintain VCT level above swap-over value. Auto makeup is not available for this condition.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 30

Tier: 2 **Group** 1

K/A: 004 Chemical and Volume Control System
A4.13 Ability to manually operate and/or monitor in the control room:
VCT level control and pressure control.

Importance Rating: 3.3/2.9

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having the candidate determine the effect on VCT makeup with a level detector failed and the required operator action to mitigate the failure.

Technical Reference: 1-AR-M6-C A-3, Rev 34

Proposed references to be provided: None

Learning Objective: OPL200.CVCS Obj B.5. c & d

Question Source:

New	
Modified Bank	
Bank	X

Question History:

Comments:

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

005 K5 05 031

Given the following:

- Unit 1 is in Mode 5 with the RCS in solid water operation.
- RHR pump 1A-A in service.
- 1-PCV-62-81, Letdown Pressure Pressure Control Valve, in automatic.
- RHR pump 1A-A trips.

Which ONE of the following correctly completes the statement below?

The RCS pressure will initially ___(1)___ due to 1-PCV-62-81 throttling ___(2)___ when RHR pump trips.

	(1)	(2)
A.	drop	open
B.	drop	closed
C.	rise	open
D✔	rise	closed

DISTRACTOR ANALYSIS:

A. *Incorrect, The RCS pressure will not drop (it will rise) if the RHR pump trips and the pressure control valve will not be throttling open. Plausible because typically when a pump supplying a system trips the system pressure will drop and if the location of the pressure control valve in the system or which side of the valve the pressure is the control point is not understood, then it can be concluded that the valve would throttle open to reduce RCS pressure.*

B. *Incorrect, The RCS pressure will not drop (it will rise) if the RHR pump trips and the pressure control valve will not be throttling open. Plausible because typically when a pump supplying a system trips the system pressure will drop and the direction of throttling of the pressure control valve is correct.*

C. *Incorrect, The RCS pressure will rise if the RHR pump trips but not due to the pressure control valve throttling opening. Plausible because the RCS pressure rising is correct and if the location of the pressure control valve in the system or which side of the valve the pressure is the control point is not understood, then it can be concluded that the valve would throttle open to reduce RCS pressure.*

D. *Correct, The RCS pressure will rise if the RHR pump trips because the letdown is being supplied via the RHR letdown line. When the pump trips a lower letdown pressure is sensed, causing the pressure control valve to throttle more closed. Being water solid with less letdown flow but charging flow not changed results in a rapid pressure increase.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 31

Tier: 2 **Group** 1

K/A: 005 K5 05
Residual Heat Removal System (RHRS)
Knowledge of the operational implications of the following concepts as they apply the RHRS:
Plant response during "solid plant": pressure change due to the relative incompressibility of water

Importance Rating: 2.7* / 3.1*

10 CFR Part 55: 41.5 / 45.7

10CFR55.43.b: Not applicable

K/A Match: Applicant is required to understand the operational implication of an RHR pump tripping while operating in solid water conditions.

Technical Reference: 0-SO-74-1, Residual Heat Removal System, Rev: 66
Precaution M.4

Proposed references to be provided: None

Learning Objective: OPT200.RHR
5. Describe the operation of the RHR:
a. Precautions and Limitations

Question Source:

New	
Modified Bank	
Bank	X

Question History: SQN bank question RHR-B-14.3 001with changes

Comments: Question changed to a fill in the blank question which resulted modification to the distractors but the only condition changes in the stem was in formatting. Thus did not label as a bank modified question.

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

006 A1.14 032

Given the following:

- Unit 2 was operating at 100% power when a LOCA occurred.
- Hottest core exit thermocouples are stable at 400°F.
- RCS pressure is 225 psig.
- RVLIS Upper Plenum is 64%.
- RVLIS Lower Range is 70%.
- Containment pressure is 6 psig.
- All SG pressures are 500 psig.

Which ONE of the following conclusions can be determined from these indications?

A. Decay heat is being removed by Steam Generators.

B. RVLIS Upper range indication has failed since it is not consistent with RVLIS Lower Range indication.

C. Core uncovery is occurring. ECCS flow must be raised to ensure adequate heat removal and to reflood the core.

D. Vessel level is adequate. ECCS flow should continue to ensure core cooling is maintained.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible if candidate determines that SGs are providing a heat sink for the reactor, however at 500 psig (sat temp ~470°F) they are above the saturation pressure for the hottest TC (400°F) which would make them a heat source rather than a heat sink.

B. Incorrect, Plausible if candidate does not recognize that Upper Range indication does not read below ~64% level.

C. Incorrect, Plausible if candidate does not recognize that with RVLIS lower range >42%, and CETs < 700°F the core is being adequately cooled.

D. Correct, With CETs <700°F and RVLIS lower range > 42% (70% given) core cooling may be degraded but is adequate. Continued ECCS flow will maintain core cooling.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 32

Tier: 2 **Group** 1

K/A: 006 Emergency Core Cooling System (ECCS)
A1.14 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ECCS controls including:
Reactor Vessel Level

Importance Rating: 3.6/3.9

10 CFR Part 55: 41.5

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having the candidate predict the changes to RVLIS during and accident, assess those changes and determine if adequate core cooling exists.

Technical Reference: 1-FR-0, Core Cooling, Rev 1
OPT200.RVLIS Rev 3

Proposed references to be provided: None

Learning Objective: OPT200.ECCS, Obj B.15.n
OPT271FR-0 Obj 5

Question Source:

New	
Modified Bank	
Bank	X

Question History: written for 06 license class

Comments:

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

007 K1.03 033

Given the following plant conditions:

- A reactor trip has occurred.
- RCS pressure is 1810 psig and lowering.
- Containment Pressure is 1.55 psig and rising.

Which ONE of the following identifies the status of the RCP's #1 seal leakoff flowpath?

A. routed to the PRT

B. routed to the VCT

C. routed to the RCDT

D. Isolated

DISTRACTOR ANALYSIS:

A. Correct, with containment pressure at 1.55 psig, the seal return line is isolated and the seal return is routed to the PRT via a relief valve.

B. Incorrect, Plausible since the VCT is the normal flowpath via the Seal return line.

C. Incorrect, Plausible the #2 seal leakoff normal flow path is to the RCDT.

D. Incorrect, Plausible the seal leakoff is isolated, but seal flow still goes to PRT via a relief line.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 33

Tier: 2 **Group** 1

K/A: 007 Pressurizer Relief Tank/Quench Tank System (PRTS)
K1.03 Knowledge of the physical connections and/or cause effect relationships between the PRTS and the following systems:
RCS

Importance Rating: 3.0 / 3.2

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

10CFR55.43.b: Not applicable

K/A Match: requires knowledge of a flow path (physical connection) between the PRT and and the RCS.

Technical Reference: 1-47W809-1, Rev 74
1-47W813-1, Rev 53
1-47W611-62-1, Rev 4
OPT200.RCP Rev 5

Proposed references to be provided: None

Learning Objective: OPT200.RCP B.3
Explain the purpose/function of each major component in the flow path of the Reactor Coolant Pump System as illustrated on the simplified system drawing.

Question Source:

New	
Modified Bank	
Bank	X

Question History: Question used on SQN 2007 exam which is not one of the last 2 exams.

Comments: Correct answer relocated.

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

008 A1.04 034

Given the following:

- Unit 1 at 100% power.
- Component Cooling Water system is in the normal alignment.
- Unit 2 in Mode 5.

Which ONE of the following describes the affect of closing 2-FCV-70-75, '2B ESF Header Return Isolation,' without closing 2-FCV-70-3, '2B ESF Header Supply Isol?'

A. Less than minimum required flow on the C-S CCS pump.

B. Inadequate suction supply path to 2B-B CCS pump.

C. Abnormal level changes in both CCS Surge Tanks.

D. Loss of flow on Unit 2 Reactor Building supply Header.

DISTRACTOR ANALYSIS:

A. Incorrect, the C-S CCS pump would still be aligned to the Train B ESF header on Unit 1. Plausible because the Unit 2 Train B ESF flow path is isolated.

B. Incorrect, 2-B CCS pump would have a suction of the Unit 2 Train a return header. Plausible because it is Train B power equipment and can be aligned to the Train B but is normally aligned to Unit 2A Train CCS.

C. Correct, as identified in 0-SO-70-1, Precaution M "1-FCV-70-3 & -75 must both be either Open or Closed and 2-FCV-70-3 & -75 must both be either Open or Closed to prevent abnormal CCS Surge Tank level changes. "B" Train CCS can remain in service to a unit if both valves (-3 & -75) associated with the opposite unit are closed.

D. Incorrect, the Unit 2 Reactor building Header is not supplied from the Unit 2 Train B CCS. It is supplied by the Unit 2 Train A CCS system. Plausible because it header could be lost by isolating a valve on the Unit 2 Train A.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 34

Tier: 2 **Group** 1

K/A: 008 A1.04
Component Cooling Water System (CCWS)
Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CCWS controls including:
Surge Tank Level

Importance Rating: 3.1 / 3.2

10 CFR Part 55: 41.5 / 45.5

10CFR55.43.b: Not applicable

K/A Match: When presented with an alignment change on the CCS system, the applicant must an evaluate the effect and understand how the surge tank levels are affected by the alignment change.

Technical Reference: 1,2-47W859-1 Rev
0-SO-70-1, Component Cooling Water System "B" Train, Rev 37

Proposed references to be provided: None

Learning Objective: OPT200.CCS
5. Describe the operation of the Component Cooling Water System:
   a. Precautions and limitations

Question Source:

New	X
Modified Bank	
Bank	

Question History: New question

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

008 A2.03 035

Given the following:

- Unit 1 is being cooled down and has been placed in shutdown cooling with 'A' Train RHR in service.
- Annunciator "RHR HX A OUTLET TEMPERATURE HIGH" alarms on 0-XA-55-27B-A, "Component Cooling/Misc."
- Temperature on 1-TI-70-157, "RHR Heat Exchanger 1A Outlet Temperature" reads 120°F and steady.

In accordance with the Annunciator Response Procedure, which ONE of the following completes the statement below?

It is _____(1)_____ to operate with the CCS temperature leaving the heat exchanger above the alarm setpoint at 120°F and _____(2)_____ could be used to lower the CCS temperature.

	(1)	(2)
A.	acceptable	decreasing RHR heat exchanger bypass flow or increasing CCS flow through the heat exchanger
B.	acceptable	increasing RHR heat exchanger bypass flow or placing the '1B' CCS pump in service
C.	**NOT** acceptable	decreasing RHR heat exchanger bypass flow or increasing CCS flow through the heat exchanger
D.	**NOT** acceptable	increasing RHR heat exchanger bypass flow or placing the '1B' CCS pump in service

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Incorrect, Plausible since it is acceptable to allow temp to exceed alarm setpoint and starting 1B CCS pump would increase CCS flow, however throttling closed on the heat exchanger bypass will cause temperature to increase not decrease.*

B. *Correct, as identified in 0-AR-M27-B-A, Component Cooling, Window E-6, operating above the alarm setpoint is acceptable as long as the temperature is maintained less than 145°F and 2 ways the temperature can be reduced by is by increasing RHR heat exchanger bypass flow or placing the '1B' CCS pump in service.*

C. *Incorrect, Plausible if candidate thinks that it is not acceptable to operate above the alarm setpoint, however second part of answer is correct 2 ways the temperature can be reduced by is by increasing RHR heat exchanger bypass flow or placing the '1B' CCS pump in service.*

D. *Incorrect, Plausible if candidate thinks that it is not acceptable to operate above the alarm setpoint, starting 1B CCS pump would increase CCS flow, however throttling open on the heat exchanger bypass will cause temperature to increase not decrease.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 35

Tier: 2 **Group** 1

K/A: 008 Component Cooling Water System (CCWS)
Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:
High/low CCW temperature

Importance Rating: 3.0 / 3.2

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

10CFR55.43.b: Not applicable

K/A Match: This question matches K/A because it has the candidate determine the impact of exceeding the CCS alarm setpoint vs the maximum system temperature and then use information within the alarm procedure to take actions to reduce the CCS temperature while plant in operating in shutdown mode.

Technical Reference: 0-AR-M27-B-A, Component Cooling, Window E-6, Rev 11

Proposed references to be provided: None

Learning Objective: OPT200.CCS Obj B.5.c

Question Source:

New	X
Modified Bank	
Bank	

Question History: New question

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

010 K4.02 036

Given the following:

- Unit 1 is in Mode 3, Tave 547°F, PZR pressure 2235 psig.
- A malfunction occurred which resulted in PZR pressure dropping to 2050 psig and PZR level lowering to 15%.
- Currently PZR pressure is 2100 psig and PZR level is 30%.

Which ONE of the following describes the current status of the PZR heaters, assuming no operator action?

A. All Backup and Control group heaters will be OFF.

B. All Backup and Control group heaters will be ON.

C. All Backup heaters will be ON and Control group D heaters will be OFF.

D. Backup heaters A & B will be OFF and Control group D heaters will be ON.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible since all heaters will be turned off when PZR level decreases below 17%, however when level is returned above 17%, the B/U heaters will turn on and only the Control heater group will remain OFF.

B. Incorrect, Plausible since the B/U heaters will turn back on after PZR level is raised above 17%, however the Control group of heaters will remain OFF.

