SEQUOYAH 2008-301

SRO WRITTEN EXAM WITH KNOWLEDGE AND ABILITIES (K/As), REFERENCES AND ANSWERS

1. Given the following plant conditions:

   - Unit 1 tripped from 10% power due to trip of both MFPTs.
   - The AFW pumps start signal was generated from the trip of both MFPTs.
   - Steam generator levels dropped to 12% (Lowest Level) post trip, and are slowly rising.

   Which ONE (1) of the following describes the operator response to enable the operator to MANUALLY control AFW flow?

   A.✓ MD AFW LCVs must be taken to Accident Reset before the valves can be controlled manually.

   NO reset is required to control TD AFW LCVs manually.

   B. TD AFW Pump must be taken to Accident Reset before the associated AFW flow can be controlled manually.

   NO reset is required to control MD AFW LCVs manually.

   C. Both the TD AFW Pump and the MD AFW LCVs must be taken to Accident Reset before AFW flow can be controlled.

   D. Neither the TD AFW Pump nor the MD AFW LCVs must be taken to Accident Reset before AFW flow can be controlled.

A. *Correct; The MD pump LCVs must be reset and while the TD AFW pump must be reset in order to control the speed of the turbine, the LCVs require no reset action.*

B. *Incorrect; The TD LCVs do not require the accident reset and the MD AFW LCVs do require the reset. Plausible because the candidate could confuse the TD AFW pump reset action required with the MD AFW LCVs.*

C. *Incorrect; The TD LCVs do not require the accident reset and the MD AFW LCVs do require the reset. Plausible because the candidate could correctly determine that the start from the trip of both MFP is an accident signal that requires the reset, but confuse the reset of the TD AFW speed control with the reset of the valves and conclude that both had to be reset.*

D. *Incorrect; The TD LCVs do not require the accident reset and the MD AFW LCVs do require the reset. Plausible because the candidate could think that since the low level start signal was not reached no accident signal was generated and conclude that neither would not have to be reset.*

Question No. 1

K/A: 007 EA1.08
Ability to operate and monitor the following as they apply to a reactor trip:
AFW System

Tier 1 Group 1

Importance Rating: 4.4 / 4.3

Technical Reference: ES-0.1 Reactor Trip Response
EA- 3.8, Manual Control of AFW Flow

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271EA-0.1 B.6

Question Source:
Bank # __________
Modified Bank # __________
New ___X_____

Question History: New for SQN NRC Exam 1/2008

Question Cognitive Level: Analysis

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

Comments:

2. Given the following:

   - Unit 1 Reactor Trip /Safety Injection initiated due to a pressurizer relief valve being stuck partially open.
   - Reactor Coolant Pumps have been stopped.
   - Pressurizer level is 60% and slowly rising.
   - RCS pressure is 1310 psig and stable.
   - Core Exit Thermocouple temperature is 580°F.

   What would be the effect on Reactor Vessel Level and Pressurizer Level if the RCS pressure is lowered due to increased pressurizer relief valve leakage?

	Reactor Vessel Level	**Pressurizer Level**
A.	Rising	Continue to rise at the same rate
B.	Rising	Rising faster
C.	Dropping	Continue to rise at the same rate
D✓	Dropping	Rising faster

A. *Incorrect, with the RCS pressure and temperature given at saturation, a steam bubble would be formed in the reactor head if RCS pressure were lowered. This would cause the water level in the vessel to drop instead of rise as stated in the distractor and the pressurizer level to rise at a faster rate due to the expansion of the steam void forcing water into the pressurizer. Plausible if student does not recognize saturated conditions in RCS and effect of bubble growth on Pressurizer level.*

B. *Incorrect, with the RCS pressure and temperature given at saturation, a steam bubble would be formed in the reactor head if RCS pressure were lowered. This would cause the water level in the vessel to drop instead of rise as stated in the distractor. Plausible if student does not recognize saturated conditions in RCS and effect of bubble growth on Pressurizer level.*

C. *Incorrect, with the RCS pressure and temperature given at saturation, a steam bubble would be formed in the reactor head if RCS pressure were lowered. This would cause the water level in the vessel to drop as stated in the distractor. However the response of the pressurizer would be to rise at a faster rate due to the expansion of the steam void forcing water into the pressurizer. Plausible if student does recognize void formation in head and does not know effect of bubble growth on Pressurizer level.*

D. *Correct, with the RCS pressure and temperature given at saturation, a steam bubble would be formed in the reactor head if RCS pressure were lowered. This would cause the water level in the vessel to drop as stated in the answer and the pressurizer level to rise at a faster rate due to the expansion of the steam void forcing water into the pressurizer.*

Question No. 2

Tier 1 Group 1

K/A APE 008 AA2.29
PZR Vapor Space Accident:
Ability to determine and interpret the following as they apply to pressurizer Vapor Space Accident: The effects of bubble in reactor vessel

Importance Rating: 3.9 / 4.2

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

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271ES-1.2 B.4

Question Source:
Bank # ________
Modified Bank # ________
New X

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ________
Comprehension or Analysis X

10 CFR Part 55 Content: 43.5 / 45.13

Comments:

3. Unit 1 Reactor has been tripped with plant status as follows:

   - RCS pressure is 1325 psig and slowly dropping.
   - RCS temperature is 530°F and stable.
   - Pressurizer level is 17% and slowly dropping.
   - Containment pressure is 2.1 psig and slowly rising.
   - SG pressures are ~ 1005 psig and stable.
   - SG levels are ~ 40% and stable.
   - Annunciator TS-62-43 REAC COOL PMPS SEAL WATER TEMP HIGH is LIT and indicator for RCP #3 reads 227°F and steady.
   - Annunciator TS-62-42 REAC COOL PMPS LOWER BEARING TEMP HIGH is lit and indicator for RCP #1 reads 201°F and steady.

   Which ONE (1) of the following is the correct action for the RCP(s) in these conditions?

   A. All RCPs are required to be tripped.

   B. ONLY RCP #1 is required to be tripped.

   C✓ ONLY RCP #3 is required to be tripped.

   D. ONLY RCPs #1 and #3 are required to be tripped.

A. *Incorrect. RCPs trip criteria is 1250 psig and the pressure is above the setpoint. Plausible because there is a low pressure trip criteria that has not been reached.*

B. *Incorrect. RCPs trip criteria is when Phase B actuates at 2.81 psig and the pressure is below the Phase B setpoint. Plausible because there is a high-high containment pressure trip that if the setpoint is reached would require tripping the RCPs.*

C. *Correct. RCP seal condition requiring trip is 225°F, and the stated seal temperature is above this value.*

D. *Incorrect. The RCP Lower Bearing temperature is below the temperature(225°F) requiring the RCP to be tripped. Plausible because there is a setpoint for the Lower Bearing temperature requiring the affect RCP be tripped. Additionally, the Lower Motor bearing temperature trip setpoint is 200°F and the lower pump bearing temperature could be confused with the lower motor bearing.*

Question No. 3

Tier _1_ Group _1_

K/A EPE009 EA2.24
Small Break LOCA:Ability to determine or interpret the following as they apply to a small break LOCA, RCP Temperature Setpoints

Importance Rating: 2.6 / 2.9

Technical Reference: E-1 Loss of Reactor or Secondary Coolant
AOP-R.04 Reactor Coolant Pump Malfunctions
Annunciator Responce 1-AR-M5-B (E-2) and (E-4)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.RCP B.5.c
OPL271AOP-R.04

Question Source:
Bank # __________
Modified Bank # __________
New ____X____

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ________
Comprehension or Analysis __X____

10 CFR Part 55 Content: CFR 43.5 / 45.13

Comments:

4. E-1, Loss of Reactor or Secondary Coolant, directs the operator to perform a transfer to Hot Leg Recirculation.

   Which ONE (1) of the following statements correctly describes the basis for this realignment?

   A. Realigns the ECCS flow to reduce Core Exit Thermocouple temperature to acceptable values.

   B. Realigns the ECCS flow to cool the reactor vessel upper internals package.

   C. Realigns the ECCS flow to pass through the RHR heat exchangers to remove decay heat.

   D✓ Realigns the ECCS flow to prevent boron precipitation.

A. Incorrect; Plausible due to Hot leg cooling will put cool water to the region of the CETs thus cooling the CETs however this is not the basis for doing so.

B. Incorrect; The transfer to hot leg recirc does put flow on top of the core but not to cool the upper internals. Plausible due to aligning the flow to the core outlet and reversing flow the knowledge of known flowpaths in core specific to cooling upper internals.

C. Incorrect; While the CCP and SIP ECCS flow when supplied from the RWST does not go through any heat exchanger, the RHR flow is always aligned through the RHR heat exchangers and when the transfer to the containment sump is initiated the cooling flow is placed on the RHR heat exchangers to cool the water coming from the containment sump. Plausible if confused in the alignment of the cooling flow, with the alignment of flow through the RHR heat exchangers.

D. Correct; EPM-3-E-1 states ECCS flow is realigned to reverse flow through the core to address the consequences of boron stratification/plate out.

Question No. 4

Tier _1_ Group _1_

K/A EPE 011EK3.13
Large Break LOCA, Knowledge of the reasons for the following responses as they apply to the Large Break LOCA: Hot-Leg injection recirculation.

Importance Rating: 3.8 / 4.2

Technical Reference: E-1, Loss of Reactor or Secondary Coolant, Rev 23
EPM-3-E-1, Basis Document, For E-1, Rev 5

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271E-1 B.4

Question Source:
Bank # _X_
Modified Bank # __________
New __________

Question History: SQN NRC EXAM 1/2008, SQN Bank question E-1-B.4 003

Question Cognitive Level:
Memory or fundamental knowledge ____X_____
Comprehension or Analysis __________

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

Comments: The words "step 23" was removed from stem. corrected answer wording changing from '*Realigns the ECCS flow to reverse flow through the core to address the consequences of boron stratification/plate out*' to '*Realigns the ECCS flow to reverse flow through the core to prevent the consequences of boron precipitation.*'

5. Unit 1 is operating at full power. Given the following events and conditions on the RCPs:

   - Alarms indicate a loss of **ALL** CCS flow to the RCPs.
   - Seal injection flow rate to each RCP is 8 gpm.

   Which ONE (1) of the following identifies how the operation of the RCP's will be affected if the operators do not respond to this alarm?

   A. The RCPs should operate without CCS indefinitely.

   B. The RCPs will experience seal failure.

   C. The RCP stator windings will overheat.

   D✓ The RCP motor bearings will overheat.

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

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

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

D. Correct, Loss of cooling to the motor bearings will cause overheating of the motor bearings and damage to the RCP motor.

Question No. 5

Tier _1_ Group _1_

K/A 015/017 AK2.08 RCP Malfunctions, Knowledge of the interrelations between the Reactor Coolant Pump Malfunction and the following, CCWS.

Importance Rating: 2.6 / 2.6

Technical Reference: AOP-M.03
AOP-R.04
FSAR 5.5.1.2
1-47W859-2

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271AOP-M.03 B.6
OPT200.RCP B.4

Question Source:
Bank # __X_______
Modified Bank # __________
New __________

Question History: SQN NRC EXAM 1/2008, SEQ Bank AOP-M.03-B.4 8

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ____X_____

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

Comments:

6. Given the following plant conditions:

   - Reactor power is steady-state at 75%.
   - Pressurizer Level Control Selector Switch (XS-68-339E) is in the 339/335 position, and level control is in automatic.
   - Temperature input to the pressurizer level control system fails to 530°F.

   Which ONE (1) of the following describes the effect this condition would have on the pressurizer level control system? (Assume **NO** operator action)

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

   B.✓ Charging initially decreases to minimum flow and indicated pressurizer level lowers to 25% where it stabilizes.

   C. Charging decreases to minimum and indicated pressurizer level lowers to 17%, then level rises to the high level reactor trip setpoint.

   D. Charging increases to 120 gpm and the pressurizer level rises to the high level reactor trip setpoint.

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

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

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

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

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

Question No. 6

Tier 1 Group 1

K/A APE 022 AA2.03
Loss of Rx Coolant Makeup, Ability to determine and interpret the following as they apply to the loss of Reactor Coolant *Pump* Makeup: Failures of flow control valve or controller

Importance Rating: 3.1 / 3.6

Technical Reference: TI-28 Att 9.
1-47W611-68-2
AOP-I.04

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.PZRLCS, B.5

Question Source:
Bank # ___X____
Modified Bank #__________
New __________

Question History: SQN NRC EXAM 1/2008, SEQ Bank PZR LEVEL-B.12.D 1

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ____X____

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

Comments:

7. Unit 1 at 100% power. All conditions are normal with the following exceptions:

- 07:00, 1A RHR Pump is tagged due to motor repair and will be returned to service in 24 hours.
- 08:00, Unit 1 has a reactor trip and SI due to a LOCA.
- 08:01, E-0, Reactor Trip or Safety Injection, is entered followed by a transition to E-1, Loss of Reactor or Secondary Coolant.
- 08:08, The 1B RHR Pump trips on overcurrent due to a locked rotor.
- 08:14, Step 15 of E-1, transitions crew to ECA-1.1, Loss of RHR Sump Recirculation. The conditions at the transition are:
  - RCS pressure is 160 psig
  - Containment pressure is 9.7 psid and stable
  - RWST level is 58% and dropping
  - Containment sump level is 25% and rising

Assuming the plant condition remain unchanged, and ALL ECA-1.1 steps to address Containment Spray Pump operation are completed, how many containment spray pumps will be running and what will be the suction source to the pumps?

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

A. *Incorrect, Due to the requirements of ECA-1.1, with containment pressure greater than 9.5 psid but less than 12.0 psid, one of the two containment spray pump should be shutdown but with stated containment sump level, the suction would be transferred to the containment sump and both pumps placed in service. Suction would not be from the RWST. Plausible because the suction path would not be swapped to the sumps in ECA-1.1 and only 1 pump would be running with conditions other than stated in the stem.*

B. *Incorrect. Due to the requirements of ECA-1.1, with containment pressure greater than 9.5 psid but less than 12.0 psid, one of the two containment spray pump should be shutdown but with stated containment sump level, the suction would be transferred to the containment sump and both pumps placed inservice. Plausible because only one pump would be running with conditions other than stated in the stem and candidate may not relate placing the stopped pump back in service when the the suction path is swapped to the sumps in ECA-1.1 .*

C. *Incorrect. Due to the requirements of ECA-1.1, containment pressure would have to be greater than 12.0 psid to require 2 containment spray pumps to be running and aligned to the RWST. The conditions stated in the stem would result in one of the pumps being stopped, then with the level stated in the containment sump, the suction swapped to the containment sump and and both pumps placed back in service. Plausible if candidate is not aware relationship between containment pressure and the number of pumps that should be in service or is not aware of the sump level required to swap the suction to the sump.*

D. *Correct, 2 containment spray pumps would be running and the suction path would be swapped to the sump in ECA-1.1 with the conditions stated in the stem.*

Question No. 7

Tier 1 Group 1

K/A APE 025 AK2.05
Loss of RHR system, Knowledge of the interrelations between the Loss of Residual Heat Removal System and the following, Reactor Building Sump

Importance Rating: 2.6 / 2.6

Technical Reference: ECA-1.1, Loss of RHR Sump Recirculation

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271ECA-1.1 B6

Question Source:
Bank # ________
Modified Bank # ______X___
New ________

Question History: SQN NRC EXAM 1/2008, SQN Bank ECA-1.1-B.2 002

Question Cognitive Level:
Memory or fundamental knowledge ________
Comprehension or Analysis ____X____

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

Comments:

8. Following a total loss of all AC power, the operator is directed to isolate CCS to the RCP thermal barriers per ECA-0.0, "Loss of Shutdown Power". When offsite power is restored, the operator is directed in ECA-0.1, "Recovery from Loss of Shutdown Power without SI Required", to ensure that the RCP thermal barrier isolation is complete prior to restarting a CCS pump.

   Which ONE (1) of the following describes the **basis**, for isolating the CCS thermal barrier return prior to restarting the CCS pump?

   A. To prevent thermal shock to the RCP pump impeller upon restart of the CCS system during recovery.

   B. To prevent thermal shock to the RCP seal packages upon restart of the CCS system during recovery.

   C. To ensure elevated heat loads as a result of the loss of all AC power are within the design cooling capacity of CCS prior to starting a CCS pump.

   D✓ To prevent steam from forming and circulating in the CCS system and ensures the CCS system is available to cool equipment necessary for recovery.

A. Incorrect, Plausible due to the seal package does allow for cooling the pump shaft, however it is not the reason.

B. Incorrect, Plausible due to Isolating the thermal barrier does secure cooling flow to the seal packages, however it is not the reason.

C. Incorrect, Plausible due to Isolating the thermal barrier would reduce the heat load on the CCS but the isolation is not to ensure the loads are within the capacity of the CCS system.

D. Correct, To prevent steam from forming and circulating in the CCS system and ensures the CCS system is available to cool equipment necessary for recovery.

Question No. 8

Tier _1_ Group _1_

K/A 026 AK3.03
Loss of Component Cooling Water: Knowledge of the following responses as they apply to the Loss of Component Cooling Water: Guidance actions contained in EOP for Loss of CCW.

Importance Rating: 4.0 / 4.2

Technical Reference: ECA-0.0, Loss of All AC Power
EPM-3-ECA-0.0, Basis Document for ECA-0.0 Loss of All AC Power

Proposed references to be provided to applicants during examination: None

Learning Objective: 271ECA-0.0 B.4

Question Source:
Bank # __X______
Modified Bank # __________
New __________

Question History: SQN NRC EXAM 1/2008, WBN Bank ECA0000.08 5

Question Cognitive Level:
Memory or fundamental knowledge ____X_____
Comprehension or Analysis __________

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

Comments:

9. 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 (1) of the following would be the immediate effect if the Pressurizer Master Pressure Controller was placed in MANUAL and the output is raised 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.

A. Incorrect, The Hi pressure alarm is actuated. Heaters do not energize but plausible if they 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.

Question No. 9

Tier _1_ Group _1_

K/A APE 027 AA1.02
Pressurizer Pressure Control System Malfunction, Ability to operate and / or Monitor the following as they apply to the Pressurizer Pressure Control Malfunction: SCR-controlled Heaters in manual mode.

Importance Rating: 3.1 / 3.0

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

Proposed references to be provided to applicants during examination: None

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

Question Source:

Bank # _X______
Modified Bank # __________
New __________

Question History: SQN NRC EXAM 1/2008, WBN Bank SYS068C.22 20

Question Cognitive Level:

Memory or fundamental knowledge ________
Comprehension or Analysis ____X_____

10 CFR Part 55 Content: 41.7 / 45.5 / 45.6

Comments: Added bullet in stem concerning C Bank Backup heater being out of service. If on they would not turn off on increasing output of controller and added 'available' in each choice.

10. The CRO is performing an RCS cooldown in response to a Steam Generator tube rupture. The oncoming shift has arrived in the control room for turnover.

    In accordance with OPDP-1, which ONE (1) of the following identifies turnover requirements?

    A.✓ An operator is NOT permitted to simultaneously turnover and perform the cooldown;
    A Control Board Walkdown and a Log Review by the oncoming operator are required to be completed.

    B. An operator is NOT permitted to simultaneously turnover and perform the cooldown;
    A Control Board Walkdown by the oncoming operator is NOT required provided the Log Review is completed.

    C. An operator is permitted to simultaneously turnover and perform the cooldown;
    A Control Board Walkdown and a Log Review by the oncoming operator are required to be completed.

    D. An operator is permitted to simultaneously turnover and perform the cooldown;
    A Control Board Walkdown by the oncoming operator is NOT required provided the Log Review is completed.

A. Correct, Per OPDP-1, Operations personnel performing shift turnover will not be involved in plant evolutions/activities during performance on shift turnover activities. The Cooldown should be complete prior to conducting turnover .The OPDP also requires a log review and a control board walkdown as a part of turnover.

B. Incorrect, The cooldown should be completed prior to turnover, there is no provision for not completing the board walkdown. Plausible due to candidate could think that due to being in an emergency the walkdown would not be required.

C. Incorrect, Plausible due to candidate not knowing requirement that personnel will not be involved in activities during turnover, and candidate could think that since the cooldown should not be delayed that turnover could be conducted in parallel.

D. Incorrect, Plausible due to candidate not knowing requirement that personnel will not be involved in activities during turnover, and candidate could think that since the cooldown should not be delayed that turnover could be conducted in parallel and that due to being in an emergency the walkdown would not be required

Question No. 10

Tier _1_ Group _1_

K/A 038 G2.1.3
Steam Generator Tube Rupture, Conduct of Operations, Knowledge of shift turnover practices.

Importance Rating: 3.0 / 3.4

Technical Reference: OPDP-1, Conduct of Operations, Rev 8

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271C209 B.10

Question Source:
Bank # ____________
Modified Bank # ____________
New ___X_____

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ____X_____
Comprehension or Analysis ____________

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

Comments:

11. Given the following

- A Reactor Trip/Safety Injection was initiated on Unit 2 due to a steam line break on Steam Generator #1 outside containment but upstream of the MSIV.
- The crew responded in accordance with the emergerency operating procedures.
- When Steam Generator #1 blowdown was complete the RCS conditions were as follows:
  - Pressurizer pressure 1880 psig.
  - Pressurizer level 9%.
  - Lowest RCS Tcold temperature reached was 474°F.

Which ONE (1) of the following identifies the concern when the steam generator blowdown was complete following isolation and the condition(s) required to re-energize the pressurizer heaters?

	Concern when blowdown complete	**To re-energize heaters**
A.	Steam Generator tube failure due to high differential pressure.	Restore level to >17% and Reset SI
B.	Steam Generator tube failure due to high differential pressure.	Restore level to >17% SI reset **NOT** required
C✓	Pressurizer overfill and RCS pressurization.	Restore level to >17% and Reset SI
D.	Pressurizer overfill and RCS pressurization.	Restore level to >17% SI reset **NOT** required

A. *Incorrect; Plausible if student does not understand the Pressure dynamics of the RCS vs SG pressures during given event. Also if student does not know SI would lock out the pressurizer heaters and must be reset before heater would energize.*

B. *Incorrect; Plausible if student does not understand the Pressure dynamics of the RCS vs SG pressures during given event.*

C. *Correct; Per EPM-3-E-2 for SI termination is checked to minimize the likelihood of overfilling the pressurizer. Pressurizer level must be >17% and SI reset for Pressurizer heaters to energize.*

D. *Incorrect; First part correct Per EPM-3-E-2 for SI termination is checked to minimize the likelihood of overfilling the pressurizer. Second part incorrect, plausible if student does not know SI would lock out the pressurizer heaters and must be reset before heater would energize.*

Question No. 11

Tier _1_ Group _1_

K/A 040 AK1.03
Steam Line Rupture, Knowledge of the operational implications of the following concepts as they apply to Steam Line Rupture: RCS Shrink and consequent depressurization.

Importance Rating: 3.8 / 4.2

Technical Reference: EPM-3-E-2 step 7, 1-47W611-68-2

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271E-2 b.6, OPT200PZRPCS b.4

Question Source:
Bank # _________
Modified Bank # _________
New ___X______

Question History: SQN NRC EXAM 1/2008,

Question Cognitive Level:
Memory or fundamental knowledge ____X_____
Comprehension or Analysis __________

10 CFR Part 55 Content: 41.8 / 41.10 / 45.3

Comments:

12. Given the following Unit 1 plant conditions:

- ECA-0.0, Loss of All AC Power is in effect.
- Depressurization of all intact SGs is in progress.
- The SG are to be depressurized at the "maximum rate".

Which ONE of the following identifies the parameter used to determine the maximum rate and the basis for the parameter being the limiting parameter?

A. Ability to maintain pressurizer level above 10% to prevent loss of pressure control resulting in reactor vessel head voiding.

B.✓ Ability to maintain at least one SG narrow range level above 10% to prevent loss of sufficient heat transfer capability from the RCS.

C. Ability to maintain RCS Tcold cooldown equal to or less than 100°F/hour to prevent transition to FR-P.1, Pressurized Thermal Shock.

D. Ability to maintain RCS pressure equal to or greater than 200 psig to prevent nitrogen from entering the the RCS from CLAs.

A. *Incorrect. The ability to maintain 1 SG level above 10% narrow range is the parameter. Loss of pressurizer level and reactor vessel head voiding may occur and are acceptable during the depressurization may stated in a note preceeding step to depressurize the SGs.Maintaining pressurizer level 10% or greater is a parameter monotored in the EOPs that results in actions being taken.*

B. *Correct. The ability to maintain 1 SG level above 10% narrow range is the parameter and the basis is to prevent the loss of sufficient heat transfer capability from the RCS.*

C. *Incorrect. The ability to maintain 1 SG level above 10% narrow range is the parameter, NOT the Tcold cooldown rate. PTS is avoided by stopping the cooldown before reaching PTS temperatures and the FRGs are suspended during ECA-0.0 implementation.*

D. *Incorrect. The ability to maintain 1 SG level above 10% narrow range is the parameter . The depressurization would be stopped and the RCS pressure controlled between 100 and 200 psig. If the pressure were to drop to below 100 psig prior to isolating CLAs, nitrogen could be injected into the RCS as described in a Caution prior to the step for depressurizingthe SGs.*

Question No. 12

Tier _1_ Group _1_

K/A 055 G2.4.18
Station Blackout, Knowledge of the Basis for EOPs.

Importance Rating: 2.7 / 3.6

Technical Reference: ECA-0.0, Loss of All AC Power
EPM-3-ECA-0.0

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271ECA-0.0, Obj 1.b, 3.b, 8

Question Source:
Bank # __________
Modified Bank # ____X_____
New _________

Question History: SQN NRC EXAM 1/2008, Sequoyah bank question ECA-0.0-B.1.B 002 modified

Question Cognitive Level:
Memory or fundamental knowledge ____X____
Comprehension or Analysis __________

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

Comments: Sequoyah bank question ECA-0.0-B.1.B 002modified

13. Given the following conditions:

- A Loss of Offsite Power occurred
- RCS pressure is 2085 psig
- Thot is 573°F
- Core exit thermocouples are 583°F

Which ONE (1) of the following is the closest approximation of RCS subcooling?