C. Correct, Backup heater groups A, B, C should all be energized with RCS pressure at 2100 psig, and they will all automatically be re-energized when PZR level is raised above 17% (low level heater cutout), However the Control bank will not automatically restart when level >17%.

D. Incorrect, Plausible since the logic for Control Htrs and Backup are reversed. B/U heaters will come back on, Control hearters will have to be reset to get them restarted after level is raised to >17%

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 36

Tier: 2 **Group** 1

K/A: 010 Pressurizer Pressure Control System (PZR PCS)
K4.02 Knowledge of PZR PCS design feature(s) and/or interlock(s) which provide for the following:
Prevention of uncovering PZR heaters.

Importance Rating: 3.0/3.4

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by testing if candidates know which and how the PZR heaters are affected by the low level interlock and the pressure setpoint at which the heaters will be on the restore normal pressure.

Technical Reference: 47W611-68-2, Rev 2
47W611-68-3, Rev 1
OPT200.PZRPCS Rev 5

Proposed references to be provided: None

Learning Objective: OPT200.PZRPCS, Obj B.5.c

Question Source:

New	
Modified Bank	X
Bank	

Question History:

Comments:

Source:	BANK MOD	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

012 A1.01 037

Given the following:

- Unit 1 is operating at 100% rated thermal power.
- Rod control has been placed in MANUAL with Tavg at 578.0°F.

Which ONE of the following describes the effect on Limiting Safety System Setpoints for Overtemperature Delta-T and Overpower Delta-T if Tavg decreases by 1°F (assuming the reactor remains at 100% power and AFD remains constant)?

A. Both OT Delta-T and OP Delta-T setpoints will decrease.

B. OT Delta-T setpoint will increase and OP Delta-T setpoint will decrease.

C. OT Delta-T setpoint will increase and OP Delta-T setpoint will remain the same.

D. OT Delta-T setpoint will remain the same and OP Delta-T setpoint will increase.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible if candidate thinks that the setpoints for OT Delta-T and OP Delta-T will be reduced as RCS Tavg goes down. This is the opposite effect that a reduction in RCS temperature would have on the setpoints.

B. Incorrect, Plausible since first part of response is correct, a reduction in Tavg will cause the OT Delta-T setpoint to increase (moving the setpoint further away from causing a trip), however the OP Delta-T will not be affected by a decrease of RCS temperature.

C. Correct, The OT Delta-T setpoint monitors five different parameters to establish a floating setpoint which will trip the reactor if these parameters move closer to DNB. A reduction in Tavg will move the rcs away from DNB thus causing the setpoint to increase. OP Delta-T monitors Tavg however only temperatures above a preset constant (578.2°F) will cause the setpoint to be reduced, thus a lowering of temperature will have not effect on OP Delta-T setpoint.

D. Incorrect, Plausible if candidate gets the circuitry reversed between OT Delta-T and OP Delta-T.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 37

Tier: 2 **Group** 1

K/A: 012 Reactor Protection System (RPS)
A1.01 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RPS controls including:
Trip setpoint adjustment

Importance Rating: 2.9*/3.4*

10 CFR Part 55: 41.5

10CFR55.43.b: Not applicable

K/A Match: this question asks the candidate to predict the changes in RPS trip setpoints for OT Delta-T and OP Delta-T if RCS Tavg changes while at 100% power.

Technical Reference: Tech Spec table 2.2.1, Reactor Trip System Instrumentation Trip Setpoints, Ammendment 310
Tech Spec Table 3.3.1-1, Reactor Trip System Instrumentation, Ammendment 301
OPT200.RPS, Rev 3

Proposed references to be provided: None

Learning Objective: OPL271C048, b.4.a

Question Source:

New	
Modified Bank	
Bank	X

Question History: modified from bank question RPS-B.4.A 002

Comments:

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

012 K2.01 038

Given the following:

- A reactor startup is in progress on Unit 1.
- Reactor power is at $5X10^{-8}$% on the Intermediate Range.
- 120V AC Vital Instrument Power Board 1-II deenergizes.

Which ONE of the following describes the Reactor Protection System response with Source Range Monitor N-32 Trip Bypass Switch (SR BYPASS) in the positions indicated at the time of the board loss?

	SR BYPASS: NORMAL	**SR BYPASS: BYPASS**
A.	no trip	no trip
B.	reactor trip	no trip
C.	no trip	reactor trip
D✓	reactor trip	reactor trip

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible if candidate determines that the loss of control power will not cause a Rx trip or that the SR Bypss switch will bypass the trip signal.

B. Incorrect, Plausible if the candidate determines that a loss of control power will cause a Rx trip and that the SR Bypass switch will bypass the trip.

C. Incorrect, Plausible if candidate determines that the loss of control power will not cause a Rx trip or that the SR Bypss switch will enable the trip signal.

D. Correct, 120V ac Vital PB 1-II supplies power to both instrument and control power. Loss of control power causes a reactor trip regardless of position of level trip bypass switch.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 38

Tier: 2 **Group** 1

K/A: 012 Reactor Protection System
K2.01 Knowledge of the bus power supplies to the following:
RPS channels, components, and interconnections.

Importance Rating: 3.3/3.7

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having testing the knowledge of power supply to portions of the RPS and if that power supply is lost how it will effect the trip functions within RPS.

Technical Reference: AOP-I.01, Nuclear Instrumentation Malfunction, sect 2.1, Rev 9

Proposed references to be provided: None

Learning Objective: OPL271AOP-I.01 Obj 6

Question Source:

New	
Modified Bank	
Bank	X

Question History: from bank question NIS-B.9.B 001

Comments:

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

013 K2.01 039

Given the following plant conditions:

- The operating crew is responding to a reactor trip due to a loss of 120V AC Vital Instrument Power Board I-I.
- PZR pressure transmitter 1-PT-68-334 (Channel II) fails LOW.

Which ONE of the following describes the plant response?

A. Both trains of SSPS SI master relays would actuate AND both trains of ECCS equipment auto start.

B. Both trains of SSPS SI master relays would actuate BUT only "B" train ECCS equipment auto starts.

C. Only the "B" train SSPS SI master relays would actuate BUT both trains of ECCS equipment auto start.

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

DISTRACTOR ANALYSIS:

A. Incorrect, 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.

B. 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.

C. Incorrect, Master Relays on both trains will have power. 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 source of the power supply or thinks that the circuit that auctioneers power in the logic cabinet provides power to the slave relays instead of the master relays.

D. Incorrect, Master Relays on both trains will have power. 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.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 39

Tier: 2 **Group** 1

K/A: 013 Engineered Safety Features Actuation System
K2.01, Knowledge of 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: Thsi question matches the K/A by testing the candidates knowledge of power supplies to portions of the ESFAS and how a loss of power will effect the systems ability to fully, or partially, actuate trains of ECCS components.

Technical Reference: 47W611-63-1, R4
AOP-P.03, Loss of Unit 1 Vital Instrument Power Board, R21
0-SO-99-3, R11

Proposed references to be provided: None

Learning Objective: OPT200.RPS B.4 & 5

Question Source: SQN Bank RPS-B.9.A 002

New	
Modified Bank	
Bank	X

Question History:

Comments:

Source:	BANK	Source If Bank:	SQN BANK
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

013 K6.01 040

The following conditions exist on Unit 1:

- Reactor power is 100%.
- The OATC notices that RWST level instrument 1-LI-63-50 failed off-scale High.
- All other RWST level indicators (1-LI-63-51, -52, -53) are at 99%.

Which ONE of the following describes the initial impact of this failure and the compensatory actions required?

	Impact	**Action Required**
A.	Train A swapover is disabled, Train B swapover is operable.	Associated functions must be tripped
B.	Train B swapover is disabled, Train A swapover is operable.	Associated functions must be bypassed
C.	Both trains of swapover are operable.	Associated functions must be tripped
D.	Both trains of swapover are operable.	Associated functions must be bypassed

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible if candidate determines that Train A would be disabled by failed instrument however 2/4 logic required for each swapover valve. T.S 3.3.2.1 Action 18 is to bypass to prevent premature or inadvertant swapover not trip affected channel.

B. Incorrect, Plausible if candidate determines that Train B would be affected by failed channel, however 2/4 logic required and is still available for each swapover valve. T.S 3.3.2.1 Action 18 is to bypass to prevent premature or inadvertant swapover, which is correct.

C. Incorrect, Plausible since first par of statement is correct, both trains are operable, however T.S 3.3.2.1 Action 18 is to bypass to prevent premature or inadvertant swapover not trip affected channel.

D. Correct, 2/4 logic is required for each swapover valve and this is satisfied with the remaining 3 level instruments. T.S 3.3.2.1 Action 18 is to bypass the affected instrument to prevent premature or inadvertant swapover.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 40

Tier: 2 **Group** 1

K/A: 013 Engineered Safety Features Actuation System (ESFAS)
K6.01 Knowledge of the effect of a loss or malfunction on the following will have on the ESFAS:
Sensors and detectors

Importance Rating: 2.7/3.1

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by asking the candidate to determine the effect a RWST level detector failure would have on automatic switchover from RWST to CNMT sump during an accident.

Technical Reference: 1, 2-47W611-63-2, Rev 4
T.S. Table 3.3-3 Engineered Safety Feature Actuation System Instrumentation, action item # 18, Ammendment 63

Proposed references to be provided: None

Learning Objective: OPT200.RPS, Obj.5 & 6

Question Source:

New	x
Modified Bank	
Bank	

Question History:

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

022 K1.01 041

Given the following:

- Unit 2 is operating at 100% power.
- Upper Containment Vent Cooler 2B is tagged in the Pull-to-Lock position.

Which ONE of the following conditions would require entry into a Technical Specification action for Containment Systems?

A. Upper Containment Vent Cooler 2D trips on an overcurrent condition.

B. The handswitch for Lower Containment Vent Cooler 2D-B is in the Pull A-P AUTO position.

C. The ERCW Temperature Control Valve is manually isolated for Lower Containment Vent Cooler 2D-B.

D. The ERCW supply and return header for Upper Containment Vent Coolers 2B and 2D is isolated to repair a leak.

DISTRACTOR ANALYSIS:

A. Incorrect, There are no T.S. requirements for Upper Containment Coolers. A candidate may choose this answer if they believe the loss of the vent cooler would lead to high containment tempertures and entry into T.S. 3.6.1.5 Containment Air Temperature.

B. Incorrect, Lower Containment vent cooler is operable in the Pull A-P position. A candidate would have the recognize that although the handswitch is in an off-normal position, the component is still operable since its safety function is not removed in the Pull A-P Auto position.

C. Correct, Unit 2 T.S. 3.6.2.2 requires two coolers per train. Isolating the TCV makes the cooler inoperable.

D. Incorrect, Unit 2 is configured differently that Unit 1. Isolating theser coolers on Unit 1 in the fashion described above would make the 1B-B and 1D-B lower containment coolers inoperable since they share the same ERCW supply and return headers as the upper containment coolers.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 41

Tier: 2 **Group** 1

K/A: 022 Containment Cooling System (CCS)
K1.01 Knowledge of the physical connections and/or cause-effect relationships between the CCS and the following systems:
SWS/cooling system (ERCW)

Importance Rating: 3.5/3.7

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match:

Technical Reference: Unit 2 TS 3.6.2.2, Depressurization and Cooling Systems, Amendment 61

Proposed references to be provided: None

Learning Objective: OPT200.ERCW, Obj 5.c
OPT200.ContainmentCooling, Obj 5.c

Question Source:

New	
Modified Bank	
Bank	X

Question History: source question CTMT COOL-B.5 004

Comments:

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

025 K4.02 042

Given the following plant conditions:

- Unit 1 at 100% power.
- An inadvertent Reactor Trip and Safety Injection occurred.
- Ice Condenser System glycol trapped between the inside and outside Containment penetration's return isolation valves expanded due to heating.

Which ONE of the following identifies the system response to the glycol expansion?

A. The penetration's inside glycol isolation valve disks are designed to relieve trapped glycol into the Containment side glycol supply header.

B. The penetration's outside glycol isolation valve disks are designed to relieve trapped glycol into the Auxiliary Building side glycol supply header.

C. A bypass line with a check valve is installed around the penetration's inside isolation valve to relieve trapped glycol into the Containment side glycol supply header.

D. A bypass line with a check valve is installed around the penetration's outside isolation valve to relieve trapped glycol into the Auxiliary Building side glycol supply header.

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Incorrect, The containment isolation valves are designed to completely seal off the penetration. The valve disc are not designed to relieve trapped glycol. A common plant misconception is that the valve disc have a small hole drilled into them to relieve trapped pressure and some valves are drilled in that fashion.*

B. *Incorrect, The containment isolation valves are designed to completely seal off the penetration. The valve disc are not designed to relieve trapped glycol. A common plant misconception is that some valve disc have a small hole drilled into them to relieve trapped pressure. A common plant misconception is that the valve disc have a small hole drilled into them to relieve trapped pressure and some valves are drilled in that fashion.*

C. *Correct, As shown on 47W814-2. This check valve relieves trapped glycol back into the containment which is more conservative from a containment isolation perspective.*

D. *Incorrect, The small bypass line with a check valve is correct, however it relieves back into the containment side glycol header and not to the auxiliary building side header. Plausible to prevent relieving into containment.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 42

Tier: 2 **Group** 1

K/A: 025 K4.02
Ice Condenser system
Knowledge of ice condenser system design feature(s) and/or interlock(s) which provide for the following:
System control

Importance Rating: 2.8* / 3.0*

10 CFR Part 55: 41.7

10CFR55.42.b: Not applicable

K/A Match: Applicant is required to identify the design feature of the ice condenser cooling system that an control a pressure rise in order to prevent an overpressuirzation of the system due to the expansion of trapped fluid.

Technical Reference: 0-SO-61-1, Ice Condenser Cooling, Rev 30
1,2-47W814-2, Rev 22

Proposed references to be provided: None

Learning Objective: OPT200ICE B.4.i

Question Source:

New	____
Modified Bank	____
Bank	X

Question History: SQN bank question

Comments:

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

026 K3.02 043

Given the following:

- Unit 1 was operating at 10% power when a LOCA occurred.
- The Containment Spray Pump (CSP)1A-A started but the header isolation valve 1-FCV-72-39 failed to open and would NOT open from the MCR handswitch
- Three hours later, the plant status is ...
  - ECCS pumps aligned in accordance with ES-1.3, "Transfer to RHR Containment Sump."
  - 1B-B Containment Spray Pump tripped due to motor fault.
  - 1B-B RHR aligned to provide RHR Spray in accordance with FR-Z.1, "High Containment Pressure."
  - 1-FCV-72-39 opened locally and 1A-A Containment Spray pump delivering 4250 gpm flow.
  - Containment Pressure has dropped from 10.3 psig to 2.8 psig.

Which ONE of the following identifies ...

(1) the status of Train A Containment Spray flow,

and

(2) the required status of the RHR Spray in accordance with FR-Z.1?

	Train A CSP flow	RHR Spray
A.	Spray flow is abnormally low	Remain in service
B.	Spray flow is abnormally low	Removed from service
C.	Spray flow is normal	Remain in service
D.	Spray flow is normal	Removed from service

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Incorrect, the containment spray flow is low it, should be greater than 4750 gpm but the RHR spray should not remain in service. The RHR spray should be removed from service because the containment pressure is less than 4 psig as identified in FR-Z.1. Plausible because the flow being low is correct and because the Containment pressure is above the value for stopping the Containment Spray Pump or if the value stated in the stem had been greater than 4 psig, then leaving the RHR spray in service would be correct.*

B. *Correct, the containment spray flow is low, the flow should be greater than 4750 gpm and the RHR spray should be removed from service because the containment pressure is less than 4 psig as identified in FR-Z.1.*

C. *Incorrect, the containment spray flow is not normal, it is low it, should be greater than 4750 gpm and the RHR spray should not remain in service, it be removed from service because the containment pressure is less than 4 psig as identified in FR-Z.1. Plausible because the flow is only slightly below the identified minimum flow (and the value is a similar number to the minimum) and is above the minimum value for pump protection that closes the recirculation valve. Also, because the Containment pressure is above the value for stopping the Containment Spray Pump or if the value stated in the stem had been greater than 4 psig, then leaving the RHR spray in service would be correct..*

D. *Incorrect, , the containment spray flow is not normal, it is low it, should be greater than 4750 gpm and the RHR spray should be removed from service because the containment pressure is less than 4 psig as identified in FR-Z.1. Plausible because the flow is only slightly below the identified minimum flow (and the value is a similar number to the minimum) and is above the minimum value for pump protection that closes the recirculation valve. Also, because with the Containment pressure stated in the stem, removing RHR spray from service is correct.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 43

Tier: 2 **Group** 1

K/A: 026 K3.02
Containment Spray System (CSS)
Knowledge of the effect that a loss or malfunction of the CSS will have on the following:
Recirculation spray system

Importance Rating: 4.2* / 4.3

10 CFR Part 55: 41.7 / 45.6

10CFR55.43.b: Not applicable

K/A Match: Applicant must identify an abnormal flow rate on the containment spray system (malfunction) and how the procedure directs the termination of the RHR recirculation spray flow for the identified conditions

Technical Reference: FR-Z.1, High Containment Pressure, Rev 18

Proposed references to be provided: None

Learning Objective: OPL271FR-Z.1 B.6.a&b
Given a set of initial plant conditions use FR-Z.1 to correctly:
a. Identify required actions
b. Respond to Contingencies

Question Source:

New	
Modified Bank	X
Bank	

Question History: SQN bank question FR-Z.1- B-6 001 modified

Comments: Modified stem , changed question statement as to what is being asked, all choices changed as a result and the correct answer relocated

Source:	BANK MOD	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

039 G2.1.7 044

Given the following:

- Unit 1 operating at 60% power.
- A Steam Generator safety valve begins to leak through.

Which ONE of the following identifies both....

(1) the time in core life that will result in the largest reactivity excursion

and

(2) the condition, in accordance with AOP-S.05, "Steam or Feedwater Leak," that would require a manual reactor trip

Time in Core Life	Condition requiring reactor trip
A. EOL	Steam leak in excess of 3% power.
B. EOL	Tavg/Tref mismatch can **NOT** be maintained within 3°F.
C. BOL	Steam leak in excess of 3% power.
D. BOL	Tavg/Tref mismatch can **NOT** be maintained within 3°F.

DISTRACTOR ANALYSIS:

A. *Correct, the largest reactivity change would occur at EOL due to the moderator temperature coefficent (MTC) being much larger than at BOL and the condition requiring a reactor trip is a steam leak greater than 3% power.*

B. *Incorrect, the largest reactivity change would occur at EOL due to the moderator temperature coefficent (MTC) change but the Tavg/Tref mismatch would have to unable to be maintained within 5°F to require a reactor trip. Plausible because the reactivity effect does change over core life with EOL being correct and a higher Tavg/Tref mismatch would require a reactor trip.*

C. *Incorrect, the largest reactivity change would occur at EOL (not at BOL) due to the moderator temperature coefficent (MTC) change but the Tavg/Tref mismatch would have to unable to be maintained within 5°F to require a reactor trip. Plausible because the reactivity effect does change over core life and steam leak greater than 3% requiring a reactor trip is correct.*

D. *Incorrect, the largest reactivity change would occur at EOL (not at BOL) due to the moderator temperature coefficent (MTC) change but steam leak greater than 3% power would require a reactor trip. Plausible because the reactivity effect does change over core life and a higher Tavg/Tref mismatch would require a reactor trip.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 44

Tier: 2 **Group** 1

K/A: 039 Main and Reheat Steam System (MRSS)
G2.1.7 Ability to evaluate plant performance and make operational judgements based on operating characteristics, reactor behavior, and instrument interpretation.

Importance Rating: 4.4/4.7

10 CFR Part 55: 41.5

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having the candidate determine when a malfunction (steam leak) would have the most effect on plant operation and based on overall plant transient conditions when a transition to appropriate plant procedure would be required.

Technical Reference: AOP-S.05, Steam or Feedwater Leak, Rev 7

Proposed references to be provided: None

Learning Objective: OPT200.MS obj B.5.d

Question Source:

New	
Modified Bank	X
Bank	

Question History:

Comments:

Source:	BANK MOD	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

059 K3.02 045

Given the following:

- Unit 1 is starting up from a refueling outage and is currently at 30% rated thermal power with all appropriate systems aligned for that power level.
- A loss of off-site power occurs.
- The 1B EDG fails to start.

Assuming no operator actions, which ONE of the following correctly identifies the status of the AFW system one (1) minute after the accident?

A. MDAFW pump A running feeding SGs 1 & 3,
TDAFW pump running feeding SGs 1, 2, 3 & 4.

B. MDAFW pump A running feeding SGs 1 & 3,
TDAFW pump running feeding SGs 2 & 4.

C. MDAFW pump A running feeding SGs 1 & 2,
TDAFW pump running feeding SGs 1, 2, 3 & 4.

D. MDAFW pump A running feeding SGs 1 & 2,
TDAFW pump running feeding SGs 3 & 4.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible if candidate does not recognize that MDAFW A would be powered by A EDG and would feed SGs 1 & 2.

B. Incorrect, Plausible if candidate does not know that TDAFW pump will supply all SGs unless operator actions is taken.

C. Correct, The loss of MFW would cause MDAFW pump A and TDAFW pump to start. At Sequoyah the "A" MDAFW pump only supplies SGs 1 & 2, while the TDAFW pump supplies all SGs.

D. Incorrect, Plausible is canidate does not recognize that MDAFW pump B will not have power since B EDG did not start.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 45

Tier: 2 **Group** 1

K/A: 059 K3.02 Knowledge of the effect that a loss of MFW will have on the following: AFW system

Importance Rating: 3.6 / 3.7

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: The loss of offsite power will cause a loss of MFW flow. The candidate needs to identify the effect this will have on AFW system.

Technical Reference: OPT200.AFW Rev 5

Proposed references to be provided: None

Learning Objective: OPT200.AFW Obj. B.5

Question Source:

New	X
Modified Bank	
Bank	

Question History:

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

061 G2.1.20 046

Given the following:

- Unit 1 initially at 100% RTP.
- The operators have entered E-0, "Reactor Trip or Safety Injection" due to a reactor trip.
- The following steam generator levels and containment pressures are observed:

Time:	0200	0201	0202	0203	0205
SG Level:					
#1 S/G (% NR)	8	12	22	26	35
#2 S/G (% NR)	7	12	24	27	36
#3 S/G (% NR)	5	13	25	29	33
#4 S/G (% NR)	5	16	28	31	35
Cntmt press (psig):	1.5	3.5	2.5	1.5	0.6

Which ONE of the following statements correctly describes the **EARLIEST** time that operators are allowed to reset and throttle AFW flow to less than 440 gpm?

A. 0201

B. 0202

C. 0203

D. 0205

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible since at this time SG level is >10% which is normal value, however CNMT pressure is adverse (2.8 psig) so the adverse numbers apply which is > 25%.

B. Correct, At this time SG 3 & 4 levels are greater than adverse number (25 %), only 1 SG > 25% is required by procedure, therefore this would be the earliest time allowed by procedure to throttle AFW flow.

C. Incorrect, Plausible if candidate thought that all SG levels would have to be greater than adverse value (25%) before AFW can be throttled.

D. Incorrect, Plausible if candidate thinks that SG levels need to return to value of automatic level control values (~33%) for AFW before they can reset and throttle flow manually.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 46

Tier: 2 **Group** 1

K/A: 061 Auxiliary/Emergency Feedwater (AFW) System
G2.1.20 Ability to interpret and execute procedure steps.

Importance Rating: 4.6/4.6

10 CFR Part 55: 41.10

10CFR55.43.b: Not applicable

K/A Match: This question has the candidate determine that CNMT atmosphere is adverse thus making required SG level of 25%, and that only one SG > than 25% is what that is needed for heat sink.

Technical Reference: E-0, Reactor Trip or Safety Injection, Rev 30
EA-3-8, Manual Control of AFW Flow, Rev 4

Proposed references to be provided: None

Learning Objective: OPL271E-0, Obj 6.b

Question Source:

New	
Modified Bank	
Bank	X

Question History: bank question E-0-B.3.A 006, last used 2006 Requal exam

Comments: Modified stem slightly from original

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

062 K4.02 047

Given the following plant conditions:

- Unit 1 & 2 are operating steady-state at 100%.
- 1B-B 6900V Shutdown Board voltage decreases to 6450V.
- The following alarms are received:
  - 0-XA-55-26B window C-7, "6900V SD BD 1B-B FAILURE OR BUS UNDERVOLTAGE".
  - 1-XA-55-1B, window B-6, "6900V SD BD 1B-B FAILURE OR BUS UNDERVOLTAGE/OVERVOLTAGE".

If the voltage remains unchanged, which ONE of the following identifies when the 1B-B 6.9 kV Shutdown Board Normal Feeder Breaker would open?

A. 1.25 seconds

B. 9.5 seconds

C. 30 seconds

D. 300 seconds

DISTRACTOR ANALYSIS:

A. *Incorrect, the 1.25 seconds is associated with the board undervoltage (less than 80% of rated voltage) conditions that initates a diesel generator start and load shedding of the board. This is a setpoint lower than the Degraded Voltage (less than 93.5%) relays setpoint. Plausible because the time delay is associated with a condition that will cause the normal feeder breaker to be tripped open.*

B. *Incorrect, The 9.5 seconds is not the time delay (less than 80% of rated voltage) unless there is a Safety Injection signal present. Plausible because the time delay is associated with a condition that will cause the normal feeder breaker to be tripped open due to operation of the degraded voltage relays but only with a Safety injection signal present.*

C. *Incorrect, At time =0 the 30 second timer produces an alarm only. Plausible if the candidate determines that the 30 second time delay is associated with the degraded voltage relays that generate the alarm due to a low (degraded) voltage condition, but not the breaker trip.*

D. *Correct, The time delay required to be met to trip open the normal feeder breaker due to Degraded Voltage relay actuation without a Safety Injection present is 300 seconds from the start of degraded conditions.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 47

Tier: 2 **Group** 1

K/A: 062 A.C. Electrical Distribution
K4.02 Knowledge of AC Distribution system design feature(s) and/or interlock(s) which provide for the following:
Circuit breaker automatic trips.