A. 58°F

B.✓ 60°F

C. 68°F

D. 70°F

A. Incorrect. Plausible if 15 is subtracted from initial pressure when calculating saturation temp and using incore temperature
641°F-583°F=58°F

B. Correct. (2100 psia Tsat =643°F) 643°F-583°F=60°F

C. Incorrect. Plausible if 15 is subtracted from initial pressure when calculating saturation temp and using Thot instead of incore temperature
641°F-573°F=68°F

D. Incorrect. Plausible if Thot is used instead of incore temperature
643°F-573°F=70°F

Question No. 13

Tier _1_ Group _1_

K/A 056 AK1.03
Loss of off-site Power, Knowledge of the operational implications of the following concepts as they apply to Loss of Off-Site Power: Definition of Subcooling: use of steam tables to determine it

Importance Rating: 3.1 / 3.4

Technical Reference: ES-0.2 Natural Circulation Cooldown.
Steam Tables

Proposed references to be provided to applicants during examination: Steam Tables

Learning Objective: OPL271ES-0.2

Question Source:
Bank # __X______
Modified Bank # __________
New __________

Question History: SQN NRC EXAM 1/2008,056 AK1.03 Prairie Island Unit 1 2004 NRC EXAM

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ____X_____

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

Comments:

14. Given the following plant conditions:

- Units 1 and 2 are operating at 100% power with No Tech Spec LCO actions in effect.
- The 125 V DC Power System is normally aligned with the exception of the Vital Battery Board IV, which is being supplied from the Vital Battery V and

and 2-S Vital Battery Charger.
- Offsite power is lost.
- 1A-A and 2B-B diesel generators start and load.
- 1B-B and 2A-A diesel generators fail to start.

If offsite power has been lost for longer than 4 hours, which ONE (1) of the following statements identifies the condition of the 125V Vital DC batteries? (Assume NO operator action is taken)

A. All four 125v Vital DC Batteries would be at their normal voltage requirements.

B. All four 125v Vital DC Batteries would be discharged beyond design limits.

C.✓ 125v Vital DC Batteries I and IV would be at their normal voltage requirements.
125v Vital DC Batteries II and III would be discharged beyond design limits.

D. 125v Vital DC Batteries II and III would be at their normal voltage requirements.
125v Vital DC Batteries I and IV would be discharged beyond design limits.

A. *Incorrect, while the 125v Vital boards I and IV would have power available to their charger,the II and III boards would not have power. With power available to the chargers, the I and IV batteries would be charged, but the II and III batteries would be discharged. Plausible if the candidate confuses the power supply to the chargers or realizes the chargers have an alternate power supplies (which are available for the II and III boards) but does not recall that manual action would be required to place the alternate power supply in service.*

B. *Incorrect, while the 125v Vital boards I and IV would have power available to their charger, the II and III boards would not have power. With power available to the chargers, the I and IV batteries would be charged, but the II and III batteries would be discharged. Plausible if the candidate concludes that the 480v boards that supply the battery chargers do not sequence back on when the DG recovers the board .*

C. *Correct, as identified on 1,2-45N700-1, the 125v Vital boards I and IV would have power to the battery charger while the battery chargers for II and III would be deenergized, thus the I and IV batteries would be charging and keeping the board powered, while the Vital Batteries Boards II and III, without a battery charger, would be lost as the batteries discharged.*

D. *Incorrect, the 125v Vital boards II and III would NOT have power to the battery charger while the battery chargers for I and IV would be energized, thus the I and IV batteries would be charging and keeping the board powered, while the Vital Batteries Boards II and III, without a battery charger, would be lost as the batteries discharged. Plausible if the candidate reverses the chargers that have power available to them.*

Question No. 14

Tier 1 Group 1

K/A 058 AK1.01
Loss of DC Power: knowledge of the operational implications of the following concepts as they apply to Loss of DC Power: Battery charger equipment and instrumentation.

Importance Rating: 2.8 / 3.1

Technical Reference: 1,2-45N700-1
FSAR 8.1.4
1-AR-M1-C
AOP-P.02

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.DC, b.4, b5

Question Source:
Bank # ___X___
Modified Bank # ________
New ________

Question History: SQN NRC EXAM 1/2008, SQN Bank DC-B.0 002

Question Cognitive Level:
Memory or fundamental knowledge ________
Comprehension or Analysis ___X___

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

Comments: reworded question to address the condition of both the batteries and the battery chargers after greater than 4 hours of DC load be supplied by the batteries board.

15. Which ONE (1) of the following conditions would require entry into Tech Spec 3.7.5, Ultimate Heat Sink?

A. Water level of 675 ft and ERCW supply temperature of 81.5°F.

B. Water level of 677 ft and ERCW supply temperature of 82.5°F.

C✓ Water level of 679 ft and ERCW supply temperature of 83.5°F.

D. Water level of 681 ft and ERCW supply temperature of 84.5°F.

Question requires the candidate to recall both the temperature and level requirements of the UHS. with water temperature above 83 degrees, the river level must be greater than 680' and the temperature equal to or less than 84.5 degrees. If temperature is less than 83 degrees the requirement for river elevation is 670' or greater.

A. Incorrect. Both level and temperature are within the limits required. Plausible because candidate could not be certain where the temperature requirement changed due to river level or may not know the minimum level requirement.

B. Incorrect. Both level and temperature are within the limits required. Plausible because candidate could not be certain where the temperature requirement changed due to river level.

C. Correct. A temperature of 83.5 degrees is above the limit with the river level less than 680'.

D. Incorrect. Both level and temperature are within the limits required. Plausible because the temperature listed is the highest temperature and candidate may not recall the higher temperature is allowed with the river level above 680' or may not recall that there are provisions for exceeding the lower limit listed in the tech spec.

Question No. 15

Tier 1 Group 1

K/A 062 AA1.01
Loss of Nuclear Service Water, Ability to operate and / or monitor the following as they apply to the Loss of Nuclear Service Water: Nuclear Service water temperature indication

Importance Rating: 3.1 / 3.1

Technical Reference: Tech Spec 3.7.5

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.ERCW B.6

Question Source:
Bank # ______
Modified Bank # X
New ______

Question History: SQN NRC EXAM 1/2008, SQN Bank Modified ERCW-B.6 001

Question Cognitive Level:
Memory or fundamental knowledge X
Comprehension or Analysis ______

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

Comments:

16. Given the following plant conditions:

- A Loss Of Coolant Accident (LOCA) outside containment has resulted in RCS Subcooling dropping to 0 degrees 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 (1) of the following is the initial mitigating strategy and what would be the indication used to confirm the LOCA has been isolated?

A. Ensure RHR suction from RCS Isolated
Pressurizer level rising

B.✓ Ensure RHR suction from RCS Isolated
RCS pressure rising

C. Isolate RHR Cold Leg Injection
Pressurizer level rising

D. Isolate RHR Cold Leg Injection
RCS pressure rising

A. *Incorrect; Plausible if student remembers that the initial strategy of ECA-1.2 is to Ensure RHR suction isolation from the RCS but does not remember that the indication is RCS pressure increasing. 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. *Correct; The procedure directs the initial strategy of ensuring RHR suction isolation from the RCS and 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 but it is not the initial mitigating strategy. 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. *Incorrect; Plausible because isolation of RHR Cold Leg injection is a strategy contained in the procedure but it is not the initial mitigating strategy. The procedure directs the use of RCS pressure increasing as the method used to indicate the leak has been isolated.*

Question No. 16

Tier 1 Group 1

K/A W/E04 G2.4.48
LOCA Outside Containment: Ability to interpret control room indications to verify the status and operation of system, and understand how operator actions and directives affect plant and system conditions.

Importance Rating: 3.5 / 3.8

Technical Reference: ECA-1.2

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271ECA-1.2, B.5

Question Source:
Bank # ____X_____
Modified Bank # ________
New __________

Question History: SQN NRC EXAM 1/2008, Modified bank question see comments

Question Cognitive Level:
Memory or fundamental knowledge ____X_____
Comprehension or Analysis ________

10 CFR Part 55 Content: 43.5 / 45.12

Comments: Question modified from combination of SQN bank question ECA-1.2-B.1.A 001and question in INPO bank from Diablo Canyon Unit 1 1/1999

17. Which ONE (1) of the following is an adverse consequence that could result from delaying feed and bleed cooling if the conditions to initiate feed and bleed are met in FR-H.1, "Loss of Secondary Heat Sink"?

A. High Temperature induced failure of S/G U-tube bends.

B. An overpressurization challenge to the Reactor Vessel.

C✓ Inability to prevent or minimize core uncovery due to high RCS pressure.

D. Inability to recover the S/Gs without damage from high thermal stresses caused by cold water refill.

A. Incorrect, Plausible due to U-tube uncovery with assumed RCS high Temp due to loss of cooling.

B. Incorrect, Plausible due to loss of cooling to RCS and assumed RCS pressure rise due to loss of cooling.

C. Correct, Per EPM-3-FR-H.1. In order to minimize core uncovery due to loss of heat sink, the operator must identify loss of heat sink conditions and immediately initiate feed and bleed.

D. Incorrect, Plausible due to possible S/G dryout with subsequent refill.

Question No. 17

Tier _1_ Group _1_

K/A W/E05 EK3.1
Loss of Secondary Heat Sink, Knowledge of the reasons for the following responses as they apply to the Loss of Secondary Heat Sink: Facility operating characteristics during transient conditions, including coolant chemistry and the effects of temperature, pressure, and reactivity changes and operating limitations and the reasons for these operating characteristics.

Importance Rating: 3.4 / 3.8

Technical Reference: EPM-3-FR-H.1, page 12, step 5 note 1

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271FR-H.1 B.6

Question Source:
Bank # __X____
Modified Bank # __________
New __________

Question History: SQN NRC EXAM 1/2008, SQN Bank FR-H.1-03 001

Question Cognitive Level:
Memory or fundamental knowledge ____X____
Comprehension or Analysis __________

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

Comments:

18. Given the following conditions:

- At 0900 the Reactor Trips due to 2 dropped rods.
- At 0920 a small break LOCA occurs.
- At 0950 the crew transitioned to ECA-1.1, "Loss of RHR Sump Recirculation", due to the failure of both RHR pumps.
- Crew has reduced ECCS flow to 1 SIP and 1 CCP per ECA-1.1.
- SI flow cannot be terminated due to lack of subcooling.
- At 1030 the crew is performing ECA-1.1 Step 20 RNO to establish the **minimum** required ECCS flow to remove decay heat.

Which one of the following correctly describes the flow rate that meets the intent of ECA-1.1, Step 20 RNO, AND requirements of using ECCS pumps in meeting this flow rate?

REFERENCE PROVIDED

A.✓ Establish 325 gpm ECCS flow. ECCS pumps may be started and stopped as necessary to accomplish the desired flow rate.

B. Establish 325 gpm ECCS flow. ECCS pumps are NOT permitted to be started and stopped as necessary to accomplish the desired flow rate.

C. Establish 400 gpm ECCS flow. ECCS pumps may be started and stopped as necessary to accomplish the desired flow rate.

D. Establish 400 gpm ECCS flow. ECCS pumps are NOT permitted to be started and stopped as necessary to accomplish the desired flow rate.

A. *Correct. 0900 - 1030 (90 Min) Using ECA-1.1, curve 9, the value is approximately 325 gpm. The Basis states "the operator is then instructed to establish the minimum ECCS flow needed to match decay heat in order to further decrease ECCS pump Flow and delay RWST depletion. This value of 325 gpm is in the acceptable region using the graph from time of trip AND meets the requirement of Minimum Flow to delay RWST depletion. The procedure states ECCS pumps may be started and stopped as necessary to accomplish the desired flow rate.*

B. *Incorrect. Correct flow rate wrong action. Plausible if student does not know procedure requirement to start or stop pumps as neccessary due to a LOCA. The student may think that due to a LOCA pumps must not be stopped.*

C. *Incorrect. Plausible due to 400 gpm meets the curve requirment however it does not meet the intent of the step which is to meet the minimum flow requirements while still meeting the curve requirments. Second part correct in ECCS pumps may be started and stopped as necessary to accomplish the desired flow rate.*

D. *Incorrect. Plausible due to 400 gpm meets the curve requirment however it does not meet the intent of the step which is to meet the minimum flow requirements while still meeting the curve requirments. Plausible if student does not know procedure requirement to start or stop pumps as neccessary due to a LOCA. The student may think that due to a LOCA pumps must not be stopped.*

Question No. 18

Tier _1_ Group _1_

K/A W/E11 EK2.2
Loss of Emergency Coolant Recirculation, Knowledge of the interrelations between the Loss of Emergency Coolant Recirculation 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 / 4.3

Technical Reference: ECA-1.1, Curve 9

Proposed references to be provided to applicants during examination: **Provide ECA-1.1, Curve 9**

Learning Objective: OPL271ECA-1.1, B.6

Question Source:
Bank # __________
Modified Bank # ____X____
New __________

Question History: SQN NRC EXAM 1/2008, WBN NRC EXAM 2006 WE11G2.1.13. Modified

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ___X_____

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

Comments:

19. Given the following:

    - Unit 1 operating at 50% power
    - Rod control in AUTO with Bank D at 176 steps
    - Tavg auctioneering unit fails LOW

    Which ONE (1) of the following identifies how the rod control system will respond **AND** what the indication will be on 1-M-4?

    A. Rods inserting as indicated by RODS IN 'RED' light LIT

    B. Rods inserting as indicated by RODS IN 'GREEN' light LIT

    C✓ Rods withdrawing as indicated by RODS OUT 'RED' light LIT

    D. Rods withdrawing as indicated by RODS OUT 'GREEN' light LIT

A. *Incorrect, If the Tavg Auctioneering Unit failed low, the rod control system would see large error between Tref-Tavg causing the rods start withdrawing not inserting. However, if conditions existed that did result in the rods inserting the 'RODS IN' green light indication would be illuminated, but the light is green not red. Plausible if the candidate confuses the direction of rod movement and the color of the 'RODS IN' light with the color of the 'RODS OUT' light which is red.*

B. *Incorrect, If the Tavg Auctioneering Unit failed low, the rod control system would see large error between Tref-Tavg causing the rods start withdrawing not inserting. However, if conditions existed that did result in the rods inserting the 'RODS IN ' green light indication would be illuminated. Plausible because the candidate could confuse the direction of rod movement but correctly identify the color of the 'RODS IN' light being green.*

C. *Correct, If the Tavg Auctioneering Unit failed low, the rod control system would see a large error between Tref - Tavg causing the rods to start withdrawing. Rod withdrawal causes the 'RODS OUT' red light to be illuminated.*

D. *Incorrect, If the Tavg Auctioneering Unit failed low, the rod control system would see large error between Tref- Tavg causing the rods start withdrawing. The 'RODS OUT' would be illuminated but the light is red not green. Plausible if the candidate determines the correct direction of rod movement but confuses the color of the 'RODS OUT' light with the color of the 'RODS IN' light which is green.*

Question No. 19

Tier 1 Group 2

K/A 001 AK2.05
Knowledge of the interrelations between the Continuous Rod Withdrawal and the following: Rod motion lights

Importance Rating: 2.9 / 3.1

Technical Reference: FSAR Section 7.7.1
TI-28, Curve Book, Attachment 9,

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200RDCNT B.5.d

Question Source:
Bank # __________
Modified Bank # ____X_____
New __________

Question History:SQN bank question RDCNT B.14.d 011mod for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis __X_____

10 CFR Part 55 Content: 41.7 / 45.7

Comments:

20. Given the following plant conditions for Unit 2:

- Intermediate Range N36 failed high.
- Operators placed the level trip bypass switch for N36 to the bypass position.
- Subsequently the Reactor trips due to Large Break LOCA.

Which ONE (1) of the following describes the operation of source range instruments to be used to monitor the Subcriticality Status Tree?

A. Source Range channel N31 and N32 are automatically reinstated when power decreases below P-10.

B. Source Range channel N31 and N32 are automatically reinstated when power decreases below P-6.

C✓ Both Source Range channels, N31 and N32, must be manually reinstated when the operable Intermediate Range channel (N35) decreases below the P-6 setpoint.

D. Both Source Range channels, N31 and N32, must be manually reinstated when the operable Intermediate Range channel (N35) decreases below the P-10 setpoint.

A. Incorrect, Source range channels are not reinstated until the IRMs drop below the P-6 setpoint. With one IRM failed high the SRMs cannot automatically reinstate. Plausible because there in a P-10 backup to ground the output of the SRMs as power increases causing the SRMs output to read zero. This backup signal is automatically removed as the P-10 clears

B. Incorrect, Source range channels are normally reinstated automatically when both of the IRMs drop below the P-6 setpoint. With one IRM failed high the SRMs cannot automatically reinstate. Plausible because the SRM trip can be blocked as power increases when one IRM increases above the P-6 setpoint and the candidate could confuse the 1 out of 2 requirement going up with the 2 out of 2 requirement coming down.

C. Correct, with one of the IRMs failed high, manual reinstatement of the SRM is required.

D. Incorrect, SRM are automatically reinstated when the IRM drop below the P-6 setpoint, not below the P-10 setpoint. Plausible because the candidate could mistake the 2 setpoints.

Question No. 20

Tier _1_ Group _2_

K/A 033 G2.4.21
Loss of Intermediate Range NI: Knowledge of the parameters and logic used to assess the status of safety functions including: 1. Reactivity control, 2. Core cooling and heat removal, 3. Reactor Coolant system integrity, 4. Containment Conditions, 5. Radioactivity release control.

Importance Rating: 3.7 / 4.3

Technical Reference: AOP-I.0, Nuclear Instument Malfunction, Rev 8 page 9
1,2-47W611-99-2 Rev 13

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271AOP-I.01, B.8

Question Source:
Bank # ________
Modified Bank # __X__
New ________

Question History: SQN NRC Exam 1/2008, SQN Bank Modified NIS-B.2. 007

Question Cognitive Level:
Memory or fundamental knowledge ____X_____
Comprehension or Analysis ________

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

Comments:

21. Given the following:

- Unit 1 is in Mode 6 and currently loading fuel into the core.
- Ice is being blown into the Ice Condenser Baskets.
- A previous cycle fuel assembly is dropped during transfer to its core location.
- Bubbles can be seen rising from the dropped fuel assembly and Area Radiation Monitors go into high alarm.

In accordance with AOP-M.04, Refueling Malfunctions, all of the following would be required **EXCEPT**?

A.✓ Initiate Control Room Isolation.

B. Evacuate el. 734 Refuel Floor.

C. Initiate Auxiliary Building Isolation.

D. Close 1-78-610, Transfer Tube Wafer Valve.

Could not identify enough plausible distractors to allow elimination of the negative approach in the stem of the question.

A. Correct, Not required by procedure.

B. Incorrect, Evacuate Aux Building el. 734 Refuel Floor. To be performed per AOP-M.04 but Plausible due to dropped fuel occurring in the Containment Building and the refuel floor is outside containment.

C. Incorrect, To be performed per AOP-M.04 but Plausible due to dropped fuel occuring in the Containment Building.

D. Incorrect, Plausible if student thinks valve closure would not be required since water level is not dropping.

Question No. 21

Tier _1_ Group _2_

K/A 036 AK1.01
Fuel Handling Incidents: Knowledge of the operational implications of the following concepts as they apply to Fuel Handling Incidents: Radiation exposure hazards.

Importance Rating: 3.5 / 4.1

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

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271AOP-M.04 B.5,8

Question Source:
Bank # ________
Modified Bank # ________
New ____X____

Question History: New for SQN NRC EXAM 1/2008,

Question Cognitive Level:
Memory or fundamental knowledge ___X______
Comprehension or Analysis ________

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

Comments:

22. Waste Gas Decay Tank J contains high activity gas. Waste Gas Decay Tank J relief valve develops a large flange leak.

Which ONE (1) of the following would identify the response of the Rad Monitors listed?

A. Waste Gas Rad Monitor (RE-90-118) would alarm, but the Auxiliary Building Ventilation Monitor (RE-90-101) would **NOT** alarm.

B. Waste Gas Rad Monitor (RE- 90-118) would alarm, and the Auxiliary Building Ventilation Monitor (RE-90-101) would alarm.

C✓ Waste Gas Rad Monitor (RE- 90-118) would **NOT** alarm, but the Auxiliary Building Ventilation Monitor (RE-90-101) would alarm.

D. Waste Gas Rad Monitor (RE- 90-118) would **NOT** alarm, and the Auxiliary Building Ventilation Monitor (RE-90-101) **NOT** alarm.

A. Incorrect, leakage must enter the WGDT release line to pass by waste gas radiation monitor RE-90-118. Flange leakage would not enter this line but rather the general Aux Building Spaces where it would eventually pass by Aux building stack radiation monitor RE-90-101. Therefore for flange leakage, 90-118 would not alarm and 90-101 would alarm. Plausible if student does not understand the relationship between the ventilation system and rad monitors.

B. Incorrect, leakage must enter the WGDT release line to pass by waste gas radiation monitor RE-90-118. Flange leakage would not enter this line but rather the general Aux Building Spaces where it would eventually pass by Aux building stack radiation monitor RE-90-101. Therefore for flange leakage, 90-118 would not alarm and 90-101 would alarm. Plausible if student does not understand the relationship between the ventilation system and rad monitors.

C. Correct, leakage must enter the WGDT release line to pass by waste gas radiation monitor RE-90-118. Flange leakage would not enter this line but rather the general Aux Building Spaces where it would eventually pass by Aux building stack radiation monitor RE-90-101. Therefore for flange leakage, 90-118 would not alarm and 90-101 would alarm.

D. Incorrect, leakage must enter the WGDT release line to pass by waste gas radiation monitor RE-90-118. Flange leakage would not enter this line but rather the general Aux Building Spaces where it would eventually pass by Aux building stack radiation monitor RE-90-101. Therefore for flange leakage, 90-118 would not alarm and 90-101 would alarm. Plausible if student does not understand the relationship between the ventilation system and rad monitors.

Question No. 22

Tier _1_ Group _2_

K/A 060 AA1.02
Accidental Gaseous Radwaste Release: Ability to operate and / or monitor the following as they apply to accidental gaseous radwaste: Ventilation system

Importance Rating: 2.9 / 3.1

Technical Reference: 1,2-47W830-4
1,2-47W866-1

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.GRW, B.5
OPT200.RM, B.4

Question Source:
Bank # ________
Modified Bank # ___X_____
New ________

Question History: SQN NRC EXAM 1/2008, modified from WGDS-B.3.A 006

Question Cognitive Level:
Memory or fundamental knowledge ____X_____
Comprehension or Analysis __________

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

Comments: modified from SQN question WGDS-B.3.A 006

23. Given the following for Unit 1:

- Plant is at 100% power.
- Containment entry is in progress for maintenance.
- The following annunciators are locked in.
    - LWR PERS ACCESS OUTER DR LOCK
    - LWR PERS ACCESS INNER DR LOCK
    - UPR/LWR AIR LOCK BREACH
- Containment pressure has rapidly equalized with the Aux Building.
- Containment pressure currently indicates 0.18 PSID.

In addition to TS 3.0.3, which ONE (1) of the following identifies both, a required TS entry **AND** its associated action statement?

A. Enter TS 3.6.1.4 "INTERNAL PRESSURE" and restore Containment to annulus DP within 1 hour.

B.✓ Enter TS 3.6.1.1 "CONTAINMENT INTEGRITY" and restore Containment integrity within 1 hour.

C. Enter TS 3.6.1.3 "CONTAINMENT AIR LOCKS" and restore both Containment Access doors to operable status within 1 hour.

D. Enter TS 3.6.1.2 "SECONDARY CONTAINMENT BYPASS LEAKAGE" and restore Secondary Containment Bypass Leakage within 1 hour.

A. Incorrect, Plausible if student does not know LCO for Containment pressure with question indicating rapid drop in pressure.Containment pressure still within limits of Tech Spec 3.6.1.4 of -0.1 and 0.3 psig.

B. Correct, Due to Not meeting requirements of TS 3.6.1.3 per surveillance requirements of TS 4.6.1.1

C. Incorrect, Plausible if student does not know LCO for Containment Air Locks. There is no 1 hour action for TS 3.6.1.3 associated with any doors being inoperable.

D. Incorrect, Plausible if student does not know that Containment Access doors are not considered bypass leakage paths to the Auxiliary Building.

Question No. 23

Tier _1_ Group _2_

K/A 069 G2.4.45
Loss of CTMT Integrity: Ability to prioritize and interpret the significance of each annunciator or alarm.

Importance Rating: 3.3 / 3.6

Technical Reference: 0-AR-M12-C page 2,3,4, and 7. Tech Specs 3.6.1.1, 3.6.1.3.

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.CntmtStructure B.5 & 6

Question Source:
Bank # __________
Modified Bank # __________
New ____X_____

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ____X____

10 CFR Part 55 Content: (CFR 43.5 / 45.3 / 45.12)

Comments:

24. During the performance of FR-C.1, "Inadequate Core Cooling" the operators are directed to start the RCPs if Incore TCs remain >1200°F.

Which ONE (1) of the following describes the purpose of starting the RCPs?

A. Provides temporary cooling to the core by forcing single-phase flow through the core.

B.✓ Provides temporary cooling to the core by forcing two-phase flow through the core.

C. Ensure steam bubbles in the SG U-tubes are removed to maximize heat transfer for cooling the core.

D. Ensure steam bubbles in the RCS intermediate legs are collapsed to minimize RCS flow restrictions for cooling the core.

A. Incorrect, With TCs >1200 F RCS will not be single-phase flow when pumps are started.

B. Correct, Provides temporary cooling to the core by forcing two-phase flow through the core.

C. Incorrect, Plausible due to flow will pass through the SG U-tubes how ever two phase flow will be pushed through. Steam bubbles will be entrained in the RCS. Starting the RCPs will not ensure steam bubbles are removed.

D. Incorrect, Plausible due to starting RCP's will actually clear the water inventory in the intermediate leg and permit circulation of hot gases from the core to the S/G's. The student may equate the formation of a loop seal to stopping any flow through the leg.

Question No. 24

Tier 1 Group 2

K/A 074 EK3.07
Inadequate Core Cooling: Knowledge of the reasons for the following responses as they apply to the Inadequate Core Cooling, Starting up emergency feedwater and RCP's

Importance Rating: 4.0 / 4.4

Technical Reference: FR-C.1 Step 21 starts RCP's. EPM-3-FR-C.1 for step 21.

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271FR-C.1 B.4

Question Source:
Bank # X
Modified Bank # ______
New ______

Question History: SQN NRC EXAM 1/2008, SQN Bank SQN FR-C.1 002

Question Cognitive Level:
Memory or fundamental knowledge X
Comprehension or Analysis ______

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

Comments: Some distracters changed

25. Given the following:

- The unit has been at 100% power
- Total primary to secondary leakage is 29 gpd
- Identified RCS leakage is 0.02 gpm
- Unidentified RCS leakage is 0.02 gpm
- Pzr level, VCT level, charging flow, and letdown flow are all stable

If fuel failure resulted in a significant increase in RCS activity, which ONE (1) of the following identifies how the identified process rad monitors would respond?