Importance Rating: 2.5/2.7

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: Applicant is required to apply the conditions in the stem to determine the time delay associated with a design feature of the plant that will cause an automatic trip of the circuit breaker feeding an ESF bus on the AC electrical distribution system.

Technical Reference: 0-SO-202-4, 6900V SHUTDOWN BOARDS, Rev 27

Proposed references to be provided: None

Learning Objective: OPT200.AC6.9KV
4. Describe the following characteristics of each major component in the 6.9 kV Distribution System:
   e. Component operation
   g. Interlocks (including setpoints)

OPT200.BLKOUT
4. Describe the following characteristics of each major component in the 6.9 kv Blackout System:
   e. Component operation
   g. Interlocks (including setpoints)

Question Source:

New	
Modified Bank	X
Bank	

Question History: SQN Bank question 6.9 SDBD-B.8 005 modified. Chanding what was being asked is the stem, all 4 choices changed, and the correct answer relocated.

Comments:

QUESTIONS REPORT

for 2010 Feb RO exam

Source:	BANK MOD	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

063 A2.01 048

Given the following:

- Unit 1 is operating at 100% rated thermal power.
- 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 (indicator) 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. Inorrect, 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, however the action taken by the operator is not correct.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 48

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 41

Proposed references to be provided: None

Learning Objective: OPT200.DC Obj 5.c

Question Source:

New	
Modified Bank	
Bank	X

Question History: Used on 2002 ILT exam

Comments:

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

064 A4.12 049

Given the following:

- 1A-A Diesel Generator is being synchronized to its shutdown board for a surveillance test.
- When 1-HS-57-47, "DG 1A Synchronize" is placed to the "SYN" position, the synchroscope pointer begins to move very slowly in the counter-clockwise direction.
- All other conditions to synchronize the diesel generator to the shutdown board are met.

Which ONE of the following actions is required prior to closing the breaker to parallel the Diesel Generator to the Shutdown Board?

A. Placing 0-HS-82-13, Speed Control, to the RAISE position.

B. Placing 0-HS-82-13, Speed Control, to the LOWER position.

C. Placing 0-HS-82-12, Voltage Regulator, to the RAISE position.

D. Placing 0-HS-82-12, Voltage Regulator, to the LOWER position.

DISTRACTOR ANALYSIS:

A. Correct, The scope moving in the counter-clockwise direction indicates that the DG in slower than the board frequency so the Speed Control would be placed to the RAISE position.

B. Incorrect, the Speed Control would be placed to the RAISE position not the LOWER position to get the scope moving in the clockwise direction. Plausible because the Speed Control is the switch need to be operated but placing it in LOWER is the opposite of the needed operation.

C. Incorrect, Placing the Voltage Control to RAISE would not correct the synchroscope movement. Plausible because the Voltage Control is used in establishing conditions to allow the DG to be synchronized to a shutdown board.

D. Incorrect, Placing the Voltage Control to LOWER would not correct the synchroscope movement. Plausible because the Voltage Control is used in establishing conditions to allow the DG to be synchronized to a shutdown board.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 49

Tier: 2 **Group** 1

K/A: 064 A4.12
Emergency Diesel Generator (ED/G) System
Ability to manually operate and/or monitor in the control room:
Synchroscope

Importance Rating: 2.7* / 2.6

10 CFR Part 55: 41.7 / 45.5 to 45.8

10CFR55.42.b: Not applicable

K/A Match: Question requires the applicant to understand the synchroscope oepation while monitoring and then operate the diesel generator system controls to establish desired operationing conditions.

Technical Reference: 0-SO-82-1, Diesel Generator 1A-A, Rev 32

Proposed references to be provided: None

Learning Objective: OPT200DG
4. Describe the following items for each major component in the Diesel Generator System:
f. Controls
h. Instrumentation and Indications

Question Source:

New	
Modified Bank	
Bank	X

Question History:

Comments:

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

064 K 6.08 050

Given the following:

- Both units are in Mode 1.
- A leak has developed in the 1A-A Diesel Generator Seven Day Fuel Oil Storage tank.
- The tank level decrease is noted by the following times:
  - at 1730 level 5.3 feet (66,600 gallons)
  - at 1745 level 5.1 feet (64,800 gallons)
  - at 1800 level 4.9 feet (62,200 gallons)
  - at 1815 level 4.7 feet (59,400 gallons)
  - at 1830 level 4.5 feet (56,800 gallons)

Which ONE of the following is the EARLIEST discovery time that 1A-A Diesel Generator is inoperable in accordance with Technical Specifications?

A. 1745

B. 1800

C. 1815

D. 1830

DISTRACTOR ANALYSIS:

A. Incorrect, the level is above the 4.8 ft (62,000 gallon) minimum. Plausible if the minimum level for operability is not known or recalled correctly.

B. Incorrect, the level is above the 4.8 ft (62,000 gallon) minimum. Plausible if the minimum level for operability is not known or recalled correctly.

C. Correct, In accordance with 0-SO-82-1, Standby Mode Parameters, the minimum Tech Spec level is 4.8 ft (62,000 gallons). At 1815, level is first level noted below the minimum. Plausible if the minimum level for operability is not known or recalled correctly.

D. Incorrect, the level is below the 4.8 ft (62,000 gallon) minimum but not the earliest time the level is below the minimum. Plausible since the recent change to minimum level up to 4.8 ft from 4.7ft. if the minimum level for operability is not known or recalled correctly.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 50

Tier: 2 **Group** 1

K/A: 064 K 6.08
Emergency Diesel Generator (ED/G) System
Knowledge of the effect of a loss or malfunction of the following will have on the ED/G system:
Fuel oil storage tanks

Importance Rating: 3.2 / 3.3

10 CFR Part 55: 41.7 / 45.7

10CFR55.43.b: Not applicable

K/A Match: Question requires the applicant to determine the impact a leak in a Diesel Generator fuel oil storage tanks would have on the ED/G system.

Technical Reference: Technical Specification LCO 3.8.1, A.C. Sources, Amendment 241
0-SO-82-1, Diesel Generator 1A-A, Rev 33

Proposed references to be provided: None

Learning Objective: OPT200. DG
B.5. Describe the administrative controls and limits for the DG system:
a. State Tech Specs/TRM LCOs that govern the DGs

Question Source:

New	
Modified Bank	
Bank	X

Question History: Vogtle bank question from 2009 exam with numbers changed for Sequoyah

Comments:

Source:	BANK	Source If Bank:	VOGTLE 2009
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

073 A4.02 051

Given the following:

- U-1 operating at 100% power.

0900 - 1-RA-90-119A, "CNDS VAC PMP LO RNG AIR EXH MON HIGH RAD" alarms.
0905 - The following radiation monitor trends are noted:
Condenser Vacuum Exhaust Rad Monitor,1-RM-90-119 trending up.
In service SGBD Rad Monitor, 1-RM-90-120 stable.
0910 - Reactor Trip and Safety Injection are manually initiated due to rapidly lowering Pressurizer level.

Which ONE of the following identifies ...:

(1) why 1-RM-90-120 trend would be stable at 0905.

and

(2) how SGBD Containment Isolation Valves would be positioned to allow Chemistry to take a sample after the safety injection occurred?

A. (1) Because SGBD isolates on High Radiation.
(2) Closed.

B. (1) Because SGBD isolates on High Radiation.
(2) Open.

C. (1) Because of the SGBD piping transport time.
(2) Closed.

D. (1) Because of the SGBD piping transport time.
(2) Open.

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Incorrect, Plausible since High Radiation as seen on the SG blowdown Rad monitors does isolate blowdown. However, SG blowdown flow is delayed from Condenser off gas flow rate. Thus in this short time the SG blowdown flow would not have caused the Rad monitor to trend up before the CNMT Phase A. The SG blowdown valve must be opened to allow sampling of SG.*

B. *Incorrect, Plausible since High Radiation as seen on the SG blowdown Rad monitors does isolate blowdown. However, SG blowdown flow is delayed from Condenser off gas flow rate. Thus in this short time the SG blowdown flow would not have caused the Rad monitor to trend up before the CNMT Phase A which would isolate blowdown.*

C. *Incorrect, Plausible since the first part of question is correct, however the isolation valves must be opened to allow the sampling of the SGs since they were isolated by CNMT Phase A.*

D. *Correct, Due to the delay time for SG blowdown flow to reach the blowdown rad monitor there would not be any expected increase in trend and the isolation valves must be open to allow chemistry to take a sample.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 51

Tier: T2 **Group** 1

K/A: 073 Process Radiation Monitoring System
A4.02 Ability to manually operate and/or monitor in the control room:
Radiation monitoring system control panel

Importance Rating: 3.7 / 3.7

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: This question matches the"monitor" in the control room portion of the radiation monitoring system control panel since RM-90-120 trend recorder that is monitored for indications of SGTR is located on panel RM-12 in the control room.

Technical Reference: ES-0.5, Equipment Verifications, Appendix A, Rev 1
1,2-47W801-2 Rev 49
1,2-47W611-15-1 Rev 8
1,2-47W611-15-2 Rev 8
1,2-47W881-5 Rev 27
1,2-47W610-90-2 Rev 78
1,2-47W831-3 Rev 17
OPT200.RM, Rev 2

Proposed references to be provided: None

Learning Objective: OPT200.RM enabling Obj. 5. Decribe the operation of the Rad Monitoring System; c. Alarms and alarm response.

Question Source:

New	X
Modified Bank	
Bank	

Question History: New question for 02-10 ILT exam

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

076 A3.02 052

Given the following:

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

Which ONE of the following describes the automatic response of the ERCW system?

A. 0-FCV-67-151, CCS Heat Exchanger 'OB1' Disch to Hdr A CLOSES and 0-FCV-67-152, CCS Heat Exchanger 'OB2' Alt Disch to Hdr B Throttles Closed to 35% position.

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

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

D. 0-FCV-67-151, CCS Heat Exchanger 'OB1' Disch to Hdr A OPENS fully and 0-FCV-67-152, CCS Heat Exchanger 'OB2' Alt Disch to Hdr B remains CLOSED.

DISTRACTOR ANALYSIS:

A. 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.

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

C. 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.

D. Incorrect, Plausible if candidate thinks that 0FCV-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.

QUESTIONS REPORT
for 2010 Feb RO exam

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: 1,2-47W611-67-5 Rev 35
1,2-45N779-38 Rev 6
1,2-47W845-2 Rev 101
0-M-27A-31.JPG
OPT200.ERCW R5

Proposed references to be provided: None

Learning Objective: OPT200.ERCW B.4.e Describe the following characteristics of each major component of ERCW system: component operation.

Question Source:

New	
Modified Bank	
Bank	X

Question History: Last used on 2007 SEQ Audit exam

Comments: Added statement to stem indicating that both units were at 100% pwr, normal plant alignment.

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

078 K2.02 053

The breaker for Auxiliary Air Compressor B is located on which ONE of the following electrical boards?

A. 480v Reactor Vent Board 1B-B

B. 480v Reactor Vent Board 2B-B

C. 480v C & A Vent Board 1B1-B

D. 480v C & A Vent Board 2B1-B

DISTRACTOR ANALYSIS:

A. Incorrect, 480v C & A Vent Board 2B1-B is the power supply to the Auxiliary Air compressor B, not the 480v Reactor Vent Board 1B-B. Plausible because the Unit 1 480v Reactor Vent Board is a vital power supply and the board is located in the Shutdown Board room.

B. Incorrect, 480v C & A Vent Board 2B1-B is the power supply to the Auxiliary Air compressor B, not the 480v Reactor Vent Board 2B-B. Plausible because the Unit 2 480v Reactor Vent Board is a vital power supply and the board is located in the Shutdown Board room.

C. Incorrect, Incorrect, 480v C & A Vent Board 2B1-B is the power supply to the Auxiliary Air compressor B, not the 480v C and A Vent board 1B1-B. Plausible because a Unit 1 C & A Vent Board is the power supply to Auxiliary Air Compressor A.

D. Correct, 480v C & A Vent Board 2B1-B is the power supply to the Auxiliary Air compressor B.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 53

Tier: 2 **Group** 1

K/A: 078 Instrument Air System
K2.02 Knowledge of bus power supplies to the following: Emergency air compressor

Importance Rating: 3.3* / 3.5*

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by asking the candidate to recall the power supply for the Auxiliary Air compressor (used as emergency source of air)

Technical Reference: 0-SO-32-1, Attachment 1, Control Air System Power Checklist 0-SO-32-1.01, 6/26/2007.
0-SO-32-2, Attachment 1, Auxiliary Compressed Air System Power Checklist 0-SO-32-2.01, Rev 2.

Proposed references to be provided: None

Learning Objective: OPT200.CSA B.4.b
Describe the following items for each major component in the CSA.
b. Power supply (including control power as appropriate).

Question Source:

New	
Modified Bank	X
Bank	

Question History: SQN Exam 1/2009 question modified.

Comments:

Source:	BANK MOD	Source If Bank:	SQN
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

103 A2.04 054

Given the following:

- Refueling is in progress on Unit 1 when a report is made to the control room that an irradiated fuel assembly has been dropped.
- The following alarms are received on 0-XA-55-12A:
  - "1-RA-90-112A CNMT BLDG UP COMPT AIR MON HIGH RAD"
  - "1-RA-90-59A RX BLDG AREA RAD MON HIGH RAD"

Which ONE of the following identifies the required actions to be taken per AOP-M.04, "Refueling Malfunctions?"