1-RM-90-106 - Lower Containment Radiation Monitor
1-RM-90-119 - Condenser Vacuum Pump Exhaust Rad Monitor

	1-RM-90-106	**1-RM-90-119**
A.	Stable	Rising
B.	Stable	Stable
C✓	Rising	Rising
D.	Rising	Stable

A. *Incorrect, The lower containment radiation monitors will increase concurently with the condenser vacuum pump radiation monitor as described in AOP-R.01. Plausible if the candidate concludes that the radiation in lower containment will not increase.*

B. *Incorrect, Both of the radiation monitors will see increased radiation as described in AOP-R.01. Plausible if the candidate concludes that with the radiation in lower containment will not increase and that with the identified leakage numbers that the condenser vacuum pump would not sense the increase.*

C. *Correct, If a fuel defect occured concurrently with a steam generator tube leak, the lower containment radiation and the radiation sensed at the condenser vacuum pump discharge could increase as described in AOP-R.01, Steam Generator Tube Leak.*

D. *Incorrect, The condenser vacuum pump radiation monitor, would not be stable, it would increase as described in AOP-R.01. Plausible because the candidate may conclude that the radiation in lower containment would rise but also conclude that the condenser vacuum pump would not sense the increase because of the amount of leakage in the question.*

Question No. 25

Tier 2 Group 2

K/A 076AK2.01
High Reactor Coolant Activity: Knowledge of the interrelations between the High Reactor Coolant Activity and the following:
Process Radiation Monitors.

Importance Rating: 2.6 / 3.0

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

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271AOP-R.01 B.6

Question Source:
Bank # __X_______
Modified Bank # __________
New ________

Question History: SQN NRC EXAM 1/2008, SQN question AOP-R.06-B.0 001

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ___X____

10 CFR Part 55 Content: 41.5 / 45.5

Comments:

26. Given the following plant conditions:

- Reactor trip occurred with subsequent loss of RCPs.
- Operators have implemented ES-0.2, "Natural Circulation Cooldown" to go to Cold Shutdown.
- A cooldown rate of 25°F/hour has been established.
- RCS depressurization has been initiated.
- RVLIS upper plenum range - 98%.
- The Shift Manager has determined that cooldown shall proceed as quickly as possible due to reduced CST inventory.

Which ONE (1) of the following correctly states the procedure that maximizes the allowable cooldown rate for the provided circumstances and maximum cooldown rate allowed by the procedure?

A. Use ES-0.2, Natural Circulation Cooldown
The cooldown limit is 50°F/hr

B. Use ES-0.2, Natural Circulation Cooldown
The cooldown limit is 100°F/hr

C. Use ES-0.3, Natural Circulation Cooldown With Steam Voids in Vessel (with RVLIS)
The cooldown limit is 50°F/hr

D✓ Use ES-0.3, Natural Circulation Cooldown With Steam Voids in Vessel (with RVLIS) The cooldown limit is 100°F/hr

A. *Incorrect. Plausible if student does not remember a transition point to ES-0.3 due to need for cooldown due to low CST inventory and cooldown rate limits for the procedures. Cooldown limit of 50 degrees/hr is the normal cooldown limit on natural circulation however, ES-0.3 allows up to 100 degrees/hr*

B. *Incorrect. Plausible if student does not remember a transition point to ES-0.3 due to need for cooldown due to low CST inventory and cooldown rate limits for the procedures. Cooldown limit of 50 degrees/hr is the normal cooldown limit on natural circulation however, ES-0.3 allows up to 100 degrees/hr*

C. *Incorrect. Plausible if student does remember a transition point to ES-0.3 due to SM decision to proceed as quickly as possible due to a condition such as CST inventory and student does not know cooldown rate limit ES-0.3. 50 degrees/hr is the normal cooldown limit on natural circulation and ES-0.3 allows up to 100 degrees/hr*

D. *Correct. The SM decision to proceed as quickly as possible due to a condition such as CST inventory requires transition to ES-0.3. ES-0.3 limits cooldown to 100 degrees/hr*

Question No. 26

Tier _1_ Group _2_

K/A W/E09 EA2.1
Natural Circulation with Steam Void in Vessel with/without RVLIS: Ability to determine and interpret the following as they apply to the Natural Circulation with Steam Void in Vessel with/without RVLIS: Facility condition and selection of appropriate procedures during abnormal and emergency operations.

Importance Rating: 3.2 / 3.9

Technical Reference: ES-0.2 Rev 15 Step 13

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271ES-0.3 B.4 & 5

Question Source:

Bank # ____X_____
Modified Bank # ___________
New ___________

Question History: SQN NRC Exam 1/2008, Reworded from SQN FR-C.2-B.4.C 001

Question Cognitive Level:

Memory or fundamental knowledge __________
Comprehension or Analysis ___X____

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

Comments:

27. While performing actions of FR-Z.1, "Response to High Containment Pressure", what steps are taken to limit the peak pressure rise in containment in the event of a Main Steam Line Break in containment?

A. Start Ice Condenser Air Handling Units.

B. Dispatch personnel to open Air Return Fan breakers.

C. Throttle all AFW Flow to less than 25 gpm per Steam Generator.

D✓ Isolate AFW Flow to any Steam Generator depressurizing in an uncontrolled manner.

A. Incorrect. Plausible due to concept of starting Ice Condenser Air Handling Units may help cool containment thus reducing containment pressure. Step 12 directs opening of Ice Condenser AHU Breakers so option to start Ice Condenser Air Handling Units is wrong.

B. Incorrect. Plausible due to requirement to check one containment air return fan running. Since there is a step to open the Ice Condenser AHU Breakers the student may mistake the opening on the Ice Condenser Air Handling Unit Breakers with Containment Air Return Fan breakers.

C. Incorrect. Plausible due to throttling feedwater would reduce inventory going into containment thus minimizing steam release pressure rise in containment. Step 10 (If all S/Gs faulted then control feed flow to greater than or equal to 25 gpm to each S/G to prevent dryout).

D. Correct. Step 11 Isolates feed flow to affected S/G. This step may eliminate mass and energy releases to the containment.

Question No. 27

Tier _1_ Group _2_

K/A W/E14 EA2.2
High Containment Pressure: Ability to determine and interpret the following as they apply to the High Containment Pressure: Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Importance Rating: 3.3 / 3.8

Technical Reference: FR-Z.1 High Containment Pressure
EPM-3-FR-Z.1 Basis Document for FR-Z.1

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271FR-Z.1 B.6

Question Source:
Bank # ____X_____
Modified Bank # _________
New __________

Question History: SQN NRC EXAM 1/2008, Braidwood Unit 1, NRC Exam given 7/17/2002.

Question Cognitive Level:
Memory or fundamental knowledge ____X_____
Comprehension or Analysis __________

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

Comments:

28. Given the following:

- Unit 1 is at 32% power.
- 1B Start Bus trips out on differential relay actuation.

Which ONE (1) of the following describes the plant response?

A.✓ Reactor trips due to the loss of power to RCP #2 and RCP #4.

B. Reactor trips due to the loss of power to RCP #1 and RCP #3.

C. Only the 1B-B D/G starts and connects to the 1B-B 6.9 KV SD Bd.

D. All 4 D/Gs start but ONLY the 1B-B D/G connects to the 6.9 KV SD Bd.

A. Correct. UV due to 1B Start Bus trip on RCP#2 and 4 meets 2 of 4 logic for a reactor trip under 35% RTP.

B. Incorrect. Plausible if student does not know power supplies to RCP's 1 and 3 comes through Start bus 1A and student understands Reactor will trip under 35% RTP.

C. Incorrect. Plausible if student does not understand trip logic under 35% RTP. This part is plausible due to 1B start bus loss of power and student understands loss of power to S/D boards will start EDG's. The student may think only the 1B D/G would start due to 1B start bus loss of power and connect to the 1B SD Bd. All 4 D/G start, but only the 1A would connect which is the wrong D/G identified in the distractor. 1B start bus feeds 1A shutdown boards.

D. Incorrect. Plausible if student does not understand trip logic under 35% RTP. This part is plausible due to 1B start bus loss of power and student understands loss of power to S/D boards will start EDG's. The student may know ALL EDG's start but confuse which EDG would connect with the Shutdown boards. All 4 D/G start, but only the 1A would connect which is the wrong D/G per the answer listed. 1B start bus feeds 1A shutdown board.

Question No. 28

Tier 2 Group 1

K/A 003 K3.04
Reactor Coolant Pump System: Knowledge of the effect that a loss or malfunction of the RCPS will have on the following, RPS.

Importance Rating: 3.9 / 4.2

Technical Reference: 611-99 drawings

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.RCP B.4, 5

Question Source:
Bank # X
Modified Bank # ____
New ____

Question History: SQN NRC Exam 1/2008, SQN Bank RCP-B.10.A 1

Question Cognitive Level:
Memory or fundamental knowledge ____
Comprehension or Analysis X

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

Comments: Changed all distracters to increase the plausibility, Changed initial power level from 30% to 32%. Student may know logic but misunderstand setpoint as 30%. To ensure student knows the setpoint for power, power was increased 2%.

29. During a plant shutdown/cooldown, which ONE (1) of the following describes the **earliest** condition required to perform Hydrogen Peroxide (H_2O_2) addition to the RCS with one RCP running, **and** the reason for the addition of Hydrogen Peroxide?

	Condition	Reason
A.	RCS Temp Less Than 250^{0}F provided RHR is in service	Lower the corrosion rate of the RCS
B.	RCS Temp Less Than 250^{0}F provided RHR is in service	Minimize Dose in Steam Generator area
C.	RCS Temp Less Than 180^{0}F	Lower the corrosion rate of the RCS
D.✓	RCS Temp Less Than 180^{0}F	Minimize Dose in Steam Generator area

A. *Incorrect. Plausible due to the Dissolved Oxygen Technical requirement limit not being applicable below 250 degrees and the addition of Hydrogen Peroxide occurs after RHR is in service. Since adding Hydrogen Peroxide will change ph, student may may Interpret this as affecting the corrosion rate. Corrosion rate is affected for a short time by actually raising the rate due to higher oxygen levels in RCS and ph change.*

B. *Incorrect. Plausible due to the Dissolved Oxygen Technical requirement limit not being applicable below 250 degrees and the addition of Hydrogen Peroxide occurs after RHR is in service. Minimizing Dose in Steam Generator area is correct per note in procedure.*

C. *Incorrect. Plausible due to correct temp listed but reason incorrect. Since adding Hydrogen Peroxide will change ph, student may may interpret this as affecting the corrosion rate. Corrosion rate is affected for a short time by actually raising the rate due to higher oxygen levels in RCS and ph change.*

D. *Correct. Per 0-GO-7. Note: Any temperature less than 180F with at least one RCP running. This minimizes the dose in the Steam Generator area.*

Question No. 29

Tier 2 Group 1

K/A 003 G2.3.10
Reactor Coolant Pump: Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.

Importance Rating: 2.9 / 3.3

Technical Reference: O-GO-7 Section 5.5 Step 8 Note.

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271GO-7 B.1

Question Source:
Bank # __________
Modified Bank # __________
New X

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge X
Comprehension or Analysis __________

10 CFR Part 55 Content: (CFR 43.4 / 45.10)

Comments:

30. Given the following:

- Unit 1 at 100% power
- Letdown in service at 75 gpm

Which ONE (1) of the following lists two conditions where **BOTH** would result in a decrease in the available NPSH to the CCPs?

(Evaluate each condition separately)

	Condition 1	**Condition 2**
A.	VCT Level transmitter, 1-LT-62-130A fails Low	Loss of air to 1-FCV-62-77, Letdown Flow Isolation
B.✓	VCT Level transmitter 1-LT-62-130A fails High	Loss of air to 1-FCV-62-93, Charging Flow Control
C.	Raising setpoint on 1-TCV-70-192, Letdown Heat Exchanger TCV	Loss of air to 1-FCV-62-118, Letdown Divert to HUT LCV
D.	Lowering setpoint on 1-TCV-70-192, Letdown Heat Exchanger TCV	Loss of air to 1-FCV-62-79, Mixed Bed High Temp Bypass

A. *Incorrect, the level transmitter failing low would result in automatic makeup to the VCT and cause the VCT pressure to rise causing an increase in NPSH to the CCP. Plausible because the candidate may not realize that the failure cause the auto make-up and how that would affect VCT pressure. Condition 2 is correct in that letdown would isolate lowering level in the VCT.*

B. *Correct, the level transmitter failing high would result in the divert valve opening cause the VCT pressure to drop causing an decrease in NPSH to the CCP. Loss of air to the Charging Flow Control valve will cause the valve to fail open thus raising charging flow and increasing the head loss through the piping due to higher velocity, thus lowering NPSH.*

C. *Incorrect, raising the setpoint on the letdown heat exchanger TCV would cause the temperature in the VCT to rise while the VCT pressure remained unchanged, thus decreasing the NPSH to the CCPs. Loss of air to the Letdown Divert to HUT LCV causes the valve to fail in the VCT position therefore not affecting VCT level or NPSH to the CCPs. Plausible because the candidate could get confused on which way the changes effect letdown or not know which way the valve fails on loss of air.*

D. *Incorrect, lowering the setpoint on the letdown heat exchanger TCV would cause the VCT temperature to drop, thus raising the NPSH to the charging pumps. However, Loss of air to the Mixed Bed High Temp Bypass will cause the valve to fail in the bypass position and have no effect on VCT level or NPSH to the charging pump. Plausible because the candidate could get confused on which way the change of the setpoint effects letdown or the effect of the failure of the Mixed Bed High Temp Bypass valve.*

Question No. 30

Tier _2_ Group _1_

K/A 004 K5.26
Chemical and Volume Control: Knowledge of the operational implications of the following concepts as they apply to the CVCS: Relationship between VCT pressure and NPSH for Charging pumps.

Importance Rating: 3.1 / 3.2

Technical Reference: 1-47W611-62-1
1-47W611-62-2
1-47W611-62-3
1-47W611-62-4
1-47W611-70-2

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.CVCS B.4, & 5

Question Source:
Bank # __________
Modified Bank # __________
New ____X____

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ____X____

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

Comments:

31. Given the following plant conditions:

- Reactor power is stable at 66% with Tave on program
- The pressurizer level control system is in Automatic

Which ONE (1) of the following identifies the pressurizer level control setpoint?

A. 41%

B. 45%

C.✓ 48%

D. 60%

Justification:

Candidate should realize that at 66% power and Tavg on program, the pressurizer level should be 66% of the pressuirzer level span added back to the Zero power level setpoint.

66%(60 - 24.7) + 24.7 = 47.998 = 48%

Because Tavg determines pressurizer level, another method the candidate might choose is determine the Tavg change and then determine pressurizer level change.

Per TI-28 page 10 with reactor power 66%, Tavg should be between 567 and 568 degrees F.
Per Table in AOP-C.01 Appendix A with Rx power at 66%. Tavg should be 567.6 degrees F and pressurizer level should be 48%
If Tavg calculated using data in TI-28, Attachment 9,

% Rx power (Full power Tavg - Zero power Tavg)+ Zero power Tavg
66% (578.2 - 547) + 547= 20.592 + 547 = 567.592

If Pressurizer level setpoint calculated using data in TI-28, Attachment 9, with Tavg change of 20.592 divided by total Tavg change from 0 to 100% power then multiplied by change in pressurizer level from 0 to 100% power and added back to the minimum pressurizer level

(20.592/31.2)(60%-24.7%) +24.7 = 47.998 = 48%

A. Incorrect, Plausible if the level setpoint at zero power is multiplied by the % power instead of the change in pressurizer level (35.3)
66%(24.7) + 24.7 = 41.002 = 41%

B. Incorrect, Plausible if the change in Tavg (31.2) is used instead of the change in pressurizer level (35.3) 66%(31.2) + 24.7 = 42.292% = 45%

C. Correct, 66%(60 - 24.7) + 24.7 = 47.998 = 48%

D. Incorrect, Plausible if the change in pressurizer level from 0 to 100% power is divided by the % change in power instead of multiplied.
35.3 / .66 = 53.485 = 53%

Question No. 31

Tier _2_ Group _1_

K/A 004 A3.08
Chemical and Volume Control: Ability to monitor automatic operation of the CVCS, including: Reactor Power

Importance Rating: 3.9 / 3.9

Technical Reference: TI-28 Rev 212 Pg 10 Rx Power vs RX Temp.
TI-28, Attachment 9, Effective Date 6/28/07 page 14
AOP-C.01 R17, Appendix A, Tavg/Tref and Pzr Level Program Values

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.PZRLCS B.3.d

Question Source:
Bank # ___X_____
Modified Bank # __________
New __________

Question History: SEQ Bank # PZR LEVEL 7, SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ____X____

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

Comments: Changed wording in the stem and power level of the reactor. change value in distractor A,B and C.

32. Unit 1 is currently in Mode 3 with a shutdown to Mode 5 underway. Which ONE (1) of the following correctly identifies the administrative temperature limit and the electrical interlock for opening 1-FCV-74-1 & 2, RHR Loop 4 Hot Leg Isolation valves in accordance with 0-SO-74-1, Residual Heat Removal System?

A. <235°F administrative limit, 350 psig electrical interlock

B. <235°F administrative limit, 380 psig electrical interlock

C. <350°F administrative limit, 350 psig electrical interlock

D✓ <350°F administrative limit, 380 psig electrical interlock

GO-7, Rev 48 Limitation B.

The RCS pressure and temperature should NOT exceed 350 psig or 235°F when the RHR system is in service. RCS pressure and temperatue shall NOT exceed 380 psig or 350°F when FCV-74-1 & -2 are open.

0-SO-74-1 Rev 64, Section 5.5.1

CAUTION prior to step 6

Unit must be in Mode 4 (<350°F) prior to performing the remainder of this section. Refer to LCO 3.5.3

NOTE prior to step 10

Pressure interlocks prevent FCV-74-1 and FCV-74-2 from being opened until RCS pressure is less than 380 psig.

Step 11 unlocks the breakers and restores power to FCV-74-1 and FCV-74-2 and subsequent steps open the valves.

A. *Incorrect, The administrative temperature limit is <350°F and the electrical interlock is 380 psig. Plausible because both the values listed are identified in 0-GO-7 as the values the temperature and pressure should not exceed when RHR is in service.*

B. *Incorrect, The administrative temperature limit is <350°F and the electrical interlock is 380 psig. Plausible because the temperature value listed is identified in 0-GO-7 as the value the temperature a should not exceed when RHR is in service and the pressure value listed is the correct value of the interlock.*

C. *Incorrect, The administrative temperature limit is <350°F and the electrical interlock is 380 psig. Plausible because the pressure value listed is identified in 0-GO-7 as the value the pressure should not exceed when RHR is in service and the temperature value listed in the correct value of the administrative limit.*

D. *Correct, The administrative temperature limit is <350°F and the electrical interlock is 380 psig as identified in 0-SO-74-1.*

Question No. 32

Tier 2 Group 1

K/A 005 A4.03
Residual Heat Removal: Ability to manually operate and /or monitor in the control room:
RHR Temperature, PZR Heaters and Flow, and nitrogen.

Importance Rating: 2.8 / 2.7

Technical Reference: 0-SO-74.1, RESIDUAL HEAT REMOVAL SYSTEM, Rev 64
0-GO-7, Rev 48

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.RHR B.4

Question Source:
Bank # ____X_____
Modified Bank # __________
New __________

Question History: SQN NRC Exam 1/2008, SQN Bank RHR-B.12.G 008

Question Cognitive Level:
Memory or fundamental knowledge ____X_____
Comprehension or Analysis _________

10 CFR Part 55 Content: (CFR 41.7 / 45.5 to 45.8)

Comments: SQN bank question RHR-B.12.G 008 - changed the pressure value in 2 distractors and changed wording in the stem but not enough to call modified.

33. Which ONE (1) of the following correctly describes the response of the Eagle-21 system and SSPS if containment sump swapover level criteria is met with a valid Safety Injection signal present?

	Eagle-21	**SSPS**
A.	bistables de-energize	input relays de-energize
B.	bistables de-energize	input relays energize
C.	bistables energize	input relays de-energize
D✓	bistables energize	input relays energize

A. Incorrect, Eagle-21 bistables do not de-energize, and the SSPS input relays do not de-energize. Plausible if the candidate confuses or is not aware which way the bistables/relays respond (energize or de-energize) to the containment sump swapover level criteria being met.

B. Incorrect, Eagle-21 bistables do not de-energize, but the SSPS input relays do not energize. Plausible if the candidate confuses or is not aware which way the bistables/relays respond (energize or de-energize) to the containment sump swapover level criteria being met.

C. Incorrect, Eagle-21 bistables do energize, but the SSPS input relays do not de-energize. Plausible if the candidate confuses or is not aware which way the bistables/relays respond (energize or de-energize) to the containment sump swapover level criteria being met.

D. Correct, The Eagle-21 bistables would energize if the containment sump swapover level criteria being met, and SSPS inputs relays would energize to cause the logic circuitry to actuate the master relay in the SSPS system.

Question No. 33

Tier _2_ Group _1_

K/A 006 K1.02
Emergency Core Cooling System: Knowledge of the physical connections and/or cause-effect relationship between the ECCS and the following systems: ESFAS

Importance Rating: 4.3 / 4.6

Technical Reference: FSAR, Section 7.2 and 7.3
1-47W610-63-3

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.RPS, B.3
OPT200.EAGLE21, B.3

Question Source:
Bank # __________
Modified Bank # ____X____
New __________

Question History:SQN NRC EXAM 1/2008 SQN Bank RPS-B.2 002 which has been modified.

Question Cognitive Level:
Memory or fundamental knowledge ____X____
Comprehension or Analysis __________

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

Comments:

34. Given the following:

- Unit 1 was operating at 100% power when a Reactor Trip and Safety Injection occurred.

Shortly after the the SI actuation the following conditions were observed:
- Annunciator 1-RA-90-59A RX BLDG AREA RAD MON HIGH RAD in alarm.
- Radiation rising on:
  - Rx Bldg Access Hatch - Upper, 1-RM-90-59
  - Rx Bldg Personnel Lock - Upper, 1-RM-90-60
  - Rx Bldg Instr Rm - Lower, 1-RM-90-61

Additionally the following annunciators were noted as being in alarm:
- TS-68-309 PRESSURIZER RELIEF TANK TEMP HIGH
- TS-30-31 LOWER COMPT TEMP HIGH
- TS-30-241 LOWER COMPT MOISTURE HI
- LS-63-104 CONTAINMENT SUMP FULL
- PS-68-301 PRESSURIZER RELIEF TANK PRESSURE HIGH alarmed and cleared.

Which ONE (1) of the following could result in these conditions, assuming NO operator action was taken?

A. #2 seal on RCP #4 failed

B.✓ Pressurizer safety valve, 1-68-568, failed open

C. Reactor Vessel Head inner O-ring fails

D. Reactor head vent throttle valve, 1-FCV-68-396, failed open

A. Incorrect, Plausible due to #1 seal leakoff would be routed to the PRT, but if the #2 seal failed the flow would not be to the PRT, it would be to the standpipe.

B. Correct, Lift if the Pressurizer safety valve would pressurize the PRT and rupture the Disc. Steam and radioactive fluid/steam would then be spread in containment.

C. Incorrect,Plausible due to radiation would increase at the seal table, This does not relieve to the PRT and conditions in PRT would not be as stated in the question stem.

D. Incorrect, Plausible because the Vent line is routed to the PRT failure of 1 valve in the vent line would not result in flow to the PRT due to another normally closed valve in series.

Question No. 34

Tier 2 Group 1

K/A 007 K3.01
Knowledge of the effect that a loss or malfunction of the PRTS will have on the following: Containment

Importance Rating: 3.3 / 3.6

Technical Reference: 1-47W809-1 Rev 74, 1,2-47w813-1 Rev 52, 0-AR-M12-A Rev 51, 1-AR-M6-C Rev 32, 1-AR-M5-C Rev 18, 1-AR-M5-A Rev 31`,

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.PZRPCS B.3, B.4.i

Question Source:
Bank # ___X______
Modified Bank # ________
New _________

Question History: SQN NRC Exam 1/2008, Bank KEWAUNEE 2/2/06 exam

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis __X______

10 CFR Part 55 Content: 41.7 / 45.6

Comments:

35. Given the following:

- Unit 2 is operating at 100% RTP.
- 6 hours into the shift annunciator WINDOW "LS-68-300A/B PRESSURIZER RELIEF TANK LEVEL HI-LOW " ALARMS and locks in on 2-XA-55-5A annunciator panel.
- The level indicator on M-5 indicates the level to be 72%.
- Redundant instrumentation in the Aux Control room shows the PRT level to be 72%.
- PRT temperature and pressure are verified to be the same as at shift turnover.

Which ONE (1) of the following identifies the condition of the PRT and the required crew actions as a result of the level alarm?

A. The PRT level alarm is valid, entry into AOP-R.05, RCS Leak and Leak Source Identification is required.

B. The PRT level alarm is valid, entry into AOP-R.05, RCS Leak and Leak Source Identification is NOT required.

C. The PRT level alarm is false. According to OPDP-1, the maximum time that maintenance has to correct the condition causing the invalid alarm is 7 days, at which time the alarm is required to be cleared/disabled.

D.✓ The PRT level alarm is false. According to OPDP-1, the maximum time that maintenance has to correct the condition causing the invalid alarm is 72 hours, at which time the alarm is required to be cleared/disabled.

A. *Incorrect, Plausible due to level in tank is on the high end but not at the alarm setpoint and adjusting lowering level to clear alarm is plausible due to dark board requirements. High alarm does not come in until 88%, action would be required if the level was high.*

B. *Incorrect, Plausible due to level in tank is on the high end but not at the alarm setpoint and performing a leakrate is plausible due to RCS leakage could be going into this tank. High alarm does not come in until 88%, action would be required if the level was high.*

C. *Incorrect, Plausible due to high alarm does not come in until 88%, whic is correct however* if alarm condition NOT corrected within 72 hours initiate actions to have alarm cleared/disabled. This answer states 7 days vs 72 hours. *i.e.,Per OPDP-1 (a nuisance alarm is an alarm that challenges crew communications or performance) since this alarm is not a nuisance and there is no 7 day requirement for nuisance alarms this answer is incorrect.*

D. *Correct, The PRT level alarm is false. The High alarm does not come in until 88% . Per OPDP-1 "Initiate a WO and if alarm condition NOT corrected within 72 hours initiate actions to have alarm cleared/disabled".*

Question No. 35

Tier 2 Group 1

K/A 007 G2.1.1
Conduct of Operations
Knowledge of conduct of operations requirements.

Importance Rating: 3.7 / 3.8

Technical Reference: OPDP-1
2-AR-M5-A

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271C209 B.23
OPT200.RCS B.4, & 5

Question Source:
Bank # __________
Modified Bank # __________
New ___X_____

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge _____X____
Comprehension or Analysis ________

10 CFR Part 55 Content: 41.10 / 45.13

Comments:

36. Given the following;

- Both Units in service at 100% RTP.
- C-S Component Cooling Water (CCS) Pump is in service.

Which ONE (1) of the following identifies requirements prior to, and after, transferring C-S CCS Pump power supply manual throwover switch to ALTERNATE?

	Prior to the <u>transfer</u>	**After the <u>transfer</u>**
A✓	Pump must be shutdown	1A-A DG declared INOPERABLE
B.	Pump must be shutdown	2B-B DG declared INOPERABLE
C.	Alternate feeder supply breaker must be closed	1A-A DG declared INOPERABLE
D.	Alternate feeder supply breaker must be closed	2B-B DG declared INOPERABLE

A. Correct, Per 0-SO-70-1, Pump must be shutdown prior to transfer and the alternate feeder supply breaker must be OPEN prior to operating manual throwover switch. Per D/G 1A-A must be considered INOPERABLE if Train A supply breaker is placed in service per 0-SO-70-1 precautions and limitations.

B. Incorrect, Pump must be shutdown. Train A supply breaker for C-S CCS pump is no longer tested in 1-SI-OPS-082-026.A. Therefore, load shedding and sequencing functions associated with Train A supply breaker are inoperable. D/G 1A-A must be considered INOPERABLE if Train A supply breaker is placed in service per 0-SO-70-1 precautions and limitations. Plausible because 2B-B is the normal supply.

C. Incorrect,Plausible since transferring *to alternate the student may think the Alternate feeder supply needs to be closed prior to manual transfer. 1A-A DG would be declared INOP as identified in Distractor B.*

D. Incorrect, Plausible since transferring *to alternate stude may think Alternate feeder supply needs to be closed prior to manual transfer. Plausible because 2B-B is the normal supply.*

Question No. 36

Tier 2 Group 1

K/A 008 K4.07
Knowledge of CCWS design feature(s) and/or interlock(s) which provide for the following: Operation of the CCW swing-bus power supply and its associated breakers and controls

Importance Rating: 2.6 / 2.7

Technical Reference: 0-SO-70-1 Component Cooling Water System "B"Train

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200CCS B.4.b,c,g

Question Source:
Bank # __________
Modified Bank # __________
New _X_______

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ____X_____
Comprehension or Analysis __________

10 CFR Part 55 Content: 41.7

Comments:

37. Given the following:

- Unit 2 was operating at 100% power.
- The Loop 1 pressurizer spray valve controller failed causing the spray valve to fully open.

Which ONE (1) of the following describes the response of the PZR pressure control system to these conditions? (Assume No Operator Actions taken)

A. Master controller output would INCREASE.
PZR pressure would be maintained above the Reactor Trip setpoint.

B. Master controller output would INCREASE.
PZR pressure would decrease to the Reactor Trip setpoint.

C. Master controller output would DECREASE.
PZR pressure would be maintained above the Reactor Trip setpoint.

D✓ Master controller output would DECREASE.
PZR pressure would decrease to the Reactor Trip setpoint.

A. *Incorrect, The output of the master controller increases as pressure goes high, not as pressure drops below setpoint. to turn on heaters not increasing, but with the spray valve fully open, the heaters would not be able to terminate the pressure drop, and a reactor trip on low pressurizer pressure would occur. Plausible if the candidate knowing that the heaters should be turned on but confuses the direction of the change in the output of the master controller or believes the the heaters coming on would prevent the pressure from continuing to drop to the reactor trip setpoint.*

B. *Incorrect, The output of the master controller increases as pressure goes high, not as pressure drops below setpoint. to turn on heaters not increasing, but with the spray valve fully open, the heaters would not be able to terminate the pressure drop, and a reactor trip on low pressurizer pressure would occur. Plausible if the candidate knowing that the heaters should be turned on but confuses the direction of the change in the output of the master controller and knows that the heaters coming on would not prevent the pressure from continuing to drop to the reactor trip setpoint.*

C. *Incorrect, The output of the master controller does decrease as the pressure drops below setpoint to turn on heaters, but with the spray valve fully open, the heaters would not be able to terminate the pressure drop, and a reactor trip on low pressurizer pressure would occur. Plausible if the candidate knowing that the heaters should be turned on and which direction the output of the master controller would change, but believes the the heaters coming on would prevent the pressure from continuing to drop to the reactor trip setpoint.*

D. *Correct, The pressurizer pressure will be dropping due to the spray valve being open. As the lower pressure is compared to the setpoint pressure, the output of the master controller will start dropping to turn on heaters. With the spray valve fully open, the heaters would not be able to terminate the pressure drop, and a reactor trip on low pressurizer pressure would occur.*

Question No. 37

Tier 2 Group 1

K/A 010 K6.03
Knowledge of the effect of a loss or malfunction of the following will have on the PZR PCS: PZR sprays and heaters

Importance Rating: 3.2 / 3.6

Technical Reference: 1-,2-27W611-68-3

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.PZRPCS B.11.a

Question Source:

Bank # __________
Modified Bank # ___X_____
New __________

Question History: SQN NRC Exam 1/2008, SQN Bank Modified PZR PRESS-B.11 005

Question Cognitive Level:

Memory or fundamental knowledge __________
Comprehension or Analysis __X______

10 CFR Part 55 Content: 41.7 /45.7

Comments:

38. Given the following events and conditions:

- Unit 1 was operating at 60% power.
- Pressurizer pressure decreased to 1940 psig.
- The SSPS Train A Low Pressurizer Pressure trip logic failed to actuate.

Which ONE (1) of the following identify the status of the trip coils on the reactor trip breakers RTA and RTB when the reactor trips?

	RTA 48v **UV** trip coil	RTB 120v **Shunt** trip coil
A.	Energized	De-energized
B.✓	Energized	Energized
C.	De-energized	De-energized
D.	De-energized	Energized

As stated in FSAR 7.2.1.1...
For a reactor trip, 1) a loss of DC voltage to the undervoltage coil releases the trip plunger and 2) the shunt trip coil energizes, either of which will trip open the breaker.

In this question the Train B SSPS generates a trip and de-energizes the "B' reactor trip breaker (RTA) undervoltage coil and energizes its shunt trip coil. However the Train A SSPS does not generate a trip, therefore, the 'A' reactor trip breaker (RTB) undervoltage coil will not be de-energized and its shunt trip coil will not be energized.

A. Incorrect, the status of the RTA coils is correct, the status of RTB coils is incorrect, Plausible if the candidate does reverses the status of the coils or incorrectly identifies which coils are normally energized and how they function to cause a trip.

B. Correct, The Train A SSPS does not generate a trip, therefore, the breaker RTA undervoltage coil will be energized and its shunt trip coil will de-energized. The Train B SSPS generates a trip de-energizing breaker RTB undervoltage coil and energizing its shunt trip coil.

C. Incorrect, the status of the RTA and RTB coils is incorrect. Plausible if the candidate incorrectly identifies which coils are normally energized and how they function to cause a trip.

D. Incorrect, the status of the RTA coils is incorrect, the status of RTB coils is correct, Plausible if the candidate does reverses the status of the coils or incorrectly identifies which coils are normally energized and how they function to cause a trip.

Question No. 38

Tier 2 Group 1

K/A 012 K4.04 Reactor Protection system
Knowledge of RPS design feature(s) and/or interlock(s)which provide for the following: Redundancy

Importance Rating: 3.1 / 3.3

Technical Reference: FSAR 7.2.1.1
45N699-1

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.RPS B.5.d & B.4.d

Question Source:
Bank # ______
Modified Bank # ______
New __X__

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ______
Comprehension or Analysis __X__

10 CFR Part 55 Content: 41.7

Comments:

39. The Unit 1 operating crew is responding to a reactor trip due to a loss of 120V AC Vital Instrument Power Board 1-I.

Which ONE (1) of the following describes the plant response if PZR pressure transmitter 1-PT-68-334 (Channel II) failed **LOW** with no operator action?

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

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

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

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

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.

Question No. 39

Tier 2 Group 1

K/A 013K2.01
Knowledge of bus power supplies to the following:
ESFAS/safeguards equipment control

Importance Rating: 3.6 / 3.8

Technical Reference: 47W611-63-1 Rev 4, AOP-P.03 Rev19, 0-SO-99-1 Att1,

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.RPS B.4 & 5

Question Source:
Bank # X
Modified Bank # __________
New __________

Question History: SQN NRC Exam 1/2008, SQN Bank RPS-B.9.A 002

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis X

10 CFR Part 55 Content: 41.7

Comments: Bank question RPS-B.9.A 002 with minor format & wording change

40. Given the following:

- Both Units in service at 100% RTP.
- Upper Compartment Cooling Units A-A and B-B are in service on both units.

Compare the effects of the inadvertent closing of the **Lower** Compartment Cooling Unit (LCCU) valves listed:

- Unit 1, LCCU 1A-A ERCW Inlet FCV (Outboard), 1-FCV-67-107
- Unit 2, LCCU 2A-A ERCW Inlet FCV (Outboard), 2-FCV-67-107

If both of the valves were closed, which ONE (1) of the following identifies the effect on the Upper Containment temperature on the respective unit(s) and the mitigation strategy, if any?

A. Upper containment temperature would RISE on Units 1 and 2.
No additional cooling unit would be available to be placed in service for either Unit.

B. Upper containment temperature would RISE on Units 1 and 2.
0-SO-30-4, Upper Compartment Cooling Units, would be used to place additional coolers in service on both Units.

C✓ Upper containment temperature would RISE on Unit 1 only.
No additional cooling unit would be available to be placed in service for this Unit.

D. Upper containment temperature would RISE on Unit 1 only.
0-SO-30-4, Upper Compartment Cooling Units, would be used to place additional coolers in service for this Unit.

A. Incorrect, Plausible due to U1 temperature would rise but Unit 2 temperature would remain constant. Unit 1 ERCW supply to UCCU comes from the line to the LCCU supply but Unit 2 supply is a separate line entering containment. Additional cooling units are not available.

B. Incorrect, Plausible due to U1 temperature would rise but Unit 2 temperature would remain constant. Unit 1 ERCW supply to UCCU comes from the line to the LCCU supply but Unit 2 supply is a separate line entering containment. Additional cooling units are not available.

C. Correct, Unit 1 only has 2 UCCU and the ERCW is supplied from the line to the LCCU. Additional cooling units are not available.

D. Incorrect, Plausible because the Temp rise would be on Unit 1 only but additional cooling units are not available.

Question No. 40

Tier 2 Group 1

K/A 022 A2.04
Ability to (a) predict the impacts of the following malfunctions or operations on the CCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of service water

Importance Rating: 2.9 / 3.2

Technical Reference: 0-S0-30-4, Upper Compartment Cooling Units
Drawing 1(2)-47W845-3 ERCW

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.ERCW B.4, 5

Question Source:
Bank # __________
Modified Bank # __________
New ___X_____

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis __X______

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

Comments:

41. Which ONE (1) of the following identifies a provision of the containment ice condenser design that increases the ice condenser's ability to remove heat during a small break LOCA?

A. Melted ice is directed away from the inlet doors and toward drain lines by turning vanes.

B. One out of every two ice bays has a drain which directs melted ice away from the inlet doors. (Only half of the total have drains)

C.✓ Inlet doors have proportioning springs to modulate door opening which equalizes air/steam flow through each ice bay.

D. Intermediate deck doors have proportioning springs to modulate door opening which equalizes air/steam flow through each ice bay.

A. Incorrect, Turning vanes direct air/steam flow not water drainage. Plausible if candidate confused the purpose of the turning vanes. From FSAR test results show that containment final peak pressure is not affected by drain performance.

B. Incorrect, All of the bays do not have drains but more than half does. Plausible if the candidate believes only half of the bays have drains. From FSAR test results show that containment final peak pressure is not affected by drain performance.

C. Correct, The door panels are provided with tension spring mechanisms that produce a small closing torque on the door panels as they open. The zero load position of the spring mechanisms is set such that, with zero differential pressure across the door panels, the gasket holds the door slightly open. This setting provides assurance that all doors will be open slightly, upon removal of cold air head, therefore eliminating significant inlet maldistribution for very small incidents.

D. Incorrect, the springs are on the inlet doors, not the intermediate doors. Plausible because the intermediate doors do open when pressure builds up in the ice condenser bay.

Question No. 41

Tier 2 Group 1

K/A 025 K5.02
Knowledge of operational implications of the following concepts as they apply to the ice condenser system: Heat transfer

Importance Rating: 2.6 / 2.8

Technical Reference: FSAR 6.5- pages 35,36,6,7

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200ICE B.1

Question Source:
Bank # __________
Modified Bank # ____X_____
New ________

Question History: SQN NRC Exam 1/2008, WBN Bank SYS061A.03 004

Question Cognitive Level:
Memory or fundamental knowledge ___X_____
Comprehension or Analysis _________

10 CFR Part 55 Content: 41.5 / 45.7

Comments:

42. Given the following:

- Unit 1 has experienced a Reactor Trip/ Safety Injection due to a LOCA.
- The operating crew is implementing the Emergency Instructions and preparing to align the suction of the Containment Spray Pumps to the containment sump.

Before 1-FCV-72-23, Containment Spray Pump 1A Suction From Containment Sump, would be opened, the water level in the containment sump would have to be at least ____ because of ____________________.

A. 8%;
the interlock associated with 1-FCV-74-3, RHR Pump 1A Suction Isolation.

B. 8%;
the interlock associated with 1-FCV-72-22, Containment Spray Pump 1A Suction From RWST.

C✓ 11%;
the interlock associated with 1-FCV-74-3, RHR Pump 1A Suction Isolation.

D. 11%;
the interlock associated with 1-FCV-72-22, Containment Spray Pump 1A Suction From RWST.

A. *Incorrect, Plausible due to 8% is the level in the RWST that is one of the two conditions that initiate the manual transfer of the containment spray pump suction to the containment sump. 1-FCV-74-3, RHR Pump 1A Suction Isolation, which is interlocked with the Containment sump suction to the RHR pumps.the automatic swapover for the RHR suction is 11%.*

B. *Incorrect, Plausible due to 8% is the level in the RWST that is one of the two conditions that initiate the manual transfer of the containment spray pump suction to the containment sump. The containment spray pump suction from the RWST is not interlocked with a containment sump level. 1-FCV-74-3, RHR Pump 1A Suction Isolation, which is interlocked with the Containment sump suction to the RHR pumps. The automatic swapover for the RHR suction is 11%.*

C. *Correct, 1-FCV-74-3, RHR Pump 1A Suction Isolation, which is interlocked with the Containment sump suction to the RHR pumps. The automatic swapover for the RHR suction is 11%.*

D. *Incorrect, Plausible due to minimum level is correct however, the associated interlock is with opening of the RHR suction valve. The 1-FCV-74-3, RHR Pump 1A Suction Isolation, which is interlocked with the Containment sump suction to the RHR pumps. The automatic swapover for the RHR suction is 11%.*

Question No. 42

Tier 2 Group 1

K/A 026 K4.07
Knowledge of CSS design feature(s) and/or interlock(s) which provide for the following:Adequate level in containment sump for suction (interlock)

Importance Rating: 3.8 / 4.1

Technical Reference: ES-1.3, Transfer to the Containment Sump
1-47W611-72-1 Rev 9

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271ES-1.3 B.2
OPT200.CS B.4.g

Question Source:
Bank # __________
Modified Bank # __X__
New __________

Question History: SQN NRC Exam 1/2008, SQN Bank Modified CSS 002.

Question Cognitive Level:
Memory or fundamental knowledge ____X_____
Comprehension or Analysis _________

10 CFR Part 55 Content: 41.7

Comments:

43. Given the following plant conditions:

- Unit 1 in service at 100% power.
- Due to the Normal feeder breaker to 6.9kV Shutdown Board 1B-B inadvertently opening, 1B-B Diesel Generator started and energized the board.

One hour later, the following occurs:

- At 1405 a steamline break occurs inside containment.
- Containment pressure is 3 psig and rising.
- At 1407 the CRO observes that 1B-B Containment Spray Pump ammeter reads '0' amps and the only light LIT above the handswitch is the GREEN light.

Which ONE (1) of the following describes the current status of the 1B-B Containment Spray Pump AND the correct operator response <u>or</u> reason for current status?

A. Pump should be running but has failed to auto start.
Immediately start 1B-B Containment Spray Pump after verifying sequencer has timed out.

B. Pump should be running but has failed to auto start.
Verify 1B-B D/G loading available, then start 1B-B Containment Spray Pump.

C. Pump status is currently correct.
UVX and UVY relays are preventing start of the 1B-B Containment Spray Pump.

D.✓ Pump status is currently correct.
Blackout timer has NOT timed out to start the 1B-B Containment Spray Pump.

A. *Incorrect, The Containment Spray Pump has not failed to start. It should not be running with the stated conditions. The timer to start the pump is active but has not timed out. Plausible because the 1B-B Shutdown Board experienced the blackout over an hour earlier, the student may think timer should already be timed out, which would result in the pump starting immediately when the containment pressure reached the setpoint. Starting the pump could cause a overload on the diesel generator if another pump auto started at the same time as the manual start.*

B. *Incorrect, the Containment Spray Pump has not failed to start. It should not be running with the stated conditions. The timer to start the pump is active but has not timed out. Plausible because the 1B-B Shutdown Board experienced the blackout over an hour earlier, the student may think timer should already be timed out, which would result in the pump starting immediately when the containment pressure reached the setpoint. Verifying D/G loading prior to starting the pump is an action taken later when adding loads to a board supplied by a diesel generator but with the conditions given the time sequencer is still loading the board. Starting the pump could cause a overload on the diesel generator if another pump auto started at the same time as the manual start.*

C. *Incorrect, While the Containment Spray Pump should not be running with the stated conditions, the reason is not because the UVX and UVY relays are preventing the start of the pump. These relays cause the load shedding of the pump when the board voltage is lost. After the board is reenergized these relays will allow the pump to restart when the blackout timer has timed out. The BOX and BOY relays are blocking the automatic start until the 180 second time delay elapses. The timer to start the pump is active but has not timed out. Plausible the student may know the UVX and UVY relays function during a blackout but confuse the function and purpose of the UVX and UVY relay functions during the blackout condition sequence.*

D. *Correct, The Containment Spray Pump should not be running with the stated conditions. The loading sequence time to start the pump is 180 seconds and while some equipment timers start when the board voltage is restored, the spray pump timer does not start until both the voltage is restored and the containment pressure reaches 2.81 psig. Since only 2 minutes have elapsed, the timer to start the pump is active but has not timed out. The pump should start when the timer sequence when reached.*

Question No. 43

Tier 2 Group 1

K/A 026 G2.4.48
Containment Spray System: Ability to interpret control room indications to verify the status and operation of system, and understand how operator actions and directives affect plant and system conditions.

Importance Rating: 3.5 / 3.8

Technical Reference: AOP-P.01, Loss of Offsite Power, Rev 22 Appendix B, 1,2-45N765-1 R16, 1,2-45N765-3 R22; 1,2-45N765-5 R14, 1,2-45N765-7 R16,

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271C368, B.4

Question Source:
Bank # __________
Modified Bank # ___X______
New __________

Question History: SQN NRC Exam 1/2008, SQN Bank Modified CSS-B.10 001

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ___X_____

10 CFR Part 55 Content: 43.4 /45.12

Comments:

44. Given the following:

- Unit 1 is 1% power.
- The OATC inadvertently lowers the Steam Dump controller setpoint.

Which ONE (1) of the following identifies a parameter that requires monitoring for Tech Spec LCO entry conditions, AND if reached, what the required action would be as stated in the Tech Spec action?

Parameter	**Tech Spec Action**
A.✓ RCS Tave < 541°F	Restore within its limit within 15 min
B. RCS Tave < 541°F	Restore within its limit within 30 min
C. RCS Pressure < 2200 psia	Restore within its limit within 5 min
D. RCS Pressure < 2200 psia	Restore within its limit within 1 hour

A. Correct, Tech Spec 3.1.1.4 is applicable in this mode. RCS Tave required to be ≥ 541 degrees and action is to restore within 15 min

B. Incorrect, Tech Spec 3.1.1.4 is applicable in this mode. RCS Tave required to be ≥ 541 degrees and action is to restore within 15 min. The action is incorrect. Plausible due to there is a 30 min surveillance requirement if the Tavg-Tref Deviation alarm is not reset.

C. Incorrect, Tech Spec 3.2.5 is not applicable in given plant parameters. Plausible due to RCS pressure will drop as RCS temperature drops and 5 minutes is plausible due to action for HIGH RCS pressure at lower modes.

D. Incorrect, Tech Spec 3.2.5 is not applicable in given plant parameters. Plausible due to RCS pressure will drop as RCS temperature drops and 2 hours would be correct if the Tech Spec would have been applicable.

Question No. 44

Tier 2 Group 1

K/A 039 A1.05
Main and Reheat Steam System: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MRSS controls including: RCS T-ave

Importance Rating: 3.2 / 3.3

Technical Reference: Tech Spec 3.1.1.4

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.RCS b.6

Question Source:
Bank # _________
Modified Bank # __________
New ____X_____

Question History: SQN NRC EXAM 1/2008,

Question Cognitive Level:
Memory or fundamental knowledge ____X_____
Comprehension or Analysis __________

10 CFR Part 55 Content: 41.5 / 45.5

Comments:

45. Given the following:

- Unit 2 operating at 55% power.
- All CBPs and HDTPs in service.
- Both MFPs in service.

If the Main Feed Pump Turbine(MFPT) 2B trips, which ONE (1) of the following identifies the correct status of MFPT 2B Condenser Inlet and Outlet Valves(FCVs) following the trip both before any Operator action is taken and after the AOP-S.01, Loss of Normal Feedwater, has been completed?

	Before any Operator Action	After AOP Completion
A.	Closed	Open
B.	Closed	Closed
C.✓	Open	Open
D.	Open	Closed

If one of the MFPTs trip, the Condenser inlet and outlet FCVs will automatically close if the unit is above 60%.
The AFW pumps will automatically start when one MFPT trips if the plant is above 80% as stated in TI-28.

A. *Incorrect, With the trip occurring at less than 60%, the AFW pumps would not be running and the condenser valves would not automatically close due to the trip of the MFPT. Plausible if the candidate does not correctly recall the conditions that will cause the automatic closure of the condenser FCVs or the AFW start conditions associated with a MFPT trip or the actions contained in the AOP for loss of a MFPT at less than 77% power.*

B. *Incorrect, With the trip occurring at less than 60%, the AFW pumps would not be running and the condenser valves would not automatically close due to the trip of the MFPT. Plausible if the candidate does not correctly recall the conditions that will cause the automatic closure of the condenser FCVs or the AFW start conditions associated with a MFPT trip or the actions contained in the AOP for loss of a MFPT at less than 77% power.*

C. *Correct, with the trip occurring at less than 60%, the valves would remain open and the AFW pumps would remain off. After completing the AOP the valves would remain open as the AOP only directs ensuring the valves are closed if the power level is not less than 60%.*

D. *Incorrect, with the trip occurring at less than 60%, the valves would remain open and the AFW pumps would remain off. After completing the AOP the valves would remain open as the AOP only directs ensuring the valves are closed if the power level is not less than 60%. Plausible if the candidate does not correctly recall the conditions that will cause the automatic closure of the condenser FCVs or the AFW start conditions associated with a MFPT trip or the actions contained in the AOP for loss of a MFPT at less than 77% power.*

Question No. 45

Tier 2 Group 1

K/A 059 A2.07
Ability to (a) predict the impacts of the following malfunctions or operations on the MFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Tripping of MFW pump turbine

Importance Rating: 3.0 / 3.3

Technical Reference: AOP-S.01, Loss of Normal Feedwater, Rev 12
TI-28, Curve Book rev 212, Att.9 effective date 06-28-2007
1, 2-47W611-2-1 Rev 8
1, 2-47W611-3-1 Rev 19
1, 2-47W611-6-1 Rev 19

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271AOP-S.01 B.2
OPT200.COND B.4

Question Source:
Bank # __________
Modified Bank # __________
New __x____

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis __x____

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

Comments:

46. Given the following:

- Unit 1 operating at 100% power.
- A main feedwater transient occurs resulting in several alarms.

The Operator notes the following:

- Turbine VPL is approximately 68%.
- Control Rods inserting at 72 step/min.
- MFPT 1B SPEED CONTROLLER at 100% and pump discharge flow increased.
- MFPT 1A indicates 0 flow.
- MFW reg valves demand at 100% and S/G levels are below setpoint.
- Steam Dump valves open.

Which ONE (1) of the following identifies the status of MFP 1A and the position of the low pressure (LP) control valves in the steam supply to the MFP 1A turbine?

A. MFP 1A has tripped;
LP Control valves OPEN.

B.✓ MFP 1A has tripped;
LP Control valves CLOSED.

C. MFP 1A is NOT tripped but has unloaded;
LP Control valves OPEN.

D. MFP 1A is NOT tripped but has unloaded;
LP Control valves CLOSED.

A. *Incorrect, the MFPT has tripped and all stop and control valves would be closed. Plausible because the candidate could confuse the LP control valve response of the MFPT with the control valve response of the AFWP turbine. On the AFW PT, if the turbine trips, the stop valve trips closed but the control valve goes full open due to loss of oil pressure. However on the MFPT both sets of valves close.*

B. *Correct, the MFPT has tripped and all control valves would be closed.*

C. *Incorrect, The valve position limiter would be at near 100% unless a runback occurred and the runback is initiated by a MFPT tripping. If the turbine unloaded, both sets of valves would be closed. Plausible because all other conditions are correct for the unloading of the 1A MFP and the candidate could think that only the HP control valves would be closed if the turbine unloaded but did not trip.*

D. *Incorrect, The valve position limiter would be at near 100% unless a runback occurred and the runback is initiated by a MFPT tripping. Plausible because all other conditions are correct for the unloading of the 1A MFP and the control valves would be closed and the stop valves open if the turbine unloaded but did not trip. An event similar to this occurred in the plant.*

Question No. 46

Tier 2 Group 1

K/A 059 A4.01
Ability to manually operate and monitor in the control room:
MFW turbine trip indication

Importance Rating: 3.1 / 3.1

Technical Reference: AOP-S.01, Loss of Normal Feedwater, Rev 12;
1-47W610-46-3 R15

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.MFW B.4.f
OPL271AOP-S.01 B.2

Question Source:
Bank # ______
Modified Bank # __x__
New ______

Question History: SQN Bank AOP-S.10-B-1 006

Question Cognitive Level:
Memory or fundamental knowledge ______
Comprehension or Analysis __x__

10 CFR Part 55 Content: 41.7 / 45.5 to 45.8

Comments:

47. Given the following;

- Unit 1 experienced a Reactor trip from 100% power.
- The Operators have not operated any controls post-trip.
- The crew completed E-0, Reactor Trip and Safety Injection, and has entered ES-0.1, Reactor Trip Response.
- Pressurizer level is 25% and slowly decreasing.
- All Steam Generator levels are between 12% and 18% narrow range and slowly rising.
- Steam Generators pressures are approximately 990 psig and slowly decreasing.
- Tavg is 545°F and slowly decreasing.
- RCS pressure is 2020 psig and slowly decreasing.