A. Evacuate non-essential personnel only, and if RM-90-400, "Shield Bldg" and/or 0-RM-90-101, "Aux Bldg Vent" rad monitors are trending up, manually initiate Containment Ventilation Isolation.

B. Evacuate all personnel from Containment and Ensure Containment Ventilation Isolation has Actuated.

C. Evacuate the Fuel Handling Area and maintain SFP and Rx cavity levels as directed by Fuel Handling SRO.

D. Evacuate the immediate area and Verify that Auxiliary Building Isolation has Actuated.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible since "Evacuate non-essential personnel" is the direction given for Reactor Cavity Seal Failure, in that case personnel are needed to stay in containment and perform actions. On fuel assembly drop/damage Containment is directed to be completely evacuated. Second part also is incorrect. If rad levels are rising operators are directed to Obtain gas release rate data.

B. Correct, For the given Rad Monitor alarms, the Containment is directed to be evacuated. Also 1-RA-90-112A will cause automatic Containment Ventilation isolation. Operators are directed to verify isolation.

C. Incorrect, Plausible since "Evacuate Fuel Handling area" is direction in AOP-M.04 but for dropped fuel assembly in the Spent Fuel pit area not inside CNMT. Also second part of distractor is direction for reactor cavity seal failure.

D. Incorrect, Plausible since "Evacuate the immediate area" is direction in AOP-M.04 but for dropped or damaged new fuel assembly. Also second part of distractor is wrong since Aux building Isolation would have to be manually initiated with the given rad monitor alarms.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 54

Tier: 2 **Group** 1

K/A: 103 Containment
A2.04 Ability to (a) predict the impacts of the following malfunctions or oeperations on the following and (b) based on those predictions use procedures to correct, control, or mitigate the consequences of the those malfunctions or operations:
Containment evacuation (including recognition of the alarm)

Importance Rating: 3.5*/3.6*

10 CFR Part 55: 41.5

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by asking if the candidate can determine the effect of the conditions and alarms given in the stem on whether or not CNMT evacuation will be required and actions directed by AOP-M.04.

Technical Reference: AOP-M.04, Refueling Malfunctions, section 2.2, Rev 7

Proposed references to be provided: None

Learning Objective: OPL271AOP-M.04 Obj 8

Question Source:

New	
Modified Bank	
Bank	X

Question History: Indian Point 3 2007 exam # 49

Comments: Question written to have operators select the (b) mitigation strategy for the given conditions.

Source:	BANK	Source If Bank:	INDIAN POINT 3
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

103 A3.01 055

Given the following plant conditions:

- Unit 2 experienced a Manual Safety Injection (SI).
- Containment Purge Rad Monitor, 2-RM-90-130, was in high rad alarm but has been reset.
- Containment Purge Rad Monitor, 2-RM-90-131, indicates normal.
- Containment Vent Isolation occurred on Train A.
- Containment Vent Isolation did NOT occur on Train B.
- Phase A has been RESET.
- SI signal has NOT been RESET.

Which ONE (1) of the following describes the status of the Containment Vent Isolation (CVI) system?

The CVI _____ and _____.

A. should have occurred on A and B Train;
the CVI can be reset with the SI signal present.

B. should have occurred on A and B Train;
the SI signal must be reset before the CVI can be reset.

C. should NOT have occurred on B Train;
the CVI can be reset with the SI signal present.

D. should NOT have occurred on B Train;
the SI signal must be reset before the CVI can be reset.

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Correct, A SI signal will initiate CVI on both trains. A reset switch exists that is self sealing which will allow CVI to be reset with a SI signal still present.*

B. *Incorrect, First part correct, should have occurred on both trains. Second part incorrect. Plausible if candidate believes since an SI signal initiates a CVI that the SI must be cleared before resetting the CVI can be accomplished.*

C. *Incorrect, Plausible if candidate does not know an SI signal will initiate CVI on both trains, and concludes since radiation levels did not go up on the B Train Rad monitor CVI Train B should not have occurred.*

D. *Incorrect, Plausible to conclude that with radiation levels normal on the B Train Rad monitor, CVI Train B should not have occured. Second part plausible if candidate concludes since an SI signal initiates isolation signals that the SI must be cleared before resetting the CVI can be accomplished.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 55

Tier: 2 **Group** 1

K/A: 103 Containment System
A3.01 Ability to monitor automatic operation of the containment system, including: Containment isolation

Importance Rating: 3.9/4.2

10 CFR Part 55: 41.7 / 45.5

10CFR55.43.b:

K/A Match: This question matches K/A by having the candidate determine status of CNMT isolation given the conditions in the stem and the actions necessary to reset the signal.

Technical Reference: 2-47W611-63-1 R3, 2-47W611-88-1R17

Proposed references to be provided: None

Learning Objective: OPT200.RPS, Obj. B.4.f & g
OPT200.PIS, Obj. B.4.f & g

Question Source:

New	
Modified Bank	
Bank	X

Question History: Bank

Comments:

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

001 K2.05 056

Given the following:

- Unit 1 at 100% power.
- 480v Common Emergency Transformer out of service.

Which ONE of the following describes the effect on the Control Rod Drive MG Sets if 6900v Unit Board 1D is de-energized by relay operation?

A. Both MG sets lose power to the motor.

B. Neither MG set loses power to the motor.

C. Only 1A MG set loses power to the motor.

D. Only 1B MG set loses power to the motor.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible because the condition will cause a reactor trip but will not cause the Control Rod MG sets to trip.

B. Incorrect, Plausible because if the board loss had been the B or C board neither of the MG sets would have lost power.

C. Incorrect, Plausible because if the board loss had been the A board the 1A MG set would have lost power.

D. Correct, the 1B MG set is supplied from 480v Unit board 1B which is supplied from the 6900v Unit Board 1D.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 56

Tier: 2 **Group** 2

K/A: 001 Control Rod Drive System
K2.05 Knowledge of bus power supplies to the following:
M/G sets

Importance Rating: 3.1*/3.5

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: Question matches K/A because knowledge of Bus power supply to M/G sets are required to answer the question.

Technical Reference: 1,2-45N715 Rev 7
1,2-45N747-1 Rev 15
1,2-45N747-2 Rev 21

OPT200-AC480V, Rev 1

Proposed references to be provided: None

Learning Objective: OPT200RDCNT
4. Describe the following items for each major component in the Rod Control System as described in this lesson:
b. Power supply (include control power as applicable)

Question Source:

New	
Modified Bank	
Bank	X

Question History: WBN bank question

Comments:

Source:	BANK	Source If Bank:	WBN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

014 A4.01 057

Given the following:

- Unit 1 is at 100% rated thermal power.
- Control bank D group 2 rod H-8 has dropped into the core.
- The operating crew is performing steps in AOP-C.01, "Rod Control System Malfunctions."
- Prior to withdrawing H-8, the OATC is directed to adjust the group step counter for Control Bank D group 2 to ZERO steps.

Which ONE of the following describes the reason the group step counter is adjusted to ZERO?

A. Ensures that Bank Overlap Unit will be updated during rod retrieval.

B. Restores low insertion limit alarm function associated with M-4B Window A-7, "ROD CONTROL BANKS LIMIT LOW."

C. Restores rod to rod misalignment alarm function associated with M-4B Window D-4 "COMPUTER ALARM ROD DEV AND SEQ NIS PWR RANGE TILTS."

D✓ Allows the operator to determine that rod control system is attempting to withdraw the dropped rod and enables the operator to match individual rod position to bank position.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible if candidate thinks that by resetting the step counter that the bank overlap unit is reset and will accurately maintain the desired overlap.

B. Incorrect, Plausible if operator thinks that steps counters reset would change Low limit setpoint, however this alarm will clear when rod is restored above the low insertion limit.

C. Incorrect, Plausible however the rod-to-rod misalignment function is independent of group demand position.

D. Correct, by resetting the group demand to zero the operators can monitor that the rod control system is sending correct signals to the rod and this can also be used to ensure the the dropped rod is returned to the position of the other rods in that group.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 57

Tier: 2 **Group** 2

K/A: 014 Rod Position Indication System
A4.01 Ability to manually operate and/or monitor in the control room:
Rod selection control

Importance Rating: 3.3/3.1

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having the candidate determine why the groups step counters are needed positioned the way they are during Rod Control operation to recover a dropped rod. This will allow proper monitoring of RPIs during manual rod motion.

Technical Reference: AOP-C.01, Rod Control System Malfunctions, Sect 2.3, Rev. 20
0-SO-85-1, Control Rod Drive System, rev 33

Proposed references to be provided: None

Learning Objective: OPL271AOP-C.01, Obj. B.6

Question Source:

New	
Modified Bank	
Bank	X

Question History: question originally AOP-C.01-B.4 001

Comments:

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

015 A3.05 058

Given the following:

- Unit 1 has just tripped from 100% power.

Which ONE of the following identifies when the Audio Count rate will re-energize?

A. When both N-35 & N-36 read < 10^{-4}% power.

B. When 3/4 of the Power range detectors are < 10%.

C. When the Level Trip Bypass switches are taken to Normal.

D. When the High Flux At Shutdown switches are taken to Normal.

DISTRACTOR ANALYSIS:

A. *Correct, When both N-35 & N-36 read < 10^{-4}% power, P-6 is reset and the SR detectors are re-energized, this will restart Audio count rate.*

B. *Incorrect, Plausible since this will remove the P-10 interlock which blocks the SR detectors from being energized. However this does not re-energize the SR detectors.*

C. *Incorrect, Plausible since this is an action the operators can take on the SR drawers but does not re-energize the detectors.*

D. *Incorrect, Plausible since this is an action that the operators will take later after SR counts have stabilized but does not re-energize the detectors.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 58

Tier: 2 **Group** 2

K/A: 015 Nuclear Instrumentation System
A3.05 Ablitiy to monitor automatic operation of NIS including:
Recognition of Audio output expected for a given plant condition.

Importance Rating: 2.6/2/7*

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by asking the candidtate when the Audio Count Rate is expected to start and provide indication in the Control room following a Rx trip.

Technical Reference: OPT200.NIS rev4,

Proposed references to be provided: None

Learning Objective: OPT200.NIS Obj B.5

Question Source:

New	X
Modified Bank	
Bank	

Question History:

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

016 K5.01 059

Which ONE of the following explains the purpose of the Isolation Amplifier associated with the Pressurizer Pressure Transmitter?

A. Amplifies the pressure output signal between containment and the instrument racks.

B. Isolates the pressure transmitter from the impacts of changing containment pressures.

C. Protects the control signal from perturbation due to backfeed from a disturbance in the Reactor Protection System.

D✓ Protects the Reactor Protection signal from a perturbation due to a backfeed from a disturbance in the control circuit.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible if the candidate thinks that a signal boost is needed since there is a long run of cable between Containment and the Instrument racks.

B. Incorrect, Plausible since, during accident conditions, changing Containment pressures effect the output of PZR pressure transmitters.

C. Incorrect, Plausible since protection and control signals are isolated from one another, however Reactor Protection is what is being protected not Control signal.

D. Correct, Isolation Amplifiers protect the RPS from signal perturbations that could arrise in the control portion of the circuit.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 59

Tier: 2 **Group** 2

K/A: 016 Non-Nuclear Instrumentation System
K5.01 Knowledge of the operational implications of the following concepts as they apply to the NNIS:
Seperation of control and protection circuits.

Importance Rating: 2.7*/2.8

10 CFR Part 55: 41.5

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A because it asks the candidate to recall the purpose of the Isolation amplifiers in this portion of NNIS.

Technical Reference: OPT200.PZRPCS, 2, 9.a
OPT200.EAGLE21, Obj 13

Proposed references to be provided: None

Learning Objective: OPT200.PZRPCS Obj B.3

Question Source:

New	
Modified Bank	
Bank	X

Question History: modified from bank question PZR Press-B.2 006

Comments:

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

017 A2.01 060

Given the following:

- Unit 1 is operating at 100% power
- The following alarm is received on 1-M4-B:
  - A-3, "INCORE TEMP MONITORING SYSTEM TROUBLE."

Which ONE of the following identifies ...
(1) the indication on the Exosensor Plasma Display if an incore thermocouple was outside it electrical limits due to an electrical short in the circuit
and
(2) the minimum number of thermocouples required to be operable in accordance with Tech Specs without relying on an Action Statement?

	Plasma Display Indication	Tech Spec Requirement
A.	" ? "	Each train must have a minimum of one operable thermocouple in each core quadrant.
B.	"XXX"	Each train must have a minimum of one operable thermocouple in each core quadrant.
C.	" ? "	Each train must have a minimum of two operable thermocouples in each core quadrant.
D.	"XXX"	Each train must have a minimum of two operable thermocouples in each core quadrant.

DISTRACTOR ANALYSIS:

A. Correct, a "?" displayed on the subcooled margin monitor indicates that the TC is outside of its electrical limits and T/S require each train to have 1 operable thermocouple in each quadrant.

B. Incorrect, Plausible since "XXX" is a valid reading on the subcooled margin monitor however this symbol indicates that the TC has been manually removed from scan and because T/Ss requiring each train to have 1 operable thermocouple in each quadrant is correct.

*C. Incorrect, Plausible since first part of answer is correct, but 2 thermocouples being required is not correct. Plausible because the "?
" readout is correct and T/Ss do require 2 Trains but not 2 thermcouples.*

D. Incorrect, Plausible since "XXX" is a valid reading on the subcooled margin monitor however this symbol indicates that the TC has been manually removed from scan and T/Ss do require 2 Trains but not 2 thermcouples.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 60

Tier: 2 **Group** 2

K/A: 017 In-Core Temperature Monitoring System
A2.01 Ability to (a) predict the impacts of the following malfunctions or operations on the ITM system; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations:
Thermocouple open and short circuits.

Importance Rating: 3.1/3.5

10 CFR Part 55: 41.5

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having the candidate how an electrical malfunction (short or open) will be identified in the control room and what action is necessary to mitigate the failure.

Technical Reference: OPT200.Incore, Rev 3
1-AR-M4B-A-7, Incore Temp Monitor System Trouble, Rev 28
GOI-6, Apparatus Operations, sect P, Rev 130
Tech Spec 3.3.3.7, Accident Monitoring Instrumentation, Amendment 149

Proposed references to be provided: None

Learning Objective: OPL200.Incore Obj B.5 d & f

Question Source:

New	X
Modified Bank	
Bank	

Question History:

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

029 A1.02 061

Given the following plant conditions:

- Unit 1 is operating at 100% power.
- A lower containment purge is in progress.
- A RCS leak develops in the raceway in lower containment.
- 1-RM-90-106, Lower Containment Radiation Monitor and 1-RM-90-131, Containment Purge Radiation Monitor are detecting increasing radiation and are trending up.

Which ONE of the following identifies...

(1) the monitor(s) reaching the HIGH RAD setpoint that will cause the containment isolation signal which will isolate the purge

and

(2) the expected response on 1-RM-90-106 after the isolation signal was generated?

Rad Monitor causing isolation	1-RM-90-106 after Isolation
A. ONLY 1-RM-90-131	would continue to rise
B. ONLY 1-RM-90-131	would start to drop
C. Either 1-RM-90-106 or 1-RM-90-131	would continue to rise
D. Either 1-RM-90-106 or 1-RM-90-131	would start to drop

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Incorrect, The HI RAD condition sensed by the Containment Purge Rad Monitor 1-RM-90-131 will result in the containment vent isolation but because 1-RM-90-106 is isolated it indicated radiation level will start dropping. Plausible since RE-90-106 monitors containment air and provide indication and alarm in the Control room and because its indication would continue to rise if the monitor were not isolated.*

B. *Correct, The HI RAD condition sensed by the Containment Purge Rad Monitor 1-RM-90-131 will result in the containment vent isolation which isolates the purge and causes the 1-RM-90-106 flowpath to isolate. With the flowpath isolated , 1-RM-90-106 indication will start dropping.*

C. *Incorrect, 1-RM-90-106 will not cause a Containment Isolation signal but it s affected by the signal by having its flow path isolated causing the detected radiation level to start dropping not continuing to rise. Plausible because both of the monitors are monitoring lower containment conditions and because 1-RM-90-106 would continue to rise if it were not isolated.*

D. *Incorrect, 1-RM-90-106 will not cause a Containment Isolation signal but it s affected by the signal by having its flow path isolated causing the detected radiation level to start dropping as stated in the distractor. Plausible because both of the monitors are monitoring lower containment conditions and because 1-RM-90-106 indication dropping after isolation is correct.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 61

Tier: 2 **Group** 2

K/A: 029 Containment Purge System
A1.02 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the Containment Purge System controls including:
Radiation Levels

Importance Rating: 3.4 / 3.4

10 CFR Part 55: 41.5

10CFR55.43.b: Not applicable

K/A Match: Applicant must predict how radiation monitors increasing will affect the containment purge system and determine the resulting effect on a radiation monitor dueto the containment isolation signal being generated.

Technical Reference: OPT200.RM, Radiation Monitoring System, Rev 2
0-AR-M12-A, Unit 1 and Common Radiation Monitor
0-XA-55-12A, Rev 52; Windows A-4 and C-7

Proposed references to be provided: None

Learning Objective: OPT200.RM Obj. 4

Question Source:

New	
Modified Bank	
Bank	X

Question History:

Comments:

Source:	BANK	Source If Bank:	WBN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

033 G2.4.21 062

In accordance with AOP-M.06, "Loss of Spent Fuel Cooling," which ONE of the following identifies...

(1) The basis for the 40°F minimum spent fuel pit (SFP) temperature limit

and

(2) The condition that could result if the SFP temperature exceeded 192°F?

A. (1) SFP criticality analysis lower limit.
(2) Excessive gassing from the SFP.

B. (1) SFP criticality analysis lower limit.
(2) Spent Fuel Pool Cooling pump cavitation.

C. (1) Minimum temperature for refueling.
(2) Excessive gassing from the SFP.

D. (1) Minimum temperature for refueling.
(2) Spent Fuel Pool Cooling pump cavitation.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible because the SFP criticality analysis being 40°F is correct and gassing from the spent fuel pool is a concern at higher temperatures but inadequate pump suction pressure is the reason stated in the AOP for the 192°F limit.

B. Correct, the minimum spent fuel pit (SFP) temperature allowed by the SFP criticality analysis is 40°F and the maximum SFP temperature above which Spent Fuel Cooling Pumps may have inadequate suction head and could cavitate is 192°F.

C. Incorrect, Plausible because there is a minimum temperature maintained in the SFP during refueling of 50°F and gassing from the spent fuel pool is a concern at higher temperatures but inadequate pump suction pressure is the reason stated in the AOP for the 192°F limit.

D. Incorrect, Plausible because there is a minimum temperature maintained in the SFP during refueling of 50°F and maintaining the temperature less than 192°F to prevent cavitation of the cooling pumps is correct.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 62

Tier: 2 **Group** 2

K/A: 033 Spent Fuel Pool Cooling System
G2.4.21 Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.

Importance Rating: 4.0/4.6

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by having the candidate identify the temperature limts of the Spent Fuel Pool as related to reactivity in spent fuel in the pool and a possible effect of high temperature on the Spent Fuel Pool Cooling pumps.

Technical Reference: AOP-M.06, Loss of Spent Fuel Cooling, Rev 4

Proposed references to be provided: None

Learning Objective: OPT200.SFFC, obj B 6
OPL271AOP-M.06 Obj B 6

Question Source:

New	____
Modified Bank	____
Bank	X

Question History: From bank question SFPS-2 003 2004 NRC exam

Comments:

Source:	BANK MOD	Source If Bank:	SQN
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

034 K6.02 063

Given the following:

- Unit 1 core has been off-loaded.
- Irradiated fuel shuffles are in progress in the spent fuel pool.
- Main Control Room Radiation Monitor, 0-RM-90-125, fails due to an instrument malfunction.

Which ONE of the following identifies if the radiation monitor failure would require an LCO entry on Unit 1 and the effect the failure would have on the movement of irradiated fuel in the spent fuel pit?

	LCO entry	Fuel Movement
A.	Required	Can continue
B.	Required	Must be stopped
C.	**NOT** required	Can continue
D.	**NOT** required	Must be stopped

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Correct, both Main Control Room Radiation Monitors 1-RM-90-125 and 1-RM-90-126 are required during the movement of irradiated fuel. If one failed an LCO entry would be required which would require action but fuel movement could continue.*

B. *Incorrect, both Main Control Room Radiation Monitors 1-RM-90-125 and 1-RM-90-126 are required during the movement of irradiated fuel. If one failed an LCO entry would be required which would require action but fuel movement would not be required to be stopped due to the failure. Plausible because the LCO entry being required is correct and other conditions in the LCO would have required the fuel movement to be stopped.*

C. *Incorrect, an LCO entry is required due to the failure of the radiation monitor and irradiated fuel movement in the spent fuel pool can continue. Plausible because there are other main control room radiation monitors that could fail without causing an LCO entry and fuel movement continuing is correct.*

D. *Incorrect, an LCO entry is required due to the failure of the radiation monitor but irradiated fuel movement in the spent fuel pool is not required to be stopped. Plausible because there are other main control room radiation monitors that could fail without causing an LCO entry and other conditions in the LCO would have required the fuel movement to be stopped.*

Question Number: 63

Tier: 2 **Group** 2

K/A: 034 Fuel Handling
K6.02 Knowledge of the effect of a loss or malfunction on the following will have on the Fuel Handling System :
Radiation monitoring systems

Importance Rating: 2.6 / 3.3

10 CFR Part 55: 41.7 / 45.7

10CFR55.42.b: Not applicable

K/A Match: Question requires knowledge of the radiation monitoring system requirements during irradiation fuel movement in accordance with Technical Specifications thus requiring the knowledge that a malfunction of a monitor would require compliance with required action of the LCO (i.e. the effect of the loss)

QUESTIONS REPORT

for 2010 Feb RO exam

Technical Reference: Technical Specification LCO 3.3.3.1, Radiation Monitoring Instrumentation, Amendment 322
0-AR-MI2-A,Unit 1 and Common Radiation Monitor 0-XA-55-12A, Rev 52

Proposed references to be provided: None

Learning Objective: OPT200.FH

6. Describe the administrative controls and limits for the Fuel Handling system as explained in this lesson:
   a. State Tech Specs/TRM LCOs that govern the Fuel Handling Systems.
   b. State the =1 hour action limit TS LCOs

OPT200.CBVENT

5. Describe the operation of the Control Building Ventilation System:
   f. How a instrument failure will affect system operation
6. Describe the administrative controls and limits for the Control Building Ventilation System:
   a. State Tech Specs/TRM LCOs that govern the system.
   b. State the =1 hour action limit TS LCOs

Question Source:

New	
Modified Bank	X
Bank	

Question History: SQN question 034 K6.02 061(used on 2009 retake exam) modified.

Comments:

Source:	BANK MOD	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

035 K4.01 064

Which ONE of the following identifies...

(1) two of the design bases criteria for the steam generator level control program

and

(2) the signal that is used to program the level control program setpoint ?

A. (1) Minimize moisture carry over to the turbine blading and maintain a constant mass in the steam generator at all power levels.
(2) Main Steam Header pressure.

B. (1) Minimize moisture carry over to the turbine blading and maintain a constant mass in the steam generator at all power levels.
(2) Main turbine impulse pressure.

C. (1) Minimize RCS cooldown following a steam break accident and maintain sufficient mass in the steam generator to prevent a reactor trip on lo-lo level following a turbine load reduction.
(2) Main Steam Header pressure.

D✓ (1) Minimize RCS cooldown following a steam break accident and maintain sufficient mass in the steam generator to prevent a reactor trip on lo-lo level following a turbine load reduction.
(2) Main turbine impulse pressure.

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Incorrect, the level control system is designed to minimize moisture carryover to the turbine but is not designed to maintain a constant mass in the steam generators at all power levels and the program setpoint level is not supplied from a transmitter measuring the main steam pressure header pressure. Plausible because the one of the two listed is a correct design criteria and the main steam header pressure is used to control the speed of the main feed pump turbines which work in conjunction with the steam generator level control program.*

B. *Incorrect, the level control system is designed to minimize moisture carryover to the turbine but is not designed to maintain a constant mass in the steam generators at all power levels. The program setpoint level is supplied from a transmitter measuring the main turbine impulse pressure. Plausible because the one of the two listed is a correct design criteria and the main turbine impulse pressure being used in the steam generator level control program is correct.*

C. *Incorrect, the level control system is designed to minimize the RCS cooldown following a steam line break while maintaining sufficient mass to prevent a reactor trip on lo-lo level due to shrink on a load rejection but the program setpoint level is not supplied from a transmitter measuring the main steam pressure header pressure. Plausible because the design criteria is correct and the main steam header pressure is used to control the speed of the main feed pump turbines which work in conjunction with the steam generator level control program.*

D. *Correct, the level control system is designed to minimize the RCS cooldown following a steam line break while maintaining sufficient mass to prevent a reactor trip on lo-lo level due to shrink on a load rejection. The program setpoint level is supplied from a transmitter measuring the main turbine impulse pressure.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 64

Tier: 2 **Group** 2

K/A: 035 Steam Generator System (S/GS)
K4.01 Knowledge of S/GS design feature(s) and/or interlock(s) which provide for the following:
S/G level control

Importance Rating: 3.6 / 3.8

10 CFR Part 55: 41.7

10CFR55.43.b: Not applicable

K/A Match: Question requires knowledge of the design features of the steam generator level control system and the source of the signal providing the controlling setpoint for the automatic level control system while the unit is operating at power.

Technical Reference: OPT200.SG, Steam Generators, Rev 3

Proposed references to be provided: None

Learning Objective: OPT200.SG
1. State the purpose/functions of the S/G system as described in the FSAR.
2. State the design basis of the S/G system in accordance with the SQN FSAR.
4. Describe the following characteristics of each major component in the S/G system:
   d. Normal operating parameters
   f. Controls
   g. Interlocks (including setpoints)

Question Source:

New	
Modified Bank	X
Bank	

Question History: SQN bank questions S/G-B.6 001 & S/G-B.12.A 001 combined.

Comments: Used parts of both questions identified above to develop this question.