Which ONE (1) of the following actions should be the first priority of the crew in accordance with ES-0.1 to address the conditions?

A. Establish Emergency Boration.

B.✓ Throttle Auxiliary Feedwater Flow.

C. Close MSIVs and bypass valves.

D. Initiate Safety Injection and Return to E-0.

A. Incorrect, ES-0.1 addresses emergency boration if cooldown drops to less than 540 degrees making this choice plausible.

B. Correct, ES-0.1 step 3 RNO c directs the throttling of AFW to address the cooldown.

C. Incorrect, ES-0.1 step 3 RNO c. directs the closing of MSIVs and bypass valves if the cooldown continues in step 3 RNO d. making this choice plausible, but this action is after the throttling of AFW flow.

D. Incorrect, ES-0.1 step 1 directs the initiation of SI and return to E-0 but only if SI is actuated. Actuation of SI is not warranted for the stated conditions. Plausible for the candidate to misuse the data trends in stem and conclude that SI will be required.

Question No. 47

Tier 2 Group 2

K/A 061 K5.01
Auxiliary/Emergency Feedwater System: Knowledge of the operational implications of the following concepts as they apply to the AFW: Relationship between AFW flow and RCS heat transfer.

Importance Rating: 3.6 / 3.9

Technical Reference: ES-0.1, Reactor Trip Response

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.AFW B.2
OPL271ES-0.1 B.4

Question Source:
Bank # ____X____
Modified Bank # __________
New __________

Question History: SQN NRC EXAM 1/2008, Millstone exam 2004

Question Cognitive Level:
Memory or fundamental knowledge _______
Comprehension or Analysis ____X______

10 CFR Part 55 Content: 41.5 / 45.7

Comments: SQN Bank AFW B.2.A 003

48. Given the following plant conditions:

- Unit 1 & 2 are operating steady-state at 100%.
- All systems are normally aligned.
- Voltage on 6.9 kV Shutdown Board 1B-B instantaneously drops to 5400 volts.

Which ONE (1) of the following describes the plant response to these conditions?

A.✓ After 1.25 seconds all Diesel Generators will auto start.

B. After 1.25 seconds only the 1B-B Diesel Generator will auto start.

C. After 300 seconds all Diesel Generators will auto start.

D. After 300 seconds only the 1B-B Diesel Generator will auto start.

A. Correct, Voltage <5520 volts will start the 1.25 second timers and all EDGs will start.

B. Incorrect, Voltage would have to be <5520 volts to start the 1.25 second timers. All diesel generators are started in this condition. Plausible if student believes low voltage on 1B-B would only start the 1B-B diesel.

C. Incorrect, Plausible due to voltage less than 6451 volts but greater than 5520 volts for 300 seconds these actions will occur.

D. Incorrect, Plausible due to voltage less than 6451 volts but greater than 5520 volts for 300 seconds these actions will occur and if student believes low voltage on 1B-B would only start the 1B-B diesel.

Question No. 48

Tier 2 Group 1

K/A 062 K1.02
Knowledge of the physical connections and/or cause effect relationships between the ac distribution system and the following systems: ED/G

Importance Rating: 4.1 / 4.4

Technical Reference: TI-28, Att 9, Drawing 1-45N724-2, 1-45N765-1

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.DG, Obj.B.4.e
OPT200.BLKOUT, Obj.B.4.e

Question Source:
Bank # ____X______
Modified Bank # __________
New __________

Question History: SQN NRC Exam 1/2008, SQN Exam Bank D/G-B.9.A 005

Question Cognitive Level:
Memory or fundamental knowledge ___X_____
Comprehension or Analysis ________

10 CFR Part 55 Content: 41.2 to 41.9

Comments: Changed third bullet from '*Voltage on 6.9 kV Shutdown Board 1B-B is 5400 volts*' to '*Voltage on 6.9 kV Shutdown Board 1B-B instantaneously drops to 5400 volts*'

5400 volts.added "*instantaneously* dropped to"

49. Given the following:

- 6.9kv Shutdown Board 1A-A control power is being supplied from the BACKUP bus NORMAL feeder in support of a maintenance activity.

Which ONE (1) of the following identifies the source of the control power to the shutdown board and how the control power transfer would occur if the normal source was lost?

	Source of Control Power	**Control Power Transfer**
A.	125v Vital Battery Board I	Manual
B.	125v Vital Battery Board I	Automatic
C.✓	125v Vital Battery Board III	Manual
D.	125v Vital Battery Board III	Automatic

A. Incorrect, Plausible due to this is the power supply for the 1A-A control power when being feed from the Backup bus alternate feeder. Correct Transfer method.

B. Incorrect, Plausible due to this is the power supply for the 1A-A control power when being feed from the Backup bus alternate feeder. Incorrect Transfer method.

C. Correct, This is the power supply for the 1A-A control power when being feed from the Backup bus normal feeder. The Control Power Transfer is a Manual Xfer.

D. Correct, This is the power supply for the 1A-A control power when being feed from the Backup bus normal feeder. Incorrect Transfer method.

Question No. 49

Tier 2 Group 1

K/A 063 K2.01
Knowledge of bus power supplies to the following: Major DC loads

Importance Rating: 2.9 / 3.1

Technical Reference: AOP-P.02, Loss of 125V DC Vital Battery Board
0-45N703-3

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.DC B.4
OPT200.AC6.9KV B.4.b

Question Source:
Bank # __________
Modified Bank # __________
New ___X_____

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ___X_____

10 CFR Part 55 Content: 41.7

Comments:

50. The 2A-A DG is running. A 2A-A DG Fuel Oil Transfer Pump automatically starts due to level in one of the day tanks and the pump shaft completely shears.

Which ONE (1) of the following correctly describes the operation of the 2A-A DG Fuel Oil Transfer pumps?

A. The second Fuel Oil Transfer pump will be running due to low discharge pressure on the first pump that started.

B. The second Fuel Oil Transfer pump will be running ONLY if both day tanks reach a low level.

C. The second Fuel Oil Transfer pump will NOT be running and will not start as the tank level continues to lower.

D✓ The second Fuel Oil Transfer pump will NOT be running, but will start as its associated tank level continues to lower.

A. Incorrect, Plausible because candidate may think that a low discharge pressure on the running pump would be a start signal for the second pump.

B. Incorrect, Plausible because candidate may think both day tanks must reach a low level before the second pump starts.

C. Incorrect, Plausible because candidate may think the pump needs to cycle off for the alternator to start the second pump.

D. Correct, Two setpoints (Upper low, and Lower low) on the Fuel Oil Day Tank for auto start of Fuel Oil Transfer Pumps. The alternator alternates which pump is lead and starts the lead pump on Upper Low first. The Second pump will auto start on the Lower Low setpoint.

Question No. 50

Tier 2 Group 1

K/A 064 K6.08
EDG: 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

Technical Reference: 45N771-4

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.DG B.4c and 5.d.e

Question Source:
Bank # ____X_____
Modified Bank # __________
New __________

Question History: SQN NRC Exam 1/2008, SQN Bank D/G-B.10 001

Question Cognitive Level:
Memory or fundamental knowledge ____X_____
Comprehension or Analysis _______

10 CFR Part 55 Content: 41.7 / 45.7

Comments: reworded stem and distracters not enough to "Modify"

51. Given the following plant conditions:

- Both Units operating at 100% RTP.
- All systems are in a normal alignment
- A leak occurs in the Unit 2 Letdown Heat Exchanger.

Assuming no action by the crew, which ONE (1) of the following describes the effects on the CCW System?

A.✓ Radiation Monitor 2-RM-90-123A indication rises. Surge Tank vent valves 1-FCV-70-66 and 2-FCV-70-66 close when the monitor reaches the HIGH rad setpoint.

B. Radiation Monitor 2-RM-90-123A indication rises. Surge Tank vent valves 2-FCV-70-66 closes when the monitor reaches the HIGH rad setpoint. The 1-FCV-70-66 will remain open.

C. Unit 2 Surge Tank level lowers. The 2A and C-S CCS pumps will both lose suction when the surge tank empties.

D. Unit 2 Surge Tank level lowers. The 2A CCS pump will lose suction when the surge tank empties.

A. Correct, A leak on the Letdown Heat exchanger due to the pressure differences on the fluid mediums will cause leakage into the CCS system. Both surge Tank vents will isolate, if setpoint is reached on any of the radiation monitors on the CCS system.

B. Incorrect, A leak on the Letdown Heat exchanger due to the pressure differences on the fluid mediums will cause leakage into the CCS system. Both surge Tank vents will isolate, if setpoint is reached on any of the radiation monitors on the CCS system. Plausible if student thinks the Rad Monitor is train specific and only close the associated units vent valve.

C. Incorrect, A leak will cause a leak into the CCS system. Plausible if student believes CCS is at a higher pressure and CCS surge tank level lowers.

D. Incorrect, A leak will cause a leak into the CCS system. Plausible if student believes CCS is at a higher pressure and CCS surge tank level lowers.

Question No. 51

Tier 2 Group 1

K/A 073 A1.01
Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRM system controls including:
Radiation levels

Importance Rating: 3.2 / 3.5

Technical Reference: 0-M-AR12-D
1,2-47W611-70-1
1,2-47W611-70-2

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.CCS B.5

Question Source:
Bank # ____X_____
Modified Bank # ________
New ________

Question History: SQN NRC EXAM 1/2008, modified from V.C Summeer June 2007 exam

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ___X_____

10 CFR Part 55 Content: 41.5 / 45.7

Comments:

52. Given the following plant conditions and information:

- Both Units operating at 100% power
- All systems aligned normally

If a large ERCW leak developed at the inlet to the 1A1 CCS Heat Exchanger, which ONE (1) of the ERCW Headers would have increased flow, and when the leak was isolated, how would the 1A and 2A ERCW header pressures be effected?

	Header with Flow Increase	Effect on Header Pressure
A.	1A	Both 1A and 2A header pressures would increase
B.	1A	Only the 1A header pressure would increase
C.✓	2A	Both 1A and 2A header pressures would increase
D.	2A	Only the 2A header pressure would increase

A. *Incorrect, The 1A ERCW supply header is not the header supplying the flow for the 1A1&1A2 CCS Heat Exchangers, the 2A header ERCW is the supply. However, because the headers are common at the pumping station, isolating the leak would cause both 1A and 2A header pressures to increase. Plausible because the component with the leak is a Unit 1 heat exchanger and standard configuration would be for a Unit 1 water header to supply the cooling and if so the flow would increase in the 1A header and the candidate could correctly relate the reduction in flow when the leak is isolated to only effecting pressures in both the 1A and 2A headers.*

B. *Incorrect, The 1A ERCW supply header is not the header supplying the flow for the 1A1&1A2 CCS Heat Exchangers, the 2A header ERCW is the supply. Additionally, because the headers are common at the pumping station, isolating the leak would cause both 1A and 2A header pressures to increase. Plausible because the component with the leak is a Unit 1 heat exchanger and standard configuration would be for a Unit 1 water header to supply the cooling and if so the flow would increase in the 1A header and the candidate could relate the reduction in flow when the leak is isolated to only effecting pressure in the 1A header and not consider the connection at the pumping station.*

C. *Correct. 2A ERCW supply header is the normal supply for the 1A1&1A2 CCS Heat Exchangers and the 2A1&2A2 CCS Heat Exchangers. Isolating the leak would cause both 1A and 2A header pressures to increase because the headers are common at the ERCW Pumping Station.*

D. *Incorrect. 2A ERCW supply header is the normal supply for the 1A1&1A2 CCS Heat Exchangers and the 2A1&2A2 CCS Heat Exchangers. However because the headers are common at the pumping station, isolating the leak would cause both 1A and 2A header pressures to increase. Plausible because the flow would increase in only the 2A header and the candidate could relate the reduction in flow when the leak is isolated to only effecting pressure in the 2A header and not consider the connection at the pumping station.*

Question No. 52

Tier 2 Group 1

K/A 076 A2.02
Ability to (a) predict the impacts of the following malfunctions or operations on the SWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Service water header pressure

Importance Rating: 2.7 / 3.1

Technical Reference: 0-SO-67-1, Essential Raw Cooling Water
1, 2-47W845-1 R47; 1, 2-47W845-2 R93; 1, 2-47W845-5 R59,

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200ERCW B.3
OPT200ERCW B.4
OPT200ERCW B.5

Question Source:
Bank # __________
Modified Bank # __________
New ___X______

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ________
Comprehension or Analysis ______X____

10 CFR Part 55 Content: 41.5 / 43.5 / 45/3 / 45/13

Comments:

53. Given the following:

- 0-FCV-67-152 is the CCS HX 0B1 and 0B2 outlet valve
- 1-FCV-67-146 is the CCS HX 1A1 and 1A2 outlet valve
- 2-FCV-67-146 is the CCS HX 2A1 and 2A2 outlet valve

Which ONE (1) of the following identifies which valve(s) receive(s) an automatic reposition signal as a result of a Unit 1 Safety Injection?

	0-FCV-67-152	1-FCV-67-146	2-FCV-67-146
A.	Yes	Yes	No
B.✓	Yes	No	No
C.	No	Yes	Yes
D.	No	Yes	No

All Valves listed are automatically or manually manipulated as required by EA-67-1 or an SI signal, thus plausible. The student would be required to know which valve would recieve an automatic signal or be required to be manipulated manually.

A. Incorrect. 0-FCV-67-152 automatically goes to the 35% open position for an SI signal on either unit. This ensures adequate flow and CCS system backpressure for the B train ESF equipment for the accident unit. 2-FCV-67-146 remains in it's current position until manually realigned as directed by EA-67-1.

B. Correct. 0-FCV-67-152 automatically goes to the 35% open position for an SI signal on either unit. This ensures adequate flow and CCS system backpressure for the B train ESF equipment for the accident unit. 1-FCV-67-146 and 2-FCV-67-146 remains in it's current position until manually realigned as directed by EA-67-1.

C. Incorrect. 0-FCV-67-152 automatically goes to the 35% open position for an SI signal on either unit. This ensures adequate flow and CCS system backpressure for the B train ESF equipment for the accident unit. 1-FCV-67-146 and 2-FCV-67-146 remain in their current position until manually realigned as directed by EA-67-1.

D. Incorrect. 0-FCV-67-152 automatically goes to the 35% open position for an SI signal on either unit. This ensures adequate flow and CCS system backpressure for the B train ESF equipment for the accident unit. 1-FCV-67-146 remains in it's current position until manually realigned as directed by EA-67-1.

Question No. 53

Tier 2 Group 1

K/A 076 A4.02
Ability to manually operate and/or monitor in the control room:
SWS Valves

Importance Rating: 2.6 / 2.6

Technical Reference: EA-67-1
47W845-2
47W611-67-5
47W611-99-3

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.ERCW B.4

Question Source:
Bank # ___________
Modified Bank # ____X_____
New ___________

Question History: SQN NRC EXAM 1/2008, SQN Bank ERCW-B.9.E 003

Question Cognitive Level:
Memory or fundamental knowledge ___X_____
Comprehension or Analysis ___________

10 CFR Part 55 Content: 41.7 / 45.5 to 45.8

Comments:

54. Which ONE (1) of the following identifies the air supply header pressure at which the Train A essential air valve, 1-FCV-32-80, Aux Cmpsr A-A Rx Bldg U-1 Isol, would automatically CLOSE and the effect the loss of air to containment would have on the Pressurizer Spray Valve?

	Header Pressure	Spray Valve Position
A.✓	50 psig decreasing	Fails CLOSED
B.	50 psig decreasing	Fails OPEN
C.	69 psig decreasing	Fails CLOSED
D.	69 psig decreasing	Fails OPEN

A. Correct; 50 psig decreasing and Spray Valves fail closed.

B. Incorrect; correct Pressure, Incorrect valve position (plausible because many valves do fail open.)

C. Incorrect; Incorrect pressure Plausible due to 69 psig is the pressure that a valve closed to isolate Auxiliary air from Control Air, correct valve position

D. Incorrect; Incorrect pressure. Plausible due to 69 psig is the pressure that a valve closed to isolate Auxiliary air from Control Air), Incorrect valve position (plausible because many valves do fail open.)

Question No. 54

Tier 2 Group 1

K/A 078 K3.01
Knowledge of the effect that a loss or malfunction of the IAS will have on the following:Containment air system.

Importance Rating: 3.1 / 3.4

Technical Reference: 0-SO-32-2
AOP-M.02

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.CSA B.4

Question Source:
Bank # ________
Modified Bank # _X___
New __________

Question History: SQN NRC Exam 1/2008, SQN Bank AIR 008

Question Cognitive Level:
Memory or fundamental knowledge _____x_____
Comprehension or Analysis ________

10 CFR Part 55 Content: 41.7 / 45.6

Comments:

55. Given the following plant conditions:

- Unit 2 experienced a Manual Safety Injection (SI).
- Containment Purge Rad Monitors, 2-RM-90-130, was in high rad alarm but has been reset.
- Containment Purge Rad Monitors, 2-RM-90-131, has indicated 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.

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.

Question No. 55

Tier 2 Group 1

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

Importance Rating: 3.9 / 4.2

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

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.RPS, Obj. B.18.b
OPT200PIS

Question Source:
Bank # __________
Modified Bank #____X______
New __________

Question History: SQN NRC Exam 1/2008, SQN Bank RPS-B.9 005 Modified

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ____X_____

10 CFR Part 55 Content: 41.7 / 45.5

Comments:

56. Given the following:

- Unit 1 in MODE 4
- RCS temperature at 240°F
- Pressurizer level in automatic at 25% and a steam bubble is formed
- 1-XS-68-339E, LEVEL CONTROL CHANNEL SELECTOR, is in the 335/320 position

Which ONE (1) of the following identifies which channel is selected as backup AND whether or not it is a Post Accident Monitoring (PAM) instrument?

A. 1-LT-68-339, Pressurizer Level Transmitter Channel I
This is a PAM instrument

B. 1-LT-68-339, Pressurizer Level Transmitter Channel I
This is NOT a PAM instrument

C✓ 1-LT-68-335, Pressurizer Level Transmitter Channel II
This is a PAM instrument

D. 1-LT-68-335, Pressurizer Level Transmitter Channel II
This is NOT a PAM instrument

A. Incorrect, 1-LT-68-339 is a PAM instrument. Plausible due to 339 is a channel which could be used for level control but not as backup with conditions in stem for selector switch postion.

B. Incorrect, 11-LT-68-339 is a PAM instrument. Plausible due to 339 is a channel which could be used for level control but not as backup with conditions in stem for selector switch postion.

C. Correct, Instrument failure would isolate letdown causing pressurizer level to rise, 1-LT-68-335 is PAM instrument.

D. Incorrect, Correct for backup however the instrument is a PAM imstrument.

Question No. 56

Tier 2 Group 2

K/A 011 K6.05 Pressurizer Level Control System (PZR LCS)
Knowledge of the effect of a loss or malfunction on the following will have on the PZR LCS: Function of PZR level gauges as postaccident monitors

Importance Rating: 3.1 / 3.7

Technical Reference: Tech Spec 3.3.3.7, Print 1-47W611-68-2, 1-47W610-68-5

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.PZRPLC B.4
OPT200.PZRPLC B.6

Question Source:
Bank # ________
Modified Bank # ________
New __X__

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ________
Comprehension or Analysis __X__

10 CFR Part 55 Content: 41.7 / 45.7

Comments:

57. Which ONE (1) of the following sets of Nuclear Instruments would lose power if Vital Instrument Power Board 1-II were to be deenergized?

A.✓ Power Range N42, Source Range N32, and Intermediate Range N36.

B. Power Range N43, Source Range N31, and Intermediate Range N35.

C. Power Range N44, Source Range N32, and Intermediate Range N36.

D. Power Range N41, Source Range N31, and Intermediate Range N35.

The correct answer is A

A. Correct, 120v AC Vital Instrument Power Board 1-II is the power supply for all three instruments listed.

B. Incorrect, N31 and N35 are powered from 120v AC Vital Instrument Power Board 1-I. N43 is powered from Board 1-III. Plausible because N31 and N35 as well as the other listed instrument receive power from a 120v AC Vital Instrument Power Board as do the instruments in the correct answer and the candidate can mistake which board supplies which instruments.

C. Incorrect, N44 receives power from a 120v AC Vital Instrument Power Board 1-IV.

D. Incorrect, N31 and N35 are powered from 120v AC Vital Instrument Power Board 1-I.

Question No. 58

Tier 2 Group 2

K/A 015 K2.01
Knowledge of bus power supplies to the following:
NIS channels, components, and interconnections

Importance Rating: 3.3 / 3.7

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

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.NIS B.4.b

Question Source:
Bank # __________
Modified Bank # NIS B.4 010
New __________

Question History: SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ___X_____
Comprehension or Analysis __________

10 CFR Part 55 Content: 41.7

Comments:

58. Which ONE (1) of the following will occur as a result of containment pressure increasing to 1.54 psid?

A. CRDM coolers trip
Upper compartment coolers trip

B. CRDM coolers trip
Ice Cond Floor Cooling Isolation valves isolate

C. Incore Instrument Room Chillers trip
Upper Compartment Coolers trip

D✓ Incore Instrument Room Chillers trip
Ice Cond Floor Cooling Isolation valves isolate

A. Incorrect, Plausible due the CRDM coolers and Upper compartment coolers will trip on containment pressure however this would require containment pressure to reach 2.81 psid (Phase B).

B. Incorrect, Plausible due the CRDM coolers will trip on containment pressure however this would require containment pressure to reach 2.81 psid (Phase B). Ice Cond Floor Cooling Isolation valves will isolate on a phase A (1.54 psid)

C. Incorrect, Plausible due the Upper compartment coolers will trip on containment pressure however this would require containment pressure to reach 2.81 psid (Phase B). Incore Instrument Room Chillers will trip on a phase A (1.54 psid)

D. Correct, Containment pressure of 1.54 psid will initiate a Safety Injection signal. A Safety Injection Signal will initiate a Containment Isolation Signal Phase A. The Phase A will trip the Incore Instrument room cooler and Ice Cond Floor Cooling Isolation valves will isolate.

Question No. 58

Tier 2 Group 2

K/A 016 K1.10
Non-Nuclear Instrumentation System:Knowledge of the physical connections and/or cause-effect relationships between the NNIS and the following systems: CCS

Importance Rating: 3.1 / 3.1

Technical Reference: 1,2-47W611-30-2,3, and 4. TI-28 Att 9
1-47W611-88-1
1,2-47W611-61-2

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.PIS B.4

Question Source:
Bank # __________
Modified Bank # ___X______
New ________

Question History: SQN NRC Exam 1/2008, Modified SQN Bank CTMT COOL-B.12.A 003

Question Cognitive Level:
Memory or fundamental knowledge ___X______
Comprehension or Analysis ________

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

Comments:

59. Which ONE (1) of the following is the highest core temperature that can be indicated by an Incore Thermocouple while remaining in the upper indicated physical limits in accordance with GOI-6, Apparatus Operations?

A. 1200°F.

B. 2100°F.

C. 2200°F.

D✓ 2300°F.

A. Incorrect, GOI-6, Rev 121, Section P identifies the indicating range of the incore thermocouples to be 200 - 2300°F. Plausible due to 1200 degrees is a red path for core cooling

B. Incorrect, GOI-6, Rev 121, Section P identifies the indicating range of the incore thermocouples to be 200 - 2300°F. Plausible due to being close to the actual temperature of 2300.

C. Incorrect, GOI-6, Rev 121, Section P identifies the indicating range of the incore thermocouples to be 200 - 2300°F. Plausible due to 2200 is ECCS acceptance criteria.

D. Correct, GOI-6, Rev 121, Section P identifies the indicating range of the incore thermocouples to be 200 - 2300°F.

Question No. 59

Tier 2 Group 2

K/A 017000K4.03
Knowledge of ITM system design feature(s) and/or interlock(s) which provide for the following: Range of temperature indication

Importance Rating: 3.1 / 3.3

Technical Reference: GOI-6, Apparatus Operation, Rev 121, Section P

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271INCORE, B.4.h

Question Source:
Bank # ____X________
Modified Bank # ___________
New ___________

Question History:SQN NRC Exam 1/2008, SQN bank INCORE-B.1.B 003

Question Cognitive Level:
Memory or fundamental knowledge __X______
Comprehension or Analysis ___________

10 CFR Part 55 Content: 41.7

Comments:

60. Which ONE (1) of the following identifes how (a) main steam header pressure will respond as turbine load is raised from 50% to 70% and (b) which method of maintaining Tavg matched with Tref would result in the value for MTC being the **MOST** negative as turbine load was raised?

A. (a) Main steam header pressure would decrease.

   (b) Rods are withdrawn to maintain Tavg on program, with Boron concentration held constant.

B. (a) Main steam header pressure would increase.

   (b) Rods are withdrawn to maintain Tavg on program, with Boron concentration held constant.

C✓ (a) Main steam header pressure would decrease.

   (b) Rod position is held constant, while Boron concentration is lowered to maintain Tavg on program.

D. (a) Main steam header pressure would increase.

   (b) Rod position is held constant, while Boron concentration is lowered to maintain Tavg on program.

A. *Incorrect, First part Correct Main Steam Header pressure would decrease as turbine load is raised. Plausible due to candidate could conclude that withdrawing Rods would make MTC more negative which in reality it makes it Less Negative. However a competing affect of Tavg rising will have a negative affect on MTC.*

B. *Incorrect, First part Incorrect Main Steam Header pressure would decrease as turbine load is raised. Plausible due to candidate could conclude that withdrawing Rods would make MTC more negative which in reality it makes it Less Negative. However a competing affect of Tavg rising will have a negative affect on MTC.*

C. *Correct, First part Correct Main Steam Header pressure would decrease as turbine load is raised. Reduction of boron concentration results in more negative MTC, Tavg rising will have a negative affect on MTC. This additive Negative affects is the MOST negative of all choices given.*

D. *Incorrect, First part Incorrect Main Steam Header pressure would decrease as turbine load is raised. Reduction of boron concentration results in more negative MTC, Tavg rising will have a negative affect on MTC. This additive Negative affects is the MOST negative of all choices given.*

Question No. 60

Tier 2 Group 2

K/A 045 K5.17
Knowledge of the operational implications of the following concepts as the apply to the MT/B System: Relationship between moderator temperature coefficient and boron concentration in RCS as T/G load increases

Importance Rating: 2.5 / 2.7

Technical Reference: Nuclear Design Report Unit 1 Cycle 15

Proposed references to be provided to applicants during examination: None

Learning Objective: GFES Coeficients

Question Source:
Bank # __________
Modified Bank # __________
New ___X_____

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ____X____

10 CFR Part 55 Content: 41.5 / 45.7

Comments:

61. Given the following:

- Unit 1 is at 60% RTP with shutdown in progress due to Steam Generator #3 tube leakage identified.
- The Condenser Vacuum Pump Discharge filters have been installed.
- 1-HS-2-255, COND VAC PUMP EXH FILTER BYPASS, is in P-auto.
- A leak on the condenser vacuum breaker develops leakage equal to 30 scfm.
- The following alarms are received at approximately the same time:
  - PDIS-2-255 COND VAC PMPS EXH FILTER DIFF PRESS HI.
  - 1-RA-90-99A CNDS VAC PMP LO RNG AIR EXH MON HIGH RAD.