QUESTIONS REPORT
for 2010 Feb RO exam

Source:	BANK MOD	Source If Bank:	SQN
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

056 K1.03 065

Given the following:

- Unit 1 is operating at 50% rated thermal power.
- Both MFW pumps are in service.
- A problem with the MFW pump Seal Water Injection System resulted in:
  - Seal water injection pressure decreasing to 210 psig.
  - 1A MFP seal water differential pressure dropping to 9 psid.
  - 1B MFP seal water differential pressure dropping to 7 psid.
- The following alarms are received:
  - 1-XA-55-3B "MFPT 1A &1B INJECTION SEAL WATER PRESS LOW"
  - 1-XA-55-3C "PDIS-54-4C LOW DIFF PRESS MFP 1A SEAL WATER"
  - 1-XA-55-3C "PDIS-54-4C LOW DIFF PRESS MFP 1B SEAL WATER"
- All seal water injection parameters returned to normal after 23 seconds .

Which ONE of the following identifies...

(1) the impact of the conditions on the MFW pumps

and

(2) the condition that caused the pump(s) to trip?

A. (1) Only one of the MFW pumps would trip.
(2) Low seal water differential pressure.

B. (1) Only one of the MFW pumps would trip.
(2) Low seal water injection supply pressure.

C. (1) Both of the MFW pumps would trip.
(2) Low seal water differential pressure.

D. (1) Both of the MFW pumps would trip.
(2) Low seal water injection supply pressure.

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Incorrect, Plausible since the first part of the question is correct, however the MFP tirp is caused by seal supply pressure not seal differential pressure.*

B. *Correct, Inaccordance with alarm response procedure for low Seal pressure, seal supply pressure low, <220psi, starts a timer that will trip B MFW after 20 secs and A MFW pump after 28 secs assuming pressure remains less than the alarm setpoint. If pressure returns after 23 secs then only 1 MFP would have tripped.*

C. *Incorrect, Plausible if the candidate does not recognize that there is time delay of 20 secs and 28 secs to trip both MFPs vs just one. Also the trip signal comes from seal injection supply pressure not seal differential pressure.*

D. *Incorrect, Plausible since the second part of distractor is correct, however only 1 MFP would trip after 23 secs not both.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 65

Tier: 2 **Group** 2

K/A: 056 K1.03
Knowledge of the physical connections and/or cause-effect relationships between the Condensate System and the following systems: MFW

Importance Rating: 2.6 / 2.6

10 CFR Part 55: 41.2 to 41.9

10CFR55.43.b: Not applicable

K/A Match: This is a K/A match because it askes the candidate to identify the cause-effect relationship between high pressure seal injection (which take suction from condensate system piping downstream of the condensate demineralizer booster pumps) and MFW pumps.

Technical Reference: 1-AR-M3-B, Main Feedwater System 1-XA-55-3B, Rev 18

Proposed references to be provided: None

Learning Objective: OPT200.MFW R4, Obj 5. Describe the normal, abnormal and emergency operation of the MFW system as it relates to the following: c. Alarms and alarm response.

Question Source:

New	X
Modified Bank	
Bank	

Question History:

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

G 2.1.19 066

Given the following:

- Unit 1 is at 100% power.
- Plant conditions required a rapid load reduction to 65% using AOP-C.03, "Rapid Shutdown or Load Reduction."
- 18 minutes elapsed since the Plant Computer AFD Monitor alarm indicated outside acceptable operation region of the COLR on $\geq$ 2 channels.

Which ONE of the following describes actions necessary to comply with Technical Specifications?

A. No action is required.

B. Reduce plant power to less than 50% and reduce NI trip setpoints to 55% RTP.

C. Reduce plant power 3% for each 1% AFD is outside the target band and reduce NI trip setpoints to 5% above the current power level.

D. Monitor and log AFD once per hour for the first 24 hours and at least once per 30 minutes thereafter until AFD is within the target band.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible if candidate does not recognize that the ICS alarm indicates that at least 2 NIS AFD channels indicate > 50% RTP and outside the acceptable AFD region. Therefore, T.S. 3.2.1 applies.

B. Correct, The ICS alarm indicates that at least 2 NIS AFD channels indicate > 50% RTP and outside of the acceptable AFD region. The AFD monitor alarm for ICS is considered operable provided tha tthe computer is not failed and the calculated values are not flagged by NCAL. No information in the root/stem indicates that ICS has failed. Therefore, T.S. 3.2.1 Action a applies. Operation in not allowed outside the operating band; reduce RTP to <50% if AFD cannot be restored to within the acceptable band within 15 minutes. 18 minutes have passed since the valid alarm condition of SR 4.2.1.2.

C. Incorrect, Plausible since this would be a required operator action, however this is for QPTR out of spec, not AFD. Both conditions require power reduction and PRNI resetting based on severity of condition/time since initiation.

D. Incorrect, Plausible since this action is required for an AFD condition, however this action is for AFD monitor alarm Inoperable not AFD out of spec.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 66

Tier: 3 **Group** ____

K/A: Sect 2.1 Conduct of Operations
2.1.19 Ability to use plant computers to evaluate system or component status.

Importance Rating: 3.9/3.8

10 CFR Part 55: 41.10

10CFR55.43.b: Not applicable

K/A Match: Questions requires applicant to evaluate AFD as indicated on the plant computer and take actions following a computer alarm.

Technical Reference: AOP-C.03, Rapid Shutdown or Load Reduction, Rev 19
Tech Spec 3.2.1, Ammendment 213

Proposed references to be provided: None

Learning Objective: OPL271AOP-C.03 Obj 8
OPL271C346, Obj 3

Question Source:

New	____
Modified Bank	____
Bank	X

Question History: previous bank # AOP-C.03-B.3 001

Comments: last modified 8/06

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

G 2.1.32 067

Given the following:

- Unit 2 is in Mode 4 with plant heatup in progress.
- 2A-A Diesel Generator is being rolled locally to check for water in the cylinders prior to performance of a monthly surveillance run.

Which ONE of the following identifies the status of the 2A-A Diesel Generator while it is being rolled and the maximum time frame that the start of the diesel generator can be delayed before the diesel generator must be re-rolled?

	DG Status	Maximum time
A.	Operable	2 hours
B.	Operable	24 hours
C.	Inoperable	2 hours
D.	Inoperable	24 hours

DISTRACTOR ANALYSIS:

A. *Incorrect, the diesel generator is not operable while it is being rolled to check for water in the cylinders and after rolling , the DG is not required to be started within 2 hours the prevent a re-roll from being required. Plausible because the DG can be considered operable for during other local activities and 2 hours is the time period per 24 hour period the DG can be allowed exceed 100% loading.*

B. *Incorrect, the diesel generator is not operable while it is being rolled to check for water in the cylinders and after rolling , the DG is required to be started within 24 hours the prevent a re-roll from being required. Plausible because the DG can be considered operable for during other local activities and the 24 hour time period without requiring a re-roll is correct.*

C. *Incorrect, the diesel generator is inoperable while it is being rolled to check for water in the cylinders but after rolling , the DG is not required to be started within 2 hours the prevent a re-roll from being required. Plausible because the DG being inoperable is correct and 2 hours is the time period per 24 hour period the DG can be allowed exceed 100% loading.*

D. *Correct, As identified in the precaution in the System Operating Procedure the diesel generator is inoperable while it is being rolled to check for water in the cylinders and after rolling, the DG must be started within 24 hours or a re-roll is required.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 67

Tier: 3 **Group** n/a

K/A: G 2.1.32
Ability to explain and apply system limits and precautions.

Importance Rating: 3.8 / 4.0

10 CFR Part 55: 0-SO-82-2 P&L

10CFR55.42.b: Not applicable

K/A Match: Applicant is required to apply a precaution in the procedure as to how an activity affects a diesel generator and the time limits

Technical Reference: 0-SO-82-3, Diesel Generator, Rev 32

Proposed references to be provided: None

Learning Objective: OPT200.DG
5. Describe the operation of the Diesel Generator (DG) system as it relates to the following:
   a. Precautions and limitations

Question Source:

New	
Modified Bank	X
Bank	

Question History: SQN Bank D/G-B.11 001 modified

Comments:

Source:	BANK	Source If Bank:	SQN BANK
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

G 2.1.40 068

According to 0-GO-9, "Refueling Procedure", the pressurizer manway must be open with air flow unobstructed whenever reactor head is in place and S/G U-tubes drained or pressurizer level off scale low.

This ensures ....

A. that on a loss of level in the RCS rapid refill capability using RHR pumps would be available.

B. that a steam void in the RCS piping would **NOT** prevent natural circulation flow.

C. an adequate vent exists to allow gravity fill from RWST on a station blackout.

D. that on a rapid loss of RCS level, a negative pressure (vacuum) would **NOT** develop in the RCS piping.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible if candidate thinks that a vent the size of PZR manway needed to prevent RCS pressurization to point that RHR could not be used.

B. Incorrect, Plausible if candidate thinks that natural circulation could be developed for these cases, however S/Gs could be drained thus prohibiting Nat Circ.

C. Correct, From sect 3.2 Limitations C. "PZR manway must be open with airflow unobstructed whenever reactor head is in place and S/G U-tubes drained or PZR level off scale low. This ensures that adequate RCS vent exists to allow gravity fill from RWST on a SBO event without natural circulation capability."

D. Incorrect, Plausible if operators think that a possible steam bubble could uncover the core on a SBO.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 68

Tier: 3 **Group** 1

K/A: G 2.1 Conduct of Operations
2.1.40 Knowledge of refueling administrative requirements.

Importance Rating: 2.8/3.9

10 CFR Part 55: 41.10

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by asking the candidate to indentify the refueling operations administrative requirement associated with the PZR manway.

Technical Reference: 0-GO-9, Refueling Procedure, Rev 34
Sect 3.2 Limitations, C.

Proposed references to be provided: None

Learning Objective: OPL271GO-9, Obj 2

Question Source:

New	X
Modified Bank	
Bank	

Question History:

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

G 2.2.40 069

While performing a cooldown on Unit 1 from Mode 3 to Mode 4 the following parameters were logged:

Time	RCS Press	RCS Temp	PZR LIQ Space Temp
0200	2200 psig	553°F	650°F
0230	1550 psig	527°F	606°F
0300	1135 psig	505°F	560°F
0330	765 psig	447°F	494°F
0400	400 psig	402°F	440°F

Which ONE of the following describes the Tech Spec / TRM implications of these conditions?

A. RCS cooldown rate limits were exceeded; Tech Spec action is required within a maximum of 30 minutes.

B. RCS cooldown rate limits were exceeded; Tech Spec action is required within a maximum of 60 minutes.

C. PZR cooldown rate limits were exceeded; TR action is required within a maximum of 30 minutes.

D. PZR cooldown rate limits were exceeded; TR action is required within a maximum of 60 minutes.

DISTRACTOR ANALYSIS:

A. Correct, Greater than 100°F in one hour exceeds the limit, action is required within 30 minutes.

B. Incorrect, Plausible since RCS cooldown greater than 100°F in one hour, however action time of 60 minutes is too long.

C. Incorrect, PZR cooldown rate limit is 200°F in any one hour. Plausible if candidate applies the 100°F per hour rate.

D. Incorrect, PZR cooldown rate limit is 200°F in any one hour. Plausible if candidate applies the 100°F per hour rate. Also action required in 30 minutes.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 69

Tier: 3 **Group** n/a

K/A: G 2.2 Equipment Control
2.2.40 Ability to apply Technical Specifications for a system.

Importance Rating: 3.4/4.7

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 if a Tech Spec was violated by determining the rate of cooldown and the required actions if cooldown was violated.

Technical Reference: 0-GO-7, Unit Shutdown From Hot Standby to Cold Shutdown, Rev 0055
T.S. 3.4.9.1 RCS Pressure and Temperature Limits, Ammendment 297
T.R. 3.4.9.2 Pressurizer Temperature Limits, Rev 42

Proposed references to be provided: None

Learning Objective: OPL271GO-7 Obj 1

Question Source:

New	
Modified Bank	
Bank	X

Question History: From McGuire 2006 ILT exam

Comments:

Source:	BANK	Source If Bank:	MCQUIRE 2006
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

G 2.2.6 070

Given the following:

- The Unit 1 TB AUO calls the Unit 1 OATC concerning a continuous use procedure currently in use.
- He reports that the procedure as written does work, but is poorly organized and has him frequently enter and exit contaminated areas.
- The AUO requests to perform all of the steps that are in the contaminated area first and then finish the rest of the procedure.
- The AUO reports doing the steps in a different order will not affect the performance of the procedure.

Which ONE of the following is the correct action to take in this circumstance?

A. This is an Operator Burden. The Unit Supervisor may authorize the AUO to perform the procedure in the order requested by the AUO. Operator Burdens must be logged and tracked to determine if compensatory actions are needed.

B. This is an Operator Challenge. The Unit Supervisor may authorize the AUO to perform the procedure in the order requested by the AUO. Operator Challenges are tracked to quantify the time spent by operators on low level deficiencies.

C. A Unit Supervisor can authorize changing the level of use to Reference Use, since neither the technical content nor the outcome of the procedure will be altered. This will allow the AUO to perform the procedure in two sections, ensuring that each section gets signed off at the completion of that section.

D. A procedure change must be drafted, reviewed by an IQR and qualified 50.59 reviewer. The Shift manager may sign as the approver of the procedure change to allow performance of the steps in the order requested by the AUO.