Which ONE (1) of the following identifies the status of 1-FCV-255, Condenser Vacuum Pump Exhaust Filter Bypass Flow Control Isol?

The bypass valve _______________________________________.

A.✓ would have opened AUTOMATICALLY due to the high ΔP setpoint across the filter.

B. would have opened AUTOMATICALLY due to the high pressure setpoint in the exhaust stack.

C. would be prevented from opening AUTOMATICALLY or MANUALLY.

D. would be prevented from AUTOMATICALLY opening, however valve could be opened MANUALLY using control switch.

A. Correct, When CVP discharge filter train is installed, FCV-2-255 is designed to open automatically on a high filter DP of 5.5 in/water increasing.

B. Incorrect, Plausible due to requirement to open the bypass if the flow rate exceeds 45 scfm even when the filters are not installed to prevent the instrument malfunction alarms cause by the high back pressure in the exhaust stack. This is a precaution in the system operating instruction.

C. Incorrect, Plausible due to candidate could think the bypass valve would be prevented from opening to ensure all release gas went through the monitor to ensure release is monitored.

D. Incorrect, Plausible due to candidate could think the bypass valve would be prevented from opening in automatic to ensure all release gas went through the monitor, but would allow operator control in manual.

Question No. 61

Tier 2 Group 2

K/A 055 A3.03
Ability to monitor automatic operation of the CARS, including:
Automatic diversion of CARS exhaust

Importance Rating: 2.5 / 2.7

Technical Reference: 1-AR-M3-A
1-SO-2-9

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200CONDVAC B.4

Question Source:
Bank # ______
Modified Bank # ______
New X

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ______
Comprehension or Analysis X

10 CFR Part 55 Content: 41.7 / 45.5

Comments:

62. With the pump control handswitches in AUTO, which ONE (1) of the following correctly describes operation of the Reactor Coolant Drain Tank (RCDT) pumps when 2-FCV-68-310, PRT Drain to RCDT, is opened to reduce the level in the Pressurizer Relief Tank (PRT)?

A. RCDT Pump A will auto start ONLY if the level in the RCDT is above the low level pump cutoff level switch.

B. RCDT Pump A will auto start EVEN if the level in the RCDT is below the low level pump cutoff level switch.

C. RCDT Pump B will auto start ONLY if the level in the RCDT is above the low level pump cutoff level switch.

D✓ RCDT Pump B will auto start EVEN if the level in the RCDT is below the low level pump cutoff level switch.

A. Incorrect, The A pump does not receive a start signal when 2-FCV-68-310 is opened, only the B pump has this start function. Plausible because the candidate could confuse which pump starts when the valve opens and due to the pump having an auto start / trip based on RCDT tank level.

B. Incorrect, The A pump does not receive a start signal when 2-FCV-68-310 is opened, only the B pump has this start function. Plausible because the candidate could confuse which pump starts when the valve opens and due to the pump having an auto start / trip based on RCDT tank level with the trip being bypassed if the valve were open.

C. Incorrect, The B pump will start when 2-FCV-68-310 is opened. The valve open limit switch in the start circuit is in parrallel to the contact that would be open if RCDT level were low. Plausible because there is a level switch that would trip the pump if the RCDT level decreased to the setpoint while pumping down the RCDT, however, this switch is bypassed when 2-FCV-68-310 is opened.

D. Correct, The B pump will start when 2-FCV-68-310 is opened. The valve open limit switch in the start circuit is in parrallel to the contact that would be open if RCDT level were low.

Question No. 62

Tier 2 Group 2

K/A 068 A4.02
Ability to manually operate and/or monitor in the control room:
Remote radwaste release

Importance Rating: 3.2 / 3.1

Technical Reference: 2-SO-68-5, Pressurizer Relief Tank, Rev 17
1,2-45N779 -17 Rev 21
1,2-45N779 -45 Rev 8

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.PZRPCS B.4.
OPT200.LRW B.4

Question Source: SQN NRC EXAM 1/2008, Modified WB Bank 007A1.01 034

Bank # __________
Modified Bank # ___X_____
New __________

Question History: New for SQN NRC Exam 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ____X_____
Comprehension or Analysis _________

10 CFR Part 55 Content: 41.7 / 45.5 to 45.8

Comments:

63. Given the following plant conditions:

- Gas Decay Tank 'C' release is in progress with Train A ABGTS running for dilution flow.
- Irradiated Fuel assembly insert shuffles are being conducted in the Spent Fuel Pit.
- Fuel Handling Area Exhaust Fan A is running.
- A leak occurs on the waste gas compressor which results in a gas release to the Auxiliary Building.
- 0-RE-90-101, Auxiliary Building Vent Monitor, alarms due to High radiation.
- 0-RE-90-102 and 0-RE-90-103, Fuel Storage Pool Area Monitors, indicate NORMAL radiation levels and are NOT in alarm.

Which ONE (1) of the following indicates the effect this would have on the running Fuel Handling Area Exhaust Fan and on the ABGTS?

(Assume no operator action has been taken)

A. Fuel Handling Area Exhaust Fan would remain in service;
Train B ABGTS would start.

B. Fuel Handling Area Exhaust Fan would remain in service;
Train B ABGTS would NOT start.

C.✓ Fuel handling Area Exhaust Fan would be stopped;
Train B ABGTS would start.

D. Fuel handling Area Exhaust Fan would be stopped;
Train B ABGTS would NOT start.

A. *Incorrect - Fuel Handling Area Exhaust Fan will be stopped due to an ABI being initiated and theTrain B ABGTS will be started by the ABI. Plausible because the candidate may conclude that the Fuel Handling Area Exhaust Fan would not be stopped due to normal radiation on the Spent Fuel Pool Area Monitors.*

B. *Incorrect - Fuel Handling Area Exhaust Fan will be stopped due to an ABI being initiated and theTrain B ABGTS will be started by the ABI. Plausible because the candidate may conclude that the Fuel Handling Area Exhaust Fans would be stopped due to High radiation in the Aux Building stack but that the Train B ABGTS would not start because the Train A ABGTS was already in service.*

C. *Correct - High radiation in the the aux building stack will cause an aux building Isolation resulting in the tripping of the Fuel Handling Area Exhaust Fan and the starting of both trains of ABGTS.*

D. *Incorrect - Fuel Handling area exhaust fan will be stopped due to an ABI being initiated and theTrain B ABGTS will be started by the ABI. Plausible because the candidate may conclude that the Fuel Handling Area Exhaust Fans would not be stopped due to normal radiation on the Spent Fuel Pool Area Monitors and that the Train B ABGTS would not start because the Train A ABGTS was already in service.*

Question No. 63

Tier 2 Group 2

K/A 071 K3.04
Knowledge of the effect that a loss or malfunction of the Waste Gas Disposal System will have on the following: Ventilation Systems

Importance Rating: 2.7 / 2.9

Technical Reference: 0-AR-M12-B, Common Radiation Monitor 0-XA-55-12B, Window B-1
0-S0-30-10, Auxiliary Building Ventilation Systems, Rev 38
1,2-47W611-30-6

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.ABVENT B.4.g. and i.
OPT200.ABGTS B.4.f

Question Source:
Bank # __________
Modified Bank # ____X_____
New __________

Question History: Modified question on SQN 2007 exam, SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ___X_____

10 CFR Part 55 Content: 41.7 / 45.6

Comments:

64. Given the following:

- Unit 1 is in service at 70% RTP.
- A tube leak is suspected in Condenser A.
- 1A1 and 1A3 waterboxes must be drained and tagged with a clearance to inspect for a condenser tube leak.
- After the Amertap system is shutdown in automatic, the Amertap is to be restored to the waterboxes on other side of Condenser A.

Which ONE of the following identifies (1) the requirement for tagging the Amertap flow paths into and out of the 1A1 and 1A3 waterboxes in accordance with SPP-10.2, Clearance Procedure to Safely Control Energy and (2) how having the CCW inlet and outlet MOVs closed one one side of Condenser A effects the ability to operate a waterbox MOV on Condensers B or C with the unit at power?

A. (1) Single valve isolation of flow path is acceptable.

(2) An Inlet MOV on Condenser B or C could NOT be operated electrically from the MCR, but could be electrically operated locally at the valve.

B.✓ (1) Single valve isolation of flow path is acceptable.

(2) An Inlet MOV on Condenser B or C could NOT be operated electrically neither from the MCR nor locally at the valve.

C. (1) Two closed valves in series is required unless lack of two valve isolation is documented and communicated to the clearance holder.

(2) An Inlet MOV on Condenser B or C could NOT be operated electrically from the MCR, but could be electrically operated locally at

the valve.

D. (1) Two closed valves in series is required unless lack of two valve isolation is documented and communicated to the clearance holder.

((2) An Inlet MOV on Condenser B or C could NOT be operated electrically neither from the MCR nor locally at the valve.

The temperature and pressure on the Condenser Circulating Water system and the Ammertap tube cleaning system is less than the values requiring double valve isolation by the clearance procedure, SPP-10.2, therefore single valve isolation is the acceptable isolation.
The condenser water box MOVs are interlocked such that only one set can be operated electrically when a CCW pump is in service.

A. Incorrect, Plausible because the candidate may correctly identify single isolation is acceptable but conclude that the waterbox MOV could be electrically operated locally.

B. Correct, single flow path isolation is acceptable for the clearance and the MOV are interlocked such that only one set of valves can be operated electrically when a CCW pump is in operation.

C. Incorrect, Double valve isolation is not required and the waterbox MOV could not be operated locally. Plausible because the candidate may incorrectly determine that double isolation is required and misapply the interlock configuration on the valves determining that the valves could be operated locally.

D. Incorrect, Double valve isolation is not required. Plausible because the second part of the answer is correct and the candidate may incorrectly determine that double isolation is required, while determining that the waterbox MOVs could not be operated electrically.

Question No. 64

Tier 2 Group 2

K/A 075 G 2.2.13
Knowledge of tagging and clearance procedures.

Importance Rating: 3.6 / 3.8

Technical Reference: SPP-10.2,Clearance Procedure to Safely Control Energy, Rev 11
0-SO-27-1 Rev 64
1,2-47W611-27-2, Rev 4

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271SPP-10.2 B.6

Question Source:
Bank # __________
Modified Bank # __________
New __X______

Question History: New for SQN NRC Exam 1/2008

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ____X______

10 CFR Part 55 Content: 41.10 / 45.13

Comments:

65. Given the following

- The Electric Fire Pump is out of service for maintainence.
- A scrap lumber fire exist on site but not affecting any plant equipment or structure.
- The Fire Brigade Leader calls the MCR and request the Diesel Fire Pump be started.

Which ONE (1) of the following identifies the actions required by the MCR operator to start the diesel fire pump and the effect on the High Pressure Fire Protection system if the pump were to overspeed after starting with the overspeed trip mechanism failing to function?

A.✓ The MCR operator could start the pump from the MCR.

HPFP header pressure would increase and remain high.

B. The MCR operator could **NOT** start the pump from the MCR, an AUO would have to start the pump locally.

HPFP header pressure would increase and remain high.

C. The MCR operator could start the pump from the MCR.

The pressure would increase until the pump automatically shuts down after a time delay.

D. The MCR operator could **NOT** start the pump from the MCR, an AUO would have to start the pump locally.

The pressure would increase until the pump automatically shuts down after a time delay.

A. Correct, The Operator can start the Pump from the MCR. The DFP has a relief valve that will lift on high pressure. The Pump does have a timed delay high pressure trip but it is normally not in service.The DFP has a relief valve that will lift on high pressure.

B. Incorrect, The Operator can start the Pump from the MCR. Plausible if the student does not know the pump can be started from the MCR. The Pump does have a timed delay high pressure trip but it is normally not in service. The DFP has a relief valve that will lift on high pressure.

C. Incorrect, The Operator can start the Pump from the MCR. The Pump does have a timed delay high pressure trip but it is normally not in service. The DFP has a relief valve that will lift on high pressure.

D. Incorrect, The Operator can start the Pump from the MCR. The Pump does have a timed delay high pressure trip but it is normally not in service. The DFP has a relief valve that will lift on high pressure.

Question No. 65

Tier 2 Group 2

K/A 086 A1.01
Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with Fire Protection System operating the controls including: Fire header pressure

Importance Rating: 2.9 / 3.3

Technical Reference: 0-SO-26.2,
1,2-47W850-27

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200HPFP B.3

Question Source:
Bank # ________
Modified Bank # ________
New ___X___

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ___X___
Comprehension or Analysis ________

10 CFR Part 55 Content: 41.5 / 45.5

Comments:

66. Which ONE (1) of the following identifies actions, in the list below, that are included in the listing of activities required to be reviewed during Shift Turnover in accordance with OPDP-1, Conduct of Operations, by an on-coming OAC at Sequoyah?

1. Radiological changes in plant
2. PERs generated since last shift worked
3. Standing Orders
4. Temporary Alteration Control forms (TACFs)
5. LCOs
6. Priority 1 and 2 Operator Workarounds

A. All EXCEPT 1 and 2

B. All EXCEPT 1 and 4

C✓ All EXCEPT 2 and 6

D. All EXCEPT 4 and 6

A. Incorrect, Radiological changes in plant are required to be reviewed, PERs are identified on the Turnover Sheet but are applicable for WBN only.

B. Incorrect, Radiological changes in plant and TACFs are required to be reviewed.

C. Correct, Neither are identified as being required on the Turnover Sheet.

D. Incorrect, TACFs are required to be reviewed, Priority 1 and 2 Operator Workarounds are not required on the Turnover Sheet.

Question No. 66

Tier 3

K/A 2.1.3
Knowledge of shift turnover practices

Importance Rating: 3.0 / 3.4

Technical Reference: OPDP-1

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271C209 B.10

Question Source:
Bank # ___________
Modified Bank # ___________
New ____X_____

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ____X____
Comprehension or Analysis ___________

10 CFR Part 55 Content: 41.10 / 45.13

Comments: Got idea from the Kewaunee 11/15/2004 exam

67. Given the following:

- Unit 2 at 35% RTP with power ascension in progress in accordance with 0-GO-5, Normal Power Operation, following a refueling outage.
- A loss of feedwater results in a reactor trip.
- The level in all 4 Steam Generators drops to < 0% Narrow Range and starts recovering.
- 25 seconds after the trip the Steam Generator levels are:
  SG #1 - 6%
  SG #2 - 9%
  SG #3 - 4%
  SG #4 - 3%

Which ONE (1) of the following identifies the expected response of the ATWS Mitigation System Actuation Circuitry(AMSAC)?

A.✓ Arming conditions for AMSAC were not present.

B. AMSAC actuated.

C. Arming conditions were present, but actuation conditions were not present.

D. AMSAC has not actuated, but will actuate after the appropriate time delay if SG levels stabilize at their current values.

A. Correct, The system does not arm until unit power is >40% and the stated power in question is 35%.

B. Incorrect, Levels are below the setpoint, however, the system does not arm until unit power is >40% and the stated power in question is 35%. Plausible if student does not know arming setpoint.

C. Incorrect, True that AMSAC will not actuate, however, the levels are still below the actuation setpoint (3 out 4 < 8%). So level recovery is NOT the reason it does not actuate. Plausible if student does not know 3 out 4 < 8% logic.

D. Incorrect, Plausible if student remembers a time delay exists and does not know AMSAC is not armed given the current plant conditions of 35% power.

Question No. 67

Tier 3

K/A G 2.1.27
Knowledge of system purpose and or function

Importance Rating: 2.8 / 2.9

Technical Reference: 1.2-47W611-3-5
TI-28 Attachment 9
1-AR-M3-C

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.AMSAC B.4

Question Source: Robinson 9/2004 exam

Question History: SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ________
Comprehension or Analysis ______X_____

10 CFR Part 55 Content: 41.7

Comments:

68. Which ONE (1) of the following best describes the function of the "D" solenoids in the steam dump system when the "D" solenoids are energized?

A. Prevents the steam dump valves from opening if the condenser is not available.

B. Allows the steam dump cooldown valves to open when Tavg is below the Lo-Lo Tavg interlock.

C. Aligns control air to supply for modulation control when the steam dumps are armed.

D✓ Allows the steam dump valves to respond more quickly when needed.

A. Incorrect, Condenser available interlocks do not input to the "D" Solenoids, only the "A" and "B" solenoids. Plausible because student may confuse which solenoids are affected by the condenser available interlocks.

B. Incorrect, Steam dump Bypass interlock feature permits opening cooldown valves below the Lo Lo Tavg interlock. This interlock does not not input to the "D" solenoids only the "A" and "B" solenoids for the Cooldown bank. Plausible because student may confuse which solenoids are affected by the Steam dump Bypass interlock.

C. Incorrect, D solenoid aligns control air for modulation control when de-energized also, arming signals do not input do not input to the "D" Solenoids, only the "A" and "B" solenoids.

D. Correct, "D" solenoids are energized when there is a large Tavg/Tref deviation indicating a large primary/secondary power mismatch requiring an artificial steam load on the reactor. This can occur for a rapid turbine loss of load or reactor trip. energizing "D" solenoids places full control air header pressure on the valves rather than the modulating control air signal to rapidly open the valves in 2 stages.

Question No. 68

Tier 3

K/A 2.1.28
Knowledge of the purpose and function of major system components and controls.

Importance Rating: 3.2 /3.3

Technical Reference: 0-47W611-1-2

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.SDCS B.4.

Question Source:
Bank # ____X_____
Modified Bank # ________
New __________

Question History: SQN NRC Exam 1/2008, SQN Bank Mod SDCS-B.7 002

Question Cognitive Level:
Memory or fundamental knowledge ___X_____
Comprehension or Analysis __________

10 CFR Part 55 Content: 41.7

Comments: SQN Bank Mod SDCS-B.7 002

69. Given the following:

- Unit 1 is in MODE 6 with core reload in progress.
- LS-78-3, SPENT FUEL PIT LEVEL HIGH-LOW is in alarm and an AUO has been sent to investigate.
- Source Range counts indicate N31=2cpm, and N32=3cpm.
- The 17th fuel assembly to be loaded is in the Refuel Machine Mast and is being lowered into the core.

Which ONE (1) of the following identifies a condition that would require fuel movement to be stopped?

REFERENCE PROVIDED

A. During shift rounds an AUO reports the Spent Fuel Pit Temperature to be 69°F.

B.✓ Source Range counts during Fuel Assembly insertion indicate N31=4cpm, and N32=7cpm.

C. AUO reports Spent Fuel Pit level is stable approximately half way between the El 725.5 rung and the EL 726 rung.

D. The MCR RO maintaining the Fuel Assembly Transfer Forms (FATF) determines that the 18th fuel assembly is in the Pit Side Upender before the 17th assembly is set in the core.

A. Incorrect, Spent Fuel Pit temperature is analyzed down to 50 degrees F. Plausible because the candidate may know that there is a lower limit on analyzed temperature but not remember the value of the limit.

B. Correct, If both SRMs increase by a factor of 2 during any single loading step after the first 12 assemblies, fuel loading must stop.

C. Incorrect,the level is slightly below the low level alarm but above the TS required level. Plausible because the candidate may know that there is a lower limit on SFP level but not remember the minimum level.

D. Incorrect, Fuel assemblies located as stated are within the requirements for assemblies outside of approved storage locations. Plausible because the candidate may know that there is a maximum number of fuel assemblies that can be outside approved storage but not remember the actual requirement or confuse the sequence of movement.

Question No. 69

Tier 3

K/A 2.2.26
Knowledge of refueling administrative requirements.

Importance Rating: 2.5 / 3.7

Technical Reference: FHI-3 Movement of Fuel, Rev 51
0-SO-78-1, Spent fuel Pit Cooling System, Rev 33

Proposed references to be provided to applicants during examination:
0-SO-78-1 Spent fuel Pit Cooling System, Appendix C

Learning Objective: OPT200.FH B.5.a, B.6.a

Question Source: New

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ________
Comprehension or Analysis _____X____

Comments:

70. Given the following plant conditions:

- Unit 1 is at 40% power, steady-state, MOL
- Rod control system is in MANUAL
- All process parameters are on program
- A malfunction in the steam dump system causes three steam dump valves to fail partially open, increasing reactor power to 50%

Which ONE (1) of the following identifies the value the Tref would indicate after the plant stabilizes AND the speed at which the control rods would move as they were being withdrawn to restore Tavg?

A. Tref would indicate approximately equal to 559°F.
Control rods would move at 64 steps/minute.

B. Tref would indicate approximately equal to 562°F.
Control rods would move at 64 steps/minute.

C✓ Tref would indicate approximately equal to 559°F.
Control rods would move at 48 steps/minute.

D. Tref would indicate approximately equal to 562°F.
Control rods would move at 48 steps/minute.

Normal Tavg and Tref @ 40% power = 559°F. Turbine is operated on IMP OUT so when dumps open there is little/no change in Tref which is based on turbine load i.e. turbine impulse pressure. Therefore, plant will stabilize at approximatel same Tref. Normal Manual Rod speed in 48 steps per minute. In Bank select, Manual rod speed is 48 Steps/minute for control banks and 64 steps/minute for shutdown banks.

A. Incorrect, The Tref would stabilize at approximately 559°F which is the Tref for 40% power, however the rod speed in manual is 48 steps per minute. Plausible if the candidate mistakes rod speed in normal manual control with manual rod speed for shutdown banks in banks select which is 64 steps/minute.

B. Incorrect, Tref will not increase to 562°F since turbine load is not increasing. Additional steam load is diverted to steam dump system. Also, normal manual rod speed is not 64 steps/minute. Plausible if the candidate does not realize that Tref does not increase for the steam dump leak and confuses manual shutdown bank rod speed with normal manual rod speed.

C. Correct, Tref will remain at approximately the 40% value of 559°F since turbine load is not increasing when additional steam load is diverted to steam dump system. Normal manual rod speed is 48 steps/minute.

D. Incorrect, Tref will not increase to 562°F since turbine load is not increasing. Additional steam load is diverted to steam dump system. Plausible if the candidate does not realize that Tref does not increase for the steam dump leak but correctly remembers that normal manual control rod speed is 48 Steps/min.

Question No. 70

Tier 3

K/A G 2.2.33
Equipment Control Knowledge of control rod programming.

Importance Rating: 3.4 / 4.0

Technical Reference: TI-28, Curve Book Att.9

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200RDCNT B.4.e, B.5.d

Question Source: SQN Exam Bank modified RDCNT B.4.08

Question History: SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ________
Comprehension or Analysis _____X____

10 CFR Part 55 Content: 43.6

Comments:

71. Given the following:

- Unit 2 is stable at 3% RTP.
- An RCS sample line fitting has a small leak inside the Polar Crane Wall.
- A work plan is being prepared to repair the leak and the work is being merged into the schedule.

Which ONE (1) of the following identifies the the lowest level of approval required to make the entry inside the Polar Crane Wall at the current plant conditions?

A. Plant Manager

B. Site Vice President

C✓ Rad Protection Manager

D. Rad Ops Shift Supervisor

A. Incorrect, Plant Manager approval for inside polar crane is required only in MODE 1 and question stem has plant in MODE 2.

B. Incorrect, Site VP approval is not required, however candidate could believe it is due to being at a power above 0%.

C. Correct, Rad Protection Manager approval is required for containment entries outside pre-determined containment building schedule.

D. Incorrect, Rad Ops Shift Supervisor can waive ALARA during emergencies.

Question No. 71

Tier 3

K/A G 2.3.2
Knowledge of facility ALARA program.

Importance Rating: 2.5 / 2.9

Technical Reference: RCI-10 Rev 30

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271C260 B.9

Question Source: New

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ________
Comprehension or Analysis _____X____

10 CFR Part 55 Content: 41.12 / 43.4 / 45.9 / 45.10

Comments:

72. Given the following:

- Unit 1 is in Mode 1.
- Operators are in the process of placing Train A Containment Purge in service to lower containment.

Which ONE (1) of the following damper(s) is opened LAST to ensure that the lower ice doors remain closed during startup of the purge?

A. 1-FCO-30-1A, Purge Air Supply Fan 1A Suction Isolation Damper

B.✓ 1-FCV-30-2, Purge Air Supply Fan 1A Discharge Isolation Damper

C. 1-FCV-30-61, Purge Air Exhaust Fan 1A Suction Isolation Damper

D. 1-FCV-30-213, Purge Air Exhaust Fan 1A Discharge Isolation Damper

A. Incorrect. This damper opens when the fans are started. Plausible because opening it last would provide the the same d/p effect as opening the supply discharge damper last.

B. Correct. Opening this damper last is in accordance with the procedure. Need to minimize d/p accross the doors which blow in to open.

C. Incorrect. This may open the doors. Plausible because this would be the last damper open if purging upper containment.

D. Incorrect. This may open the doors. Plausible because the candidate could confuse this damper with the supply fan discharge damper.

Question No. 72

Tier 3

K/A G 2.3.9
Knowledge of the process for performing a containment purge.

Importance Rating: 2.5 / 3.4

Technical Reference: 0-SO-30-3

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.CONTPURGE B.5

Question Source: Bank

Question History: SQN NRC Exam 1/2008, CTMT PURGE-B.16.C 001

Question Cognitive Level:
Memory or fundamental knowledge ___X_____
Comprehension or Analysis ___________

10 CFR Part 55 Content: 43.4 / 45.10

Comments: SQN bank CTMT PURGE-B.16.C 001. Changed stem setup and wording, changed the original question A distractor, reordered distracters, added damper unique identifiers. No significant changes

73. Following completion of EA-0-3, Minimizing Secondary Plant Contamination, during a SGTR event, which ONE (1) of the following identifies the alignment of the Low Volume Waste Treatment (LVWT) Pond?

A. The LVWT pond would be aligned to the diffuser pond and aligned to recieve the discharge of the Turbine Building Sump.

B. The LVWT pond would be aligned to the diffuser pond but isolated from the discharge of the Turbine Building Sump.

C.✓ The LVWT pond would be isolated from the diffuser pond but aligned to recieve the discharge of the Turbine Building Sump.

D. The LVWT pond would be isolated from the diffuser pond and isolated from the discharge of the Turbine Building Sump.

A. Incorrect, Procedure does not align the LVWT Pond to the diffuser Pond it isolates the LVWT pond from the diffuser pond. Plausible because the procedure addresses realignment affecting both the LVWT pond and the diffuser pond and if student assumes Turbine Bldg Sump discharge may be returned to the diffuser pond if it is realigned to pass through the Low Volume Waste Treatment pond first.

B. Incorrect, Procedure does align the Turbine Building Sump discharge to the LVWT pond. Plausible if student assumes turbine building sump discharge must be isolated from the environment as a result of a SGTR. Also Plausible since the procedure addresses isolation of the LVWT from the Diffuser pond.

C. Correct, Procedure aligns Turbine Building Sump to the LVWT pond and isolates the LVWT Pond from the Diffuser pond.

D. Incorrect, Procedure does align Turbine Building sump discharge to the LVWT pond. Plausible since the procedure does isolate the LVWT pond from the diffuser pond if student does not remember that if also aligns the Turbine building sump to the LVWT pond or assumes that turbine building sump discharge must be isolated from the environment as a result of a SGTR.

Question No. 73

Tier 3

K/A 2.3.10
Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.

Importance Rating: 2.9/3.3

Technical Reference: EA-0-3

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271E-3 B.6

Question History: New for SQN NRC exam 1/2008

Question Cognitive Level:

Memory or fundamental knowledge ___X____
Comprehension or Analysis __________

10 CFR Part 55 Content: 43.4 / 45.10

Comments:

74. Given the following:

- A reactor trip and safety injection has occurred.
- E-0, Reactor Trip Or Safety Injection, is entered.
- While the Unit Supervisor (US) is reading Step 3, an ORANGE Path condition on the CONTAINMENT Critical Safety Function (CSF) Status Tree is identified by the STA.
- There are NO other ORANGE path conditions present.

Which ONE (1) of the following identifies when the transition to the ORANGE Path procedure is to take place:

A. Immediately after the US confirms the ORANGE Path condition is present.

B. As soon as verification that NO RED Path conditions exist on remaining status trees.

C. As soon as the reading of the E-0 IMMEDIATE ACTION steps has been completed by the US.

D✓ When transition is made from E-0 and verification that NO RED Path condition exist.

A. *Incorrect, No transition has been made in the stem of the question, therefore status tree should not be implemented until a transition is made from E-0 or a step is reached in E-0 that directs monitoring. Plausible because Orange paths could be implemented but only after meeting the criteria listed above which is not met in the stem of the question.*

B. *Incorrect, No transition has been made in the stem of the question, therefore status tree should not be implemented until a transition is made from E-0 or a step is reached in E-0 that directs monitoring. Plausible because Orange paths could be implemented after verification no RED path exists which would take a higher priority and only after meeting the criteria listed above which is not met in the stem of the question.*

C. *Incorrect, No transition has been made in the stem of the question, therefore status tree should not be implemented until a transition is made from E-0 or a step is reached in E-0 that directs monitoring. Plausible because operators are allowed to take prudent action after immediate actions steps have been completed.*

D. *Correct. No transition has been made in the stem of the question, therefore status tree should not be implemented until a transition is made from E-0 or a step is reached in E-0 that directs monitoring. If no RED path exits then orange paths may be implemented.*

Question No. 74

Tier 3

K/A G 2.4.16
Knowledge of EOP implementation hierarchy and coordination with other support procedures.

Importance Rating: 3.0 / 4.0

Technical Reference: EPM-4, User's Guide, Revision 19

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271EPM-4 B.11

Question Source: Indian Point 2004

Question History: SQN NRC Exam 1/2008, Bank Modified Indian Point 2004 Exam

Question Cognitive Level:
Memory or fundamental knowledge ________
Comprehension or Analysis ____X_____

10 CFR Part 55 Content: 41.10 / 43.5 / 45.13

Comments:

75. Which ONE (1) of the following explains the BASES for the prioritization of the HEAT SINK safety function compared to the PRESSURIZED THERMAL SHOCK safety function?

A.✓ HEAT SINK safety function is prioritized **HIGHER** than the PRESSURIZED THERMAL SHOCK safety function because HEAT SINK has a larger impact on the barriers to a fission product release.

B. HEAT SINK safety function is prioritized **HIGHER** than the PRESSURIZED THERMAL SHOCK safety function because Heat Sink must exist before a PRESSURIZED THERMAL SHOCK could occur.

C. HEAT SINK safety function is prioritized **LOWER** than the PRESSURIZED THERMAL SHOCK safety function because a Heat Sink must exist before a PRESSURIZED THERMAL SHOCK could occur.

D. HEAT SINK safety function is prioritized **LOWER** than the PRESSURIZED THERMAL SHOCK safety function because PRESSURIZED THERMAL SHOCK has a larger impact on the barriers to a fission product release.

*A. Correct. Per EPM-4 HEAT SINK safety function is prioritized **HIGHER** than the PRESSURIZED THERMAL SHOCK and HEAT SINK has a Larger impact on the barriers to a fission product release.*

B. Incorrect. Correct prioritization; incorrect Bases. Plausible because student could think that a heat sink be required to induce a rapid cooldown of the primary for the basis.

C. Incorrect. Incorrect prioritization; Incorrect Bases. Plausible if student does not know prioritization of safety functions and student could think that a heat sink be required to induce a rapid cooldown of the primary for the basis.

D. Incorrect. Incorrect prioritization; correct Bases. Plausible if student does not know prioritization of safety functions

Question No. 75

Tier 3

K/A G 2.4.22
Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations.

Importance Rating: 3.0/4.0

Technical Reference: EPM-3-FR-0

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271FR-0 B.2

Question Source: NEW

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge __X_____
Comprehension or Analysis __________

10 CFR Part 55 Content: CFR: 43.5 / 45.12

Comments:

76. Given the following:
- Unit 1 experienced a reactor trip / safety injection due to the inadvertent opening of a pressurizer safety valve.
- Reactor Coolant Pumps were stopped due to Phase B after verifying Containment Spray in service.
- Plant conditions when the first Emergency Plan classification was made:

Pressurizer pressure	1635 psig and stable
Pressurizer level	100%
High Quad. Avg. Incore Thermocouple	572°F and stable
Lowest Tcold	544°F and stable
RVLIS	87% and dropping
Steam Generator levels	33% NR and stable
Highest Containment Radiation	1.1E+01 Rem/hr and stable
Containment Hydrogen	0.0%
Containment Pressure	4.8 psid and dropping
Containment Sump Level	14% and rising
RCS Activity	< Tech Spec limit

Which ONE (1) of the following identifies the required initial Emergency Plan classification and the classification required fifty (50) minutes later if the High Quad. Avg. Incore Thermocouple is 743°F and rising with RVLIS at 48%? (SED Judgement is NOT to be used as criteria for the declaration)

Reference Provided

	Initial Classification	50 minutes Later
A.✓	Alert	Site Area Emergency
B.	Alert	General Emergency
C.	Site Area Emergency	Site Area Emergency
D.	Site Area Emergency	General Emergency

A. Correct. Initial conditions result is a loss of 1.2 RCS Barrier EAL 1.2.2 RCS Leakage / LOCA due to subcooling being less than 40°F and also a potential loss of the same 1.2.2 EAL. NO other EAL criteria are applicable. The 50 minute conditions result the additional Potential Loss of 1.1 Fuel Clad Barrier via 1.1.2, Incore Thermocouple HI Quad Average which can be determined from the information provided. Additionally, EAL 1.1.1, Critical Safety Function Status (Core Cooling Orange) is a Potential Loss of the 1.1.1 Fuel Clad Barrier, but the candidate would have to recall this information (the orange path criteria is not provided). Loss or Potential Loss of any two barriers results in the declaration being a Site Area Emergency.

B. Incorrect. Initial conditions result is a loss of 1.2 RCS Barrier EAL 1.2.2 RCS Leakage / LOCA due to subcooling being less than 40°F and also a potential loss of the same 1.2.2 EAL. NO other EAL criteria are applicable. The General Emergency classification is plausible because the candidate could mistakenly determine from the information that criteria for Inadequate Core Cooling exist (FR-C.1 RED Path) which would result in the loss of 1.1 Fuel Clad barrier and the potential loss of 1.3 Containment Barrier (1.3.1 - Actions of FR-C.1 ineffective due to CETs tending up) which would be a General Emergency. While the upward trend exist, the Core Cooling is NOT a RED Path with the stated conditions. Core Cooling Red Path criteria would have to be recalled correctly to prevent this error.

C. Incorrect. Initial Site Area Emergency is plausible if the candidate misapplies the information provided. The 50 minute classification is correct.

D. Incorrect. Initial Site Area Emergency and the General Emergency classifications are plausible if the candidate misapplies the information provided.

Question No. 76

Tier _1_ Group _1_

K/A 008 Vapor Space LOCA
G2.4.41 Knowledge of the emergency action level thresholds and classifications.

Importance Rating: 2.3 / 4.1

Technical Reference: EPIP-1, Emergency Plan Classification Matrix, Rev 39
1-FR-0, Unit 1 Status Trees, Rev 1

Proposed references to be provided to applicants during examination:
EPIP-1, Emergency Plan Classification Matrix,
pages 9 and 10 (Fission Product Barrier Matrix)

Learning Objective: OPT271.REP B.3

Question Source:
Bank # __________
Modified Bank # __________
New ____X____

Question History: SQN NRC Exam 1/2008

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis __X_____

10 CFR Part 55 Content: (CFR 43.4 / 45.11)

10CFR55.43.b (5)

Comments:

77. Given the following:

- Unit 1 operating at 100% power when an ATWS occurred following the trip of both MFPTs.
- All S/G water levels are approximately 4% narrow range and dropping with ONLY the MDAFW pump 1A-A in service supplying 260 gpm to S/G #1 and 190 gpm to S/G #2.
- At the time of entry into FR-S.1 the RCS temperature and pressure are increasing rapidly.

- Subsequently, while perfoming FR-S.1, the reactor is successfully tripped and a safety injection occurs on low pressurizer pressure.

Which ONE (1) of the following identifies BOTH the status of the turbine at the time FR-S.1 was entered and the correct procedure implementation as a result of the safety injection?

A✓ The turbine is tripped.

Perform steps 1 through 4 of E-0, Reactor Trip or Safety Injection, and ES-0.5, Equipment Verifications, while continuing in FR-S.1.

B. The turbine is tripped.

Performance of steps 1 through 4 of E-0, Reactor Trip or Safety Injection, and ES-0.5, Equipment Verifications, is NOT permitted until FR-S.1 is completed.

C. The turbine is NOT tripped.

Perform steps 1 through 4 of E-0, Reactor Trip or Safety Injection, and ES-0.5, Equipment Verifications, while continuing in FR-S.1.

D. The turbine is NOT tripped.

Performance of steps 1 through 4 of E-0, Reactor Trip or Safety Injection, and ES-0.5, Equipment Verifications, is NOT permitted until FR-S.1 is completed.

A. Correct, The trip of both MFPs is a turbine trip signal and the turbine is tripped as indicated by the heatup and pressurization of the RCS (if the turbine was not tripped, the RCS would be cooling down and depressurizing). Perform steps 1 through 4 of E-0, Reactor Trip or Safety Injection, and ES-0.5, Equipment Verifications, while continuing in FR-S.1 would be correct procedure implementation.

B. Incorrect, The trip of both MFPs is a turbine trip signal and the turbine is tripped as indicated by the heatup and pressurization of the RCS (if the turbine was not tripped, the RCS would be cooling down and depressurizing). Procedure implementaion is incorrect. Plausible if student believes no other procdures can be implemented while FR-S.1 is in progress.

C. Incorrect, The trip of both MFPs is a turbine trip signal and the turbine is tripped as indicated by the heatup and pressurization of the RCS (if the turbine was not tripped, the RCS would be cooling down and depressurizing). Perform steps 1 through 4 of E-0, Reactor Trip or Safety Injection, and ES-0.5, Equipment Verifications, while continuing in FR-S.1 would be correct procedure implementation.

D. Incorrect, The trip of both MFPs is a turbine trip signal and the turbine is tripped as indicated by the heatup and pressurization of the RCS (if the turbine was not tripped, the RCS would be cooling down and depressurizing). Procedure implementaion is incorrect. Plausible if student believes no other procdures can be implemented while FR-S.1 is in progress.

Question No. 77

Tier 1 Group 1

K/A 000029 EA2.09
ATWS: Ability to determine or interpret the following as they apply to a ATWS: Occurrence of a main turbine/reactor trip

Importance Rating: 4.4 / 4.5

Technical Reference: FR-S.1, Nuclear Power Generation / ATWS
EPM-3-FR-S.1,Basis Document for FR-S.1, Nuclear Power Generation / ATWS
FR-0, Status Trees

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271FR-S.1 B5, B7

Question Source:
Bank # ___________
Modified Bank # ___X______
New ___________

Question History: SQN NRC Exam 1/2008, INPO Bank S029EA2.09 1Robinson 9/27/04

Question Cognitive Level:
Memory or fundamental knowledge ___________
Comprehension or Analysis __X_____

10 CFR Part 55 Content: 43.5 / 45.13

10CFR55.43.b (5)

Comments:

78. Given the following:

- Unit 1 at 4% power, startup in progress in accordance with GO-3, Power Ascension from Reactor Critical to Less than 5 Percent 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.
- Following an inadvertent Feedwater Isolation, the crew enters AOP-S.01, Loss of Normal Feedwater

If all 4 SG levels were at 28% and dropping, which ONE (1) of the following identifies the status of the MFW Bypass Reg Valves and the procedure to be in effect when the plant is stabilized?

A. MFW Bypass Reg Valves would be closed ;
AOP-S.01, Loss of Normal Feedwater.

B.✓ MFW Bypass Reg Valves would be closed;
ES-0.1, Reactor Trip Response.

C. MFW Bypass Reg Valves would be opening;
AOP-S.01, Loss of Normal Feedwater.

D. MFW Bypass Reg Valves would be opening;
ES-0.1, Reactor Trip Response.

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 the plant would be stabilized in AOP-S.01 if the power level had been lower in Mode 2 and the candidate may not correctly identify the valves closed by the FWI signal because there is a FWI valve downstream.*

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. A reactor trip would be required, following by a transition to ES-0.1 where the plant would be stabilized.*

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 plant would be stabilized in AOP-S.01 if the power level had been lower in Mode 2.*

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. The plant stabilization in ES-0.2 is correct.*

Question No. 78

Tier 1 Group 1

K/A 054 AA2.05
Ability to determine and interpret the following as they apply to the Loss of Main Feedwater (MFW): Status of MFW pumps, regulating and stop valves

Importance Rating: 3.5 / 3.7

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

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.MFW B4, OPL271AOP-S.01 B2

Question Source:
Bank # __________
Modified Bank # __________
New ___X_____

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis __X_____

10 CFR Part 55 Content: 43.5 / 43.13

10CFR55.43.b (5)

Comments:

79. Given the following:

- Unit 2 is operating at 100% RTP when a transient causes a reactor trip
- The Operating Crew implements E-0, Reactor Trip or Safety Injection, then transitions to ES-0.1, Reactor Trip Response, and stabilizes the plant.
- The operating crew observes the following:
  - Steam dump valves CLOSED.
  - S/G Atmospheric Relief Valves Operating.
  - First Out annunciators DARK.
  - All SSPS status lights DARK.

Which ONE (1) of the following identifies the procedural requirements to place T/D AFW pump in service and the required time to make the first 10CFR50.72 report to the NRC in accordance with SPP-3.5?

A. Transfer T/D AFW Pump Turbine Trip & Throttle valve power supply in accordance with AOP-P.02, Loss of 125v Vital DC Battety Board;

   4 hours.

B. Transfer T/D AFW Pump Turbine Trip & Throttle valve power supply in accordance with AOP-P.02, Loss of 125v Vital DC Battety Board;

   8 hours

C✓ Transfer T/D AFW Pump Turbine control power in accordance with AOP-P.04, Loss of Unit 2 Vital Instrument Power Board;

   4 hours

D. Transfer T/D AFW Pump Turbine control power in accordance with AOP-P.04, Loss of Unit 2 Vital Instrument Power Board;

   8 hours

A. *Incorrect, the 120v AC Vital Board 2-I has failed as identified by the Status light and first out annunciators. The pump would start due to having DC power but the speed controller would be deengerized until the supply was transferred locally. Plausible if the candidate mistakenly thinks that the effect on the T/D AFW pump would be not starting instead of the real effect of the loss of the speed control circuit. The first NRC notification is a 4 hour report*

B. *Incorrect, the 120v AC Vital Board 2-I has failed as identified by the Status light and first out annunciators. The pump would start due to having DC power but the speed controller would be deengerized until the supply was transferred locally. The first NRC notification is a 4 hour report. Plausible if the candidate mistakenly thinks that the effect on the T/D AFW pump would be not starting instead of the real effect of the loss of the speed control circuit or misapplies the NRC reporting criteria as many conditions are 8 hour reports.*

C. *Correct, the 120v AC Vital Board 2-I has failed as identified by the Status light and first out annunciators. The pump would start due to having DC power but the speed controller would be deengerized until theT/D AFW pump power supply was transferred to the 2-III board locally. The first NRC notification is a 4 hour report.*

D. *Incorrect, the 120v AC Vital Board 2-I has failed as identified by the Status light and first out annunciators. The pump would start due to having DC power but the speed controller would be deengerized until the T/D AFW pump power supply was transferred to the 2-III board locally. Plausible if the candidate correctly applies the power supplies transfer needed to restore the speed control circuit but misapplies the NRC reporting criteria.*

Question No. 79

Tier 1 Group 1

K/A 000057 AA2.17
Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: System and component status, using local or remote controls

Importance Rating: 3.1/ 3.4

Technical Reference: AOP-P.04, Loss of Unit 2 Vital Instrument Power Board

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271AOP-P.03 & P.04 B2, B6

Question Source:
Bank # ___________
Modified Bank # ___________
New ___X_____

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ___________
Comprehension or Analysis __X_____

10 CFR Part 55 Content: 43.5 / 45.13

10CFR55.43.b (5)

Comments:

80. Given the following:

- Unit 1 is in MODE 4 following a Refuel Outage.
- ABGTS Train B is tagged for heater bank inspection.
- Annunciator PS-32-104 TRAIN A AUX CONTROL AIR PRESSURE LOW alarms.
- AUO reports the Train A Aux air is isolated from station air, Train A Aux Air Compressor running and the Train A header is 67 psig and slowly dropping.

Which ONE (1) of the following identifies the action required per Unit 1 Technical Specifications regarding the status of ABGTS?

A. ABGTS Train A remains OPERABLE until the Train A Containment Air Isolation valve automatically closes, at which time LCO 3.0.3 entry would NOT be required.

B. ABGTS Train A remains OPERABLE until the Train A Containment Air Isolation valve automatically closes, at which time LCO 3.0.3 entry would be required.

C. Both ABGTS Trains would be INOPERABLE with the current conditions. LCO 3.0.3 entry would NOT be required.

D✓ Both ABGTS Trains would be INOPERABLE with the current conditions. LCO 3.0.3 entry would be required.

Question requires the knowledge of when the air system can not support the systems that require air and the application of 2 Technical Specifications for ABGTS. Plant Systems LCO 3.7.8 Auxiliary Building Gas Treatment System and Refueling Operations LCO 3.9.12 Auxiliary Building Gas Treatment System.

A. Incorrect, per the ARI for the alarm identified in the stem (and AOP-M.2, Loss of Control Air) if the air pressure is less than 70 psig then control air is inoperable (and it is not covered by a T/S of its own.) The ABGTS is one the systems affected by the loss of air. Thus, the Train A ABGTS must be declared Inoperable. The Train A Containment Air Isolation valve automatically closing is plausible due to it occuring at a pressure setting air on decreasing air pressure. The suspension of tuel movement is a required action in LCO -3.9.12 if no ABGTS train is operable making the distractor more plausible.

B. Incorrect, per the ARI for the alarm identified in the stem (and AOP-M.2, *Loss of Control Air) if the air pressure is less than 70 psig then control air is inoperable (and it is not covered by a T/S of its own.) The ABGTS is one the systems affected by the loss of air. Thus, the Train A ABGTS must be declared Inoperable. The Train A Containment Air Isolation valve automatically closing is plausible due to it occurring at a pressure setting air on decreasing air pressure. The suspension of fuel movement is a required action in LCO -3.9.12 if no ABGTS train is operable making the distractor more plausible and the distractor also has the correct application of LCO 3.30.3 as required by LCO -3.7.8 due to being in Mode 4.*

C. Incorrect, Both trains of ABGTS are Inoperable (B- tagged and A-due to low air pressure as identified in the ARI and in AOP-M.2, Loss of Control Air) Plausible if the candidate remembers that LCO-3.0.3 is identified as not being applicable in LCO 3.9.12 which is applicable due to the movement of irradiated fuel in the storage pool, but does not remember LCO 3.7.8 is also applicable due to the plant being in Mode 4. LCO 3.0.3 is applicable for not meeting 3.7.8 and not having an identified action statement that can be applied.

D. Correct,Both trains of ABGTS are Inoperable (B- tagged and A-due to low air pressure as identified in the ARI and in AOP-M.2, Loss of Control Air) LCO 3.9.12 is applicable due to having irradiated fuel in the pit and requires the movement of irradiated fuel in the storage pool be stopped. while not applicable for LCO 3.9.12, LCO 3.0.3 is applicable for not meeting 3.7.8 due to not having an identified action statement that can be applied.

Question No. 80

Tier 1 Group 1

K/A 065 AA2.01
Ability to determine and interpret the following as they apply to the Loss of Instrument Air: Cause and effect of low-pressure instrument air alarm

Importance Rating: 2.9 / 3.2

Technical Reference: 1-AR-M15-B (A-4)
AOP-M.2, Loss of Control Air
Plant Systems T/S 3.7.8, Auxiliary Building Gas Treatment System
Refueling Operations T/S 3.9.12, Auxiliary Building Gas Treatment System
1,2-47W611-32-2

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.ABGTS B6

Question Source:
Bank # ____________
Modified Bank # ____________
New __X______

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ____________
Comprehension or Analysis __X______

10 CFR Part 55 Content: **43.5 / 45.13**

10CFR55.43.b (2)

Comments:

81. Given the following:

- Unit 2 is responding to a LOCA with various Aux Building Radiation Monitors in alarm.
- The operators reach the last step in the procedure in effect and observes the following conditions:
  - RCS pressure 1040 psig and dropping.
  - RWST Wide Range level 72% and dropping.
  - Containment Sump level is 0%.

Which ONE (1) of the following statements identifies...

1) The procedure transition required to assure continued removal of decay heat under these conditions.
   and
2) How the termination of ECCS flow would be procedurally accomplished when termination criteria was met?

A.✓ 1) Transition to ECA-1.1, Loss of RHR Sump Recirculation;
2) ECCS flow would be terminated in ECA-1.1.

B. 1) Transition to ECA-1.1, Loss of RHR Sump Recirculation;
2) ECCS flow would be terminated in ES-1.1.

C. 1) Transition back to E-1, Loss of Reactor or Secondary Coolant;
2) ECCS flow would be terminated in E-1.

D. 1) Transition back to E-1, Loss of Reactor or Secondary Coolant;
2) ECCS flow would be terminated in ES-1.1

A. Correct, If LOCA has not been isolated as per indications given in stem then the procedure forces a Transition to ECA-1.1, Loss of RHR Sump Recirculation and the SI termination would be completed in ECA-1.1.

B. Incorrect, If LOCA has not been isolated as per indications given in stem then the procedure forces a Transition to ECA-1.1, Loss of RHR Sump Recirculation however, the the SI termination would be completed in ECA-1.1 not in ES-1.1. Plausible if the candidate knows the transition would be made to ECA-1.1 but does not know that the ECA will terminate the safety injection.

C. Incorrect, E-1 would be the correct transition if the leak had been isolated. Isolation is determined by the RCS pressure rising and the stem states that the pressure is dropping. Plausible if the candidate does not know the criteria required to make the transition to E-1 is RCS pressure increasing.

D. Incorrect, E-1 would be the correct transition if the leak had been isolated as determined by the RCS pressure rising and the stem states that the pressure is dropping. Plausible if the candidate does not know the criteria required to make the transition to E-1 is RCS pressure increasing but does know that if E-1 is entered the SI termination would be terminated in ES-1.1.

Question No. 81

Tier 1 Group 1

K/A W/E11 G 2.4.48
Ability to interpret control room indications to verify the status and operation of system, and understand how operator actions and directives affect plant and system conditions.

Importance Rating: 3.5 / 3.8

Technical Reference: ECA-1.2, LOCA Outside Containment

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271ECA-1.2, B5

Question Source:
Bank # _________
Modified Bank # _____X_____
New _________

Question History: SQN NRC Exam 1/2008, SQN BANK ECA-1.2-B.1B 001

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ___X_____

10 CFR Part 55 Content: 43.5 / 45.12

10CFR55.43.b (5)

Comments: SQN BANK ECA-1.2-B.1B 001 with minor rewording of the stem to require candidate to determine the leak is not isolated (versus stating the leak is not isolated in the stem) and to correct procedure titles in the choices

82. Given the following:

- The crew is performing actions of ECA-2.1, "Uncontrolled Depressurization of All Steam Generators."
- The RCS subcooling is 48 degrees F.
- RCS pressure is 1540 psig and rising.
- Pressurizer level is 24% and rising.
- While performing Step 14, MONITOR SI Termination Criteria, the S/G #4 pressure suddenly begins to rise in an uncontrolled manner.

What action is required for this condition?

A. Terminate SI in ECA-2.1, then transition to E-2, Faulted Steam Generator Isolation.

B.✓ Transition to E-2, Faulted Steam Generator Isolation, then terminate SI.