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Incorrect, Plausible since the definition of an Operator Burden in OPDP-1, "an equipment or program deficiency that provides an obstacle to normal plant operation by requiring operations personnel to take compensatory actions to comply with procedures." However this would require a formal procedure change.*

B. *Incorrect, Plausible since the definition of an Operator Challenge in OPDP-1, "is taking compensatory actions such as additional monitoring or leak cleanup." If operator determines that frequently crossing a radiation boundry is unnecessay.*

C. *Incorrect, Plausible since, from SPP-2.2, a reference use procedure can be performed in sections and then reviewed and signed off as sections. The circle-slash method of procedure use is the standard method used to ensure that procedures are completed. The Unit Supervisor does not have the autority to change the level of use of a procedure.*

D. *Correct, From SPP-2.2, and OPDP-1 procedures are required to be performed in order unless otherwise stated in the procedure. SPP-2.2 allows a SRO from the affected unit to sign as approval authority for minor/editorial changes.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 70

Tier: 3 **Group** n/a

K/A: G 2.2 Equipment Control
2.2.6 Knowledge of the process for making changes to procedures.

Importance Rating: 3.0/3.6

10 CFR Part 55: 41.10

10CFR55.43.b: Not applicable

K/A Match: Question matches K/A because it requires the candidate to have specific knowledge of the procedure change process as outlined in SPP-2.2 and OPDP-1

Technical Reference: SPP-2.2, Administration of Site Technical Procedures, Rev 0016
OPDP-1, Conduct of Operations, Rev 0013

Proposed references to be provided: None

Learning Objective: OPL271SPP-2.2 Obj 5

Question Source:

New	
Modified Bank	
Bank	X

Question History:

Comments:

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

G 2.3.12 071

Prior to an entry into lower containment being made, which ONE of the following identifies the verifications that are required relative to the incore flux detector placement and tagging?

	Detector Placement	Tagged with a...
A.	Storage position, only .	Caution Order
B.	Storage position, only.	Hold Order
C.	Storage position or inserted to within 10 feet of the core.	Caution Order
D.	Storage position or inserted to within 10 feet of the core.	Hold Order

DISTRACTOR ANALYSIS:

A. *Incorrect, Storage is not he only position allowed for the incore flux detectors, they can also be inserted to within 10 feet of the core. A Caution Order cannot be used to maintain the configuration control. Plausible because storage is one of the two approved positions and a Caution Order is one of the types of clearances used for tagging equipment.*

B. *Incorrect, Storage is not he only position allowed for the incore flux detectors, they can also be inserted to within 10 feet of the core. A Hold Order is used to maintain the configuration control. Plausible because storage is one of the two approved positions and tagging with a Hold Order is correct.*

C. *Incorrect, the incore flux detectors must be verified to be in the storage position or inserted to within 10 feet of the core and tagged out. A Caution Order cannot be used to maintain the configuration control. Plausible because the two locations are approved positions and a Caution Order is one of the types of clearances used for tagging equipment.*

D. *Correct, In accordance with 0-SI-OPS -000-011.0, the incore flux detectors must be verified to be in the storage position or inserted to within 10 feet of the core and tagged out. A Hold Order is used to maintain the configuration control.*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 71

Tier: 3 **Group** n/a

K/A: G 2.3.12
Radiation control
Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.

Importance Rating: 3.2 / 3.7

10 CFR Part 55: 41.12 / 45.9 / 45.10

10CFR55.42.b: Not applicable

K/A Match: Question requires knowledge that the Incore flux detectors pose radiation hazards and must be properly positioned and controlled to protect personnel inside lower containment.

Technical Reference: 0-SI-OPS-000-011.0, Containment Access Control During Modes 1 through 4, Rev 34

Proposed references to be provided: None

Learning Objective:
OPT200.INCORE
5. Describe the operation of the IIS system:
   a. Precautions and limitations

Question Source:

New	X
Modified Bank	
Bank	

Question History: New question

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

G 2.3.5 072

Given the following:

- Unit 2 was operating at 100% power when a SG tube rupture develops.
- The reactor is tripped and SI is initiated.
- Annunciator '2-RA-90-119ACNDS VAC PMP LO RNG AIR EXH MON HIGH RAD' is in alarm.

Which ONE of the following radiation monitors could be used to determine the specific SG that developed the rupture?

A. Observing 2-RM-90-120 (SG blowdown liquid rad).

B. Observing 2-RM-90-124 (SG sample line monitor).

C. Observing 2-RM-90-255 (Cond vacuum pump exhaust hi rad).

D✔ Observing 2-RM-421, 422, 423, 424 (Main steamline high rad).

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible since this monitors SG rad., however point monitored is common to all SGs. Once hi rad is detected SG blowdown isolates, and rad monitor would have to be flushed with demin water to clear alarm to allow rad monitor to be placed in service again.

B. Incorrect, Plausible since this monitors SG liquid, however this monitor is common to all SGs.

C. Incorrect, Plausible since this monitors SG liquid, however this monitor is common to all SGs.

D. Correct, Operators are directed by procedure to monitor steam line rad monitors for trends to help identify affected SG.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 72

Tier: 3 **Group** n/a

K/A: G 2.3 Radiation Control
2.3.5 Ability to use radiaiton monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.

Importance Rating: 2.9/2.9

10 CFR Part 55: 41.11

10CFR55.43.b: Not applicable

K/A Match: This question matches the K/A by requiring the candidate to use the fixed radiation monitoring equipment to determine specific SG that has ruptured.

Technical Reference: 1-AR-M30A, Post Accident Radiation Monitoring
1-XA-55-30, Rev 16
E-3, Steam Generator Tube Rupture, Rev 17

Proposed references to be provided: None

Learning Objective: OPL271AOP-R.01 Obj 8

Question Source:

New	
Modified Bank	
Bank	X

Question History:

Comments: From question E-0-B.5.C

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

G 2.3.7 073

The following events have occurred on Unit 2:

- Unidentified RCS leakage has increased to 1.2 gpm.
- Unit 2 has been placed in Mode 3.
- A team is being readied to enter lower containment (non-scheduled entry) to search for leaks.
- The team will require access to all of lower containment (including RCS loops 1 and 2).
- The RWP request has been submitted to Rad Protection.

Which ONE of the following lists required approvals per RCI-10. "ALARA PROGRAM," under these circumstances?

A. Shift Manager approval is required.

B. Rad Ops Shift Supervisor approval is required.

C. Rad Protection Manager (or designee) approval is required.

D. Forced Outage Recovery Team approvals are required.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible since the Plant Manager is required to approve all Lower Containment entries but only if Unit is operating in Mode 1. Given plant condition is Mode 3.

B. Incorrect, Plausible since Rad Protection Ops Shift Supervisor is the one who the RWP is submitted to, however Rad Protection Manager is required to approve all Containment Entries that are outside the pre-determined Containment Building entry schedule.

C. Correct, RCI-10, ALARA PROGRAM, General Requirement 'N', identifies that the Rad Protection Manager shall approve all Containment Building entries during periods which are outside the pre-determined Containment Building entry schedule.

D. Incorrect, Plausible since Rad Protection Manager approval is required, however Plant Manager approval only required if Unit is in Mode 1.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 73

Tier: 3 **Group** n/a

K/A: G 2.3.7
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

10CFR55.42.b: Not applicable

K/A Match: Applicant must be have knowledge of requirements for approvals of emergenct RWPs that would require entry into containment either at power or when Shutdown (Mode 3).

Technical Reference: RCI-10, Alara Program, rev 31,
General Requirement 'N',

Proposed references to be provided: None

Learning Objective: OPL271C260, Obj B.9

Question Source:

New	
Modified Bank	
Bank	X

Question History: Old bank question number RADCON 009

Comments:

Source:	BANK	Source If Bank:	SQN
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

G 2.4.28 074

Which ONE of the following describes a condition requiring implementation of the Two-Person Line-of-Sight rule?

A. Report of a hostile force approaching the site.

B. Civil disturbance within the Exclusion Area boundary.

C. Security receives report of a credible insider threat.

D. Unavailability of security force that threatens plant operation.

DISTRACTOR ANALYSIS:

A. Incorrect, Plausible since a Hostile force on-site would be a very dangerous situation, however Two Man Line-of-Site rule applies to specific insider threat according to SPP-1.3.

B. Incorrect, Plausible since a civil disturbance in a condition identified in the Radiological Emergency Plan that requires actions.

C. Correct, Per SPP-1.3, Access Authorization and Nuclear Security, 3.10.11, Nuclear Security shall request that two-person Line-of-Site rule be implemented after receipt of a credible insider threat.

D. Incorrect, Plausible since the unavailability of the security force is a condition identified in the Radiological Emergency Plan that requires actions.

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 74

Tier: 3 **Group** n/a

K/A: G 2.4 Emergency Procedures /Plan
2.4.28 Knowledge of procedures relating to a security event (non-safeguards information).

Importance Rating: 3.2/4.1

10 CFR Part 55: 41.10

10CFR55.43.b: Not applicable

K/A Match: Question matches K/A by testing candidates knowledge of Non-safeguards level of knowledge for security event on site.

Technical Reference: EPIP-8, Personnel Accountability and Evacuation, Rev 17, Appendix D,
SPP-1.3, Access Authorization and Nuclear Security, Rev 0013, Sect 3.10.11 Credible Insider Threat

Proposed references to be provided: None

Learning Objective: OPL271C198, Obj. 1.d

Question Source:

New	X
Modified Bank	
Bank	

Question History: Developed for 02/10 ILT exam

Comments:

Source:	NEW	Source If Bank:	
Cognitive Level:	LOWER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO

QUESTIONS REPORT
for 2010 Feb RO exam

G 2.4.46 075

Given the following:

- A LOCA has occurred on Unit 1 resulting in a Reactor Trip and Safety Injection.
- The crew is responding in accordance with E-1, "Loss of Reactor or Secondary Coolant."
- Annunciator window E-3 on 1-XA-55-6E 'LS-63-50A RWST LVL LO' alarms.
- Containment Sump Level indicates 50%.
- 1-FCV-74-3 and 1-FCV-74-21, RHR PUMP SUCTION ISOL valves are open.
- 1-FCV-63-72 and 1-FCV-63-73, CNTMT SUMP SUCT TO RHR PUMP valves remain closed.

Which ONE of the following identifies the status of the ECCS system and the correct operator response to the conditions?

A. The automatic swapover has failed. Place 1-HS-63-72 and 1-HS-63-73, 'CNMT SUMP SUCT TO RHR PUMP' valves to OPEN to initiate the transfer of the RHR pump suction to the containment sump.

ES-1.3 Transfer to RHR Cnmt Sump.

B. The automatic swapover has failed. Place 1-HS-74-3 and 1-HS-74-21, 'RHR PUMP SUCTION ISOL' valves to CLOSE to initiate the transfer of the RHR pump suction to the containment sump.

C. The valves are aligned correctly. The RWST level is above the automatic swapover setpoint. Monitor that swapover occurs when annunciator 'LS-63-50B RWST LVL LO-LO' alarms.

D. The valves are aligned correctly. The containment sump level is below the automatic swapover setpoint. Monitor that swapover occurs when annunciator 'LS-63-104 CNTMT SUMP FULL' alarms.

QUESTIONS REPORT
for 2010 Feb RO exam

DISTRACTOR ANALYSIS:

A. *Correct, the automatic transfer should be in progress. All required conditions (RWST level, containment sump level, and SI present) are met. The transfer is manually initiated by placing the containment sump valve control switches to OPEN.*

B. *Incorrect, the automatic transfer should be in progress. All required conditions (RWST level, containment sump level, and SI present) are met but the transfer is not manually initiated by placing the RHR suction valve control switches to CLOSE.*

C. *Incorrect, the valves are not aligned correctly, the containment sump valves should be traveling open. The RWST level alarm in the stem is at the auto transfer setpoint for RWST level. Plausible because the RWST alarm in the distractor is another alarm on RWST level but it is not the alarm received when the level reaches the swapover setpoint.*

D. *Incorrect, the valves are not aligned correctly, the containment sump valves should be traveling open. Plausible because the containment sump level is an interlock in the swapover logic but the alarm in the distractor is not the alarm associated with the sump level reaching at the required setpoint. The 'LS-63-104 CNTMT SUMP FULL' alarm is set much higher than the 11% required level*

QUESTIONS REPORT
for 2010 Feb RO exam

Question Number: 75

Tier: 3 **Group** n/a

K/A: G 2.4 Emergency Procedures/ Plan
2.4.46 Ability to verify that the alarms are consistent with plant conditions.

Importance Rating: 4.2/4.2

10 CFR Part 55: 41.10

10CFR55.43.b: Not applicable

K/A Match: This is a K/A match since it asks the candidate as to whether the the plant conditons are as expected for the alarm and the appropriate crew response to the alarm.

Technical Reference: ES-1.3, Transfer to RHR Containment Sump, Rev 16

Proposed references to be provided: None

Learning Objective: OPL271ES-1.3 Obj 2

Question Source:

New	
Modified Bank	X
Bank	

Question History:

Comments:

Source:	BANK MOD	Source If Bank:	SQN
Cognitive Level:	HIGHER	Difficulty:	
Job Position:	RO	Plant:	SEQUOYAH
Date:	2/2010	Last 2 NRC?:	NO