C. Remain in ECA-2.1, SI termination criteria are not currently met.

D. Transition to E-2, Faulted Steam Generator Isolation, SI termination criteria are not currently met.

A. *Incorrect. The fold out page Event Diagnostics and a caution direct the operator not to transition until SI termination is complete after the SI is reset in Step 15. With termination criteria met at step 14, the caution and fold out page directions do not apply. The purpose of this caution is to prevent an unnecessary delay in terminating SI; thus, prevent/minimize the potential for repressurizing the RCS (PTS concern). With the termination criteria met prior to this step, the procedure directs the transition to E-2 where SI termination will be directed. Plausible if candidate does not understand the process to start the SI termination process.*

B. *Correct. The fold out page Event Diagnostics directs the transition to E-2 if SI termination criteria is met unless Step 15 through Step 25 are in progress. The parameters listed result in meeting SI termination criteria. Meeting the criteria prior to Step 15 which resets the SI and begins the SI termination process, results in the correct action being a transition to E-2 where SI termination will be directed.*

C. *Incorrect. The SI termination criteria is met and a transition is required to be made to E-2. Plausible if the candidate misapplies the data given to required SI termination criteria and determines that continuing in ECA-2.1 is the correct action which would be correct is SI termination criteria was not met.*

D. *Incorrect. The transition to E-2 is correct however the SI termination is met as provided in the data supplied in the question. Plausible because the candidate could recognize the pressure increasing in the #4 SG as being an criteria for the transition to E-2 but misapply the data given as not meeting SI termination criteria.*

Question No. 82

Tier 1 Group 1

K/A W/E12 G2.1.32
Ability to explain and apply all system limits and precautions.

Importance Rating: 3.4 / 3.8

Technical Reference: ECA-2.1

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271ECA-2.1, B4, & 5, & 6

Question Source:
Bank # ___________
Modified Bank # _____X_____
New __________

Question History: SQN NRC Exam 1/2008, SQN Bank question ECA-2.1-B.5.A 001

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ____X___

10 CFR Part 55 Content: 41.10 / 43.2 / 45.12

10CFR55.43.b (5)

Comments:

83. Given the following:

- Unit 1 is at 100% RTP.
- Control Rod D Rods are at 220 steps.
- A single rod in Control Bank D drops to 115 steps.

Which ONE (1) of the following statements describes the BASES for restricting thermal power to less than or equal to 75%?

A.✓ Ensures Fuel Rod Integrity is maintained during continued operation.

B. Minimize AFD swings due to xenon redistribution.

C. Removes requirement to determine QPTR using incore probes.

D. Eliminates the requirement to re-evaluate specific accident analysis.

A. Correct, Basis states restriction of thermal power provides assurance of fuel rod integrity during continued operation.

B. Incorrect, Not part of basis and lowering RX power can cause AFD swings. Plausible due to AFD being affected during a dropped rod event but power reduction is not to minimize AFD swings.

C. Incorrect, Not part of actions/basis for dropped rod. This action is from TS 3.2.4 QPTR. Plausible due to QPTR being affected by a dropped rod, and this is a restriction placed on determining QPTR with power above 75% power with an NI out of service.

D. Incorrect, Accident analysis must be performed to ensure analysis remains valid per Tech Spec action. Plausible due to Accident analysis being a TS action which must be performed.

Question No. 83

Tier 1 Group 2

K/A 000003 G2.2.22
Dropped Control Rod: Knowledge of limiting conditions for operations and safety limits.

Importance Rating: 3.4 / 4.1

Technical Reference: TS 3.1.3.1 and Basis

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271AOP-C.01 B6, B9

Question Source:
Bank # __________
Modified Bank # __________
New __X______

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ___X_____
Comprehension or Analysis ________

10 CFR Part 55 Content: (CFR 43.2 / 45.2)

10CFR55.43.b (2)

Comments:

84. Given the following:

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

Which ONE of the following identifies the correct response to the rod misalignment per AOP-C.01, Rod Control System Malfunction?

A. Make repairs then realign the Group 1 rods to the Group 2 rods per AOP-C.01.

B. Make repairs then realign the Group 2 rods to the Group 1 rods per AOP-C.01.

C. Remove the Unit from service within 6 hours in accordance with Tech Specs using GOs.

D✓ Trip the Reactor and Go to E-0, Reactor Trip or Safety Injection.

A. Incorrect, Plausible due to AOP-C.01 contains steps to realign a misaligned rod to the bank but not with the conditions stated in the question.

B. Incorrect, Plausible due to AOP-C.01 contains steps to realign a misaligned rod to the bank but not with the conditions stated in the question.

C. Incorrect, with the rods >12 and <50 steps out of alignment, Plausible due to this could be correct if the rods were in a bank other than D.

D. Correct, AOP- C.01 directs - If multiple rods misaligned greater than 12 steps but no more than 50 steps each from respective banks (with the misaligned rods in Control Bank D) then TRIP the reactor and GO TO E-0, Reactor Trip or Safety Injection.

Question No. 84

Tier 1 Group 2

K/A 000005 AA2.03
Ability to determine and interpret the following as they apply to the Inoperable / Stuck Control Rod: Required actions if more than one rod is stuck or inoperable

Importance Rating: 3.5 / 4.4

Technical Reference: AOP-C.1, Rod control System Malfunction

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271AOP-C.01 B8

Question Source:
Bank # ___________
Modified Bank # ___________
New __X______

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ___________
Comprehension or Analysis __X_____

10 CFR Part 55 Content: 43.5 / 45.13

10CFR55.43.b (5)

Comments:

85. Given the following:

- Unit 1 turbine load is at 40%.
- Condenser vacuum is being lost due to air in-leakage.
- Operators have entered AOP-S.02, Loss of Condenser Vacuum.
- Condenser pressure is 1.9 psia and increasing at 0.1 psia/minute.

Which of the following are the correct actions in accordance with AOP-S.02 for the current conditions?

A. Trip the turbine and GO TO AOP-S.06, Turbine Trip.

B. Trip the Reactor and GO TO E-0, Reactor Trip or Safety Injection.

C. Continue in AOP-S.02, if condenser pressure exceeds 2.7 psia and can NOT be restored within 5 min, Trip the turbine and GO TO AOP-S.06, Turbine Trip.

D✓ Continue in AOP-S.02 if condenser pressure exceeds 2.7 psia and can NOT be restored within 5 min, Trip the Reactor and GO TO E-0, Reactor Trip or Safety Injection.

A. Incorrect, Plausible due to Turbine trip would be required if the load were less than 30% with pressure >1.72 psia.

B. Incorrect, Plausible due to Reactor trip would be required if the condenser pressure exceeded 2.7 psia and could not be restored to less than 2.7 psia within 5 minutes. The 1.72 setpoint is associated with turbine trip at less than 30% load.

C. Incorrect, Plausible due to with load greater than 30%, if the condenser pressure exceeds 2.7 psia and cannot be restored within 5 minutes, then a Reactor trip is required, NOT a Turbine trip.

D. Correct. With load greater than 30%, if the condenser pressure exceeds 2.7 psia and cannot be restored within 5 minutes, then a Reactor trip is required.

Question No. 85

Tier 1 Group 2

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

Importance Rating: 3.9 / 4.1

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

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271AOP-S.02 B2, B8

Question Source:
Bank # __________
Modified Bank # _____X_____
New __________

Question History: SQN NRC Exam 1/2008, SQN Bank Mod AOP-S.02-B.2 014

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ___X_____

10 CFR Part 55 Content: 43.5 / 45.13

10CFR55.43.b (5)

Comments:

86. Given the following:

- An inadvertent Reactor Trip occurred on Unit 1.
- A Safety Injection was initiated due to SG #2 Atmospheric Relief Valve sticking open.
- The operating crew is currently performing E-2, Faulted Steam Generator Isolation and the following conditions exist:
  - RCS subcooling is 64 degrees F.
  - S/G levels in #1, #3 and #4 SGs are stable at 33% narrow range.
  - S/G #2 level is 0% wide range.
  - RCS pressure 1760 psig and rising.
  - Pressuizer level 22% and rising.

Which ONE (1) of the following identifies the procedural flow path to implement ES-1.1, SI Termination **and**, the required action in ES-1.1 if the RCS pressure starts to drop and continues to drop following the action to stop the first centrifugal charging pump (CCP)?

A. Transition to ES-1.1 would be made DIRECTLY from E-2.

Restart the CCP and transition to E-1, Loss of Reactor or Secondary Coolant.

B✓ Transition to ES-1.1 would be made DIRECTLY from E-2.

Transition to ES-1.2, Post LOCA Cooldown.

C. No direct transition from E-2 to ES-1.1 can be made, a transition must first be made to E-1, Loss of Reactor or Secondary Coolant.

Restart the CCP and transition to E-1, Loss of Reactor or Secondary Coolant.

D. No direct transition from E-2 to ES-1.1 can be made, a transition must first be made to E-1, Loss of Reactor or Secondary Coolant.

Transition to ES-1.2, Post LOCA Cooldown.

A. Incorrect, Transition to ES-1.1 would be made directly from E-2 and if the RCS pressure continued to drop following the stopping of the CCP the procedure will direct the transition to ES-1.2. Plausible because the restarting of the CCP and a transition to E-1 would be made from the ES-1.1 Fold Out Page on the procedure under different conditions.

B. Correct, ES-1.1 would be entered from E-2, and if the RCS pressure continued to drop following the stopping of the CCP, a transition to ES-1.2 is directed.

C. Incorrect, ES-1.1 would be entered directly from E-2, No transition to E-1 would be required, however the candidate might mistakenly conclude that an E-1 transition would have to be made before ES-1.1 could be entered. Plausible if the candidate was not aware that the direct transition was correct or because the restarting of the CCP and a transition to E-1 would be made from the ES-1.1 Fold Out Page on the procedure under different conditions.

D. Incorrect, ES-1.1 would be entered directly from E-2, No transition to E-1 would be required, however plausible because the candidate might mistakenly conclude that an E-1 transition would have to be made before ES-1.1 could be entered and the transition to ES-1.2 is correct for the pressure response after the CCP is stopped.

Question No. 86

Tier 1 Group 2

K/A W/E02 EA2.2
SI Termination: Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

Importance Rating: 3.5 / 4.0

Technical Reference: E=0, Reactor Trip or Safety Injection
Technical Specifications 3.3.1.1, 3.3.2.1

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.PZRPCS B6, OPT200.NIS B6, OPL271E-0 B5

Question Source:

Bank # ___________
Modified Bank # ___________
New X

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:

Memory or fundamental knowledge ___________
Comprehension or Analysis X

10 CFR Part 55 Content: 43.5 / 45.13

10CFR55.43.b (3, 5)

Comments:

87. Given the following conditions:

- Unit 1 core reload in progress.
- An irradiated assembly is in the manipulator crane and is being transported to a core location.
- An additional irradiated fuel assembly is in the RCCA change fixture.
- The Refueling SRO determines a leak exists in the Reactor Cavity Seal and RADCON tech reports that radiation levels are rising as the water level is dropping.

Which ONE (1) of the following describes the action that is REQUIRED to be taken with the 2 fuel assemblies in accordance with AOP-M.04, Refueling Malfunctions?

	Irradiated Assembly <u>In Manipulator Crane</u>	**Irradiated Assembly <u>In RCCA change Fixture</u>**
A.✓	Transport back to Spent Fuel Pit side	Place in any core location
B.	Transport back to Spent Fuel Pit side	Transport back to Spent Fuel Pit side
C.	Place in any core location	Transport back to Spent Fuel Pit side
D.	Place in any core location	Place in any core location

A. *Correct. As stated per AOP-M04.*

B. *Incorrect. AOP -M.04 requires the assembly in the RCCA fixture to be placed in the core. Plausible because the candidate could think that both assemblies would be returned to the spent fuel pit.*

C. *Incorrect. AOP -M.04 requires the assembly in the manipulator crane to be transported to the SFP and the assembly in the RCCA fixture to be placed in the core. Plausible because these are the to locations required for the assemblies, but are reversed. The candidate could think that the identified locations are the required location for each of the assemblies.*

D. *Incorrect. AOP -M.04 requires the assembly in the manipulator crane to be transported to the SFP. Plausible because the candidate could think that this assembly would be placed in a core location*

Question No. 87

Tier 1 Group 2

K/A W/E16 G2.2.31 High Containment Radiation
Knowledge of procedures and Limitations involved in initial core loading.

Importance Rating: 2.2 / 2.9

Technical Reference: AOP-M.04, Refueling Malfunctions

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271AOP-M.04, B.8.b

Question Source:
Bank # ________
Modified Bank # ____X______
New __________

Question History: SQN NRC Exam 1/2008, Modified WBN Bank question AOP2900.06 006

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ____X___

10 CFR Part 55 Content: 43.6

10CFR55.43.b (7)

Comments:

88. Given the following:

- Unit 1 restarted 10 days ago following a refueling outage and is operating at 100% power.
- Control Bank D is currently 185 steps withdrawn and Rod control is in AUTOMATIC.
- Subsequently, the following occurs;
  - A controller problem results in the Letdown Hx Temperature Control Valve slowly drifting closed.
  - The operating crew enters AOP-C.02, Uncontrolled RCS Boron Concentration Changes.

Which ONE (1) of the following correctly describes the direction the control rods would move AND how rod control is to be operated in accordance with AOP-C.02?

A. OUT

Control rods are to be withdrawn in Manual

B.✓ OUT

Control rods are to be operated in Automatic

C. IN

Control rods are to be inserted in Manual

D. IN

Control rods are to be operated in Automatic

A. *Incorrect. The first part would be correct, Ltdn temp would increase resulting in Boration and Tave lowers therfore rods would move out in Auto. AOP-C.02 section 2.1, Uncontrolled or Unplanned dilution specifically states Control rods are not to be withdrawn in Manual however Automatic rod motion is allowed.*

B. *Correct. The first part would be correct, Ltdn temp would increase resulting in Boration and Tave lowers therfore rods would move out in Auto. AOP-C.02 section 2.1, Uncontrolled or Unplanned dilution specifically states Control rods are not to be withdrawn in Manual however Automatic rod motion is allowed.*

C. *Incorrect.First and second part incorrect. Ltdn temp would increase resulting in Boration and Tave lowers therfore rods would move out in Auto. AOP-C.02 section 2.1, Uncontrolled or Unplanned dilution specifically states Control rods are not to be withdrawn in Manual however Automatic rod motion is allowed.*

D. *Incorrect. First part incorrect. Ltdn temp would increase resulting in Boration and Tave lowers therfore rods would move out in Auto. AOP-C.02 section 2.1, Uncontrolled or Unplanned dilution specifically states Control rods are not to be withdrawn in Manual however Automatic rod motion is allowed.*

Question No. 88

Tier _2_ Group _1_

K/A 008 A2.09

Component Cooling Water: 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: Results of excessive exit temperature from the letdown cooler, including the temperature effects on ion-exchange resins.

Importance Rating: 2.3 / 2.8

Technical Reference: CCS Mech Logic Diagram 1,2-47W611-70-2.
AOP-C.02.

Proposed references to be provided to applicants during examination: none

Learning Objective: OPT200.CVCS B.5.d

Question Source:

Bank # ______
Modified Bank # __X__
New ______

Question History: SQN NRC Exam 1/2008,Votgle draft 2006 Exam question #3 Modified

Question Cognitive Level:

Memory or fundamental knowledge ______
Comprehension or Analysis __X__

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

10CFR55.43.b (6) (5)

Comments:

89. If the Reactor Cooling System pressure exceeded the Technical Specification Safety Limit in Mode 3, which ONE (1) of the following identifies the maximum time allowed for each of the following?

1. Pressure restored to less than Safety Limit.
2. Operations Duty Manager (ODS) Notification.

	Pressure Restored	ODS Notification
A.	5 minutes	Within 5 minutes after event initiation
B.✓	5 minutes	Within 5 minutes after REP declaration
C.	1 hour	Within 5 minutes after event initiation
D.	1 hour	Within 5 minutes after REP declaration

A. Incorrect, The time to restore pressure is 5 minutes per T/S 2.1.2. The time to notify the ODS is 5 minutes after the REP declaration. Plausible because there is a 15 minute time requirement to make a declaration after event initiation and the student could mix up the initiating requirement.

B. Correct, The time to restore pressure is 5 minutes per T/S 2.1.2. The time for the ODS notification is within 5 minutes after REP declaration.

C. Incorrect, The time to restore pressure is 5 minutes per T/S 2.1.2 not 1 hour stated in the distractor. The time to notify the ODS is 5 minutes after the REP declaration. Plausible because there is a 15 minute time requirement to make a declaration after event initiation and the student could mix up the initiating requirement.

D. Incorrect, The time to restore pressure is 5 minutes per T/S 2.1.2 not 15 as stated in the distractor. Correct ODS notification time.

Question No. 89

Tier 2 Group 1

K/A 010 Pressurizer Pressure Control System G 2.4.38
Ability to take actions called for in the facility emergency plan, including (if required) supporting or acting as emergency coordinator

Importance Rating: 2.2 / 4.0

Technical Reference: Technical Specifications 2.1.2
Radiological Emergency Plan EPIP-1

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271REP 2, OPT200.PZRPCS B6

Question Source:
Bank # __________
Modified Bank # __________
New __X_____

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge __X______
Comprehension or Analysis _________

10 CFR Part 55 Content: 43.5 / 45.11

10CFR55.43.b (1, 2)

Comments:

90. Given the following:

- Unit 1 at 100% power with the TD-AFW pump out of service for maintenance.
- Annunciator "125V DC VITAL CHARGER II FAILURE OR VITAL BAT II DISCHARGE" ON 1-M-1 panel is in alarm and the crew is investigating the cause.
- Following a reactor trip due to a spurious main turbine trip, the crew is performing ES-0.1, Reactor Trip Response, when the OATC determines the Train B AFW pump is NOT running.

Which ONE (1) of the following identifies a reason the AFW pump B is not running **AND** the allowed procedure use sequence provided by EPM-4, User's Guide, to allow placing the AFW pump B in service?

A. Loss of control power to SSPS Train B slave relays.

AOP-P.02, Loss of 125v DC Vital Battery Board, can be implemented ONLY after ES-0.1 has been completed.

B. Loss of control power to SSPS Train B slave relays.

Implement AOP-P.02, Loss of 125v DC Vital Battery Board while continuing in ES-0.1.

C. Loss of control power to the 6900v Shutdown Board.

AOP-P.02, Loss of 125v DC Vital Battery Board, can be implemented ONLY after ES-0.1 has been completed.

D✓ Loss of control power to the 6900v Shutdown Board.

Implement AOP-P.02, Loss of 125v DC Vital Battery Board while continuing in ES-0.1.

A. *Incorrect, Loss of Control Power for the slave relay would prevent the pump from starting. Control power to SSPS Train B slave relays is from Channel II 120v AC Vital and not from the Channel II 125v DC. Candidate could confuse the 2 power supplies. Rules of procedure usage allows implementing AOP while continuing ES-0.1. Plausible if student thinks the AOP cannot be performed while ES-0.1 is being performed.*

B. *Incorrect, Loss of Control Power for the slave relay would prevent the pump from starting. Control power to SSPS Train B slave relays is from Channel II 120v AC Vital and not from the Channel II 125v DC. Candidate could confuse the 2 power supplies. While 125v DC control Power to the board can be transferred, the control power to the slave relays cannot be transferred. Rules of procedure usage allows implementing AOP while continuing ES-0.1.*

C. *Incorrect, Loss of control power to the 6900v Shutdown Board would bring in the alarm and without the control power the pumps would not start. Rules of procedure usage allows implementing AOP while continuing ES-0.1. Plausible if student thinks the AOP cannot be performed while ES-0.1 is being performed.*

D. *Correct, Loss of control power to the 6900v Shutdown Board would bring in the alarm and without the control power the pumps would not start. Rules of procedure usage allows implementing AOP while continuing ES-0.1.*

Question No. 90

Tier 2 Group 1

K/A 013 A2.05
Ability to (a) predict the impacts of the following malfunctions or operations on the ESFAS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations; Loss of dc control power

Importance Rating: 3.7 / 4.2

Technical Reference: AOP-P.02, and 0-SO-250-10, 6900V Shutdown Board DC Control Bus Transfer, 1-AR-M1-C (B-4)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271AOP-P.02 B2 & 8

Question Source:
Bank # __________
Modified Bank # __________
New __X______

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis __X_____

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

10CFR55.43.b (5)

Comments:

91.
Given the following:

- Unit 1 is being shutdown for a refueling outage.
- Operating crew is performing 0-GO-7, Unit Shutdown From Hot Standby To Cold Shutdown.

Which ONE (1) of the following identifies when Containment Closure Control is required to be implemented in accordance with 0-GO-15, Containment Closure Control, **AND** who will maintain the listing of Containment Closure Exceptions in effect in accordance with 0-GO-15?

	Required When	**Containment Closure Exceptions Maintained by**
A.✓	When Unit enters Mode 5	Operations Work Control Center(WCC) US
B.	When Unit enters Mode 5	Unit 1 SRO
C.	When RHR is placed in service	Operations Work Control Center(WCC) US
D.	When RHR is placed in service	Unit 1 SRO

A. Correct, 0-GO-7 states that 0-GO-15 , Containment Closure Control, is to be implemented to track containment configuration changes when the unit enters Mode 5. 0-GO-7 identifies the WCC US as maintaining the Appendix tracking containment closure exceptions.

B. Incorrect, 0-GO-7 states that 0-GO-15 , Containment Closure Control, is to be implemented to track containment configuration changes when the unit enters Mode 5. 0-GO-7 identifies the WCC US as maintaining the Appendix tracking containment closure exceptions. Plausible because the GO requires the unit SRO to maintain awareness of the exceptions and to inform the WCC US of changes on the unit that could affect allowable closure times.

C. Incorrect, 0-GO-15 purpose statement says the GO provides the requirements for Containment Closure Control in the event of a loss of RHR shutdown cooling, making the implementation fo the GO when RHR is placed in service plausible, however, the correct implementation is when the Unit enters Mode 5.

D. Incorrect, 0-GO-15 purpose statement says the GO provides the requirements for Containment Closure Control in the event of a loss of RHR shutdown cooling, making the implementation fo the GO when RHR is placed in service plausible, however, the correct implementation is when the Unit enters Mode 5. Plausible because the GO requires the unit SRO to maintain awareness of the exceptions and to inform the WCC US of changes on the unit that could affect allowable closure times.

Question No. 91

Tier 2 Group 1

K/A 103 Containment Systems G 2.2.14
Knowledge of the process for making configuration changes.

Importance Rating: 2.1 / 3.0

Technical Reference: 0-GO-15, *Containment Closure Control*

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271GO-15 B.1 and B.4

Question Source:
Bank # __________
Modified Bank # __________
New ___X_____

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ___X_____
Comprehension or Analysis _________

10 CFR Part 55 Content: 43.3 / 45.13

10CFR55.43.b (4, 5)

Comments:

92. Given the following:

- Unit 1 is in MODE 4 with Heatup in Progress.
- Unit 2 is in MODE 6 with core reload in progress.

Which ONE (1) of the following identifies a condition where the associated Unit's Containment Purge would be required to be shutdown, **but** would continue to run until an Operator MANUALLY shutdown the purge?

A. Annunciator, 1-RA-90-131A CNMT PURGE AIR EXH MON HIGH RAD, alarms with Unit 1 Upper Containment Purge in progress.

B. Annunciator, 0-RA-90-101A AUX BLDG VENT MONITOR HIGH RAD, alarms with Unit 1 Lower Containment Purge in progress.

C. Annunciator, 2-RA-90-131A CNMT PURGE AIR EXH MON HIGH RAD, alarms with Unit 2 Lower Containment Purge in progress.

D✓ Annunciator, 0-RA-90-101A AUX BLDG VENT MONITOR HIGH RAD, alarms with Unit 2 Upper Containment Purge in progress.

A. Incorrect, Plausible if student does not remember that 1-RM-90-131 would automatically shutdown the U-1 purge and manual shutdown is not required.

B. Incorrect, Plausible due to 0-RM-90-101 will initiate an ABI, however, Manual shutdown of purge is NOT required due to the ABI if U-1 is in Mode 4.

C. Incorrect, Plausible if student does not remember that 2-RM-90-131 would automatically shutdown the U-2 purge and manual shutdown is not required.

D. Correct, 0-RM-90-101 will initiate an ABI and if the Unit is in MODE 5, 6, or defueled, an operator must manually shutdown the U-2 purge.

Question No. 92

Tier 2 Category 2

K/A 029 G 2.4.46
Ability to verify that the alarms are consistent with the plant conditions.

Importance Rating: 3.5 / 3.6

Technical Reference: 0-SO-30-3, 1,2-47W611-30-6, 0-AR-M12-B (B-1 and B-2)

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.CONTPURGE B5

Question Source: New

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level: Higher

10 CFR Part 55 Content: 43.5 / 45.3 / 45.12

10CFR55.43.b (7) (4)

Comments:

93. You are the Fuel Handling SRO for receiving new fuel. As a new fuel cask is being lifted from the transport truck, the lifting slings break and the cask drops to the ground. Initial inspections indicate extensive damage to one fuel assembly.

Per AOP-M.04, Refueling Malfunctions, which ONE (1) of the following correctly describes the MINIMUM level required for approval of recovery instructions?

A. Fuel Handling SRO.

B. Shift Manager.

C. Operations Manager.

D✓ Plant Manager.

A. Incorrect, Plausible if student does not know recovery instructions are required. Fuel Handling SRO approval for fuel movement is normally required.

B. Incorrect, Plausible because Fuel Handling SRO approval for fuel movement is normally required and since damage occured Shift Manager approval would be a good distractor.

C. Incorrect, Plausible if student knows recovery instructions are required prior to moving damaged fuel assembly, and since operations is in charge of the movement the Operations Manager is a good distractor.

D. Correct, Must be suspended until recovery instructions are approved by the Plant Manager.

Question No. 93

Tier _2_ Group _2_

K/A 034 A2.02
Fuel Handling Equipment: Ability to (a) predict the impacts of the following malfunctions or operations on the Fuel Handling System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Dropped cask.

Importance Rating: 3.4 / 3.9

Technical Reference: AOP-M.04 Refuleing Malfunctions

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271AOP-M.04 B5 and 8

Question Source:
Bank # ____
Modified Bank # ____
New __X__

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge __X__
Comprehension or Analysis ____

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

10CFR55.43.b (7)

Comments:

94. Given the following:

- Both units in MODE 1.
- The following data resulted from the **weekly** testing on 125v DC Vital Battery III.
  - Battery on float charge.
  - Battery Terminal Voltage 133v dc.
  - Battery charging current is 2.2 amps.
  - Battery Room and Electrolyte temperature is 68°F.
  - Cell electrolyte level is between minimum and maximum marks.
  - Cell voltage is 2.11v dc.
  - Corrected Specific Gravity is 1.197.

Which ONE (1) of the following identifies the Unit 1 T/S required actions regarding the 125v DC Vital Battery III?

REFERENCE PROVIDED

A. Immediately declare INOPERABLE due to Category A criteria, restore to OPERABLE status within the next 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

B. Immediately declare INOPERABLE due to Category B criteria, restore to OPERABLE status within the next 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

C✓ May be considered OPERABLE provided that within 24 hours all the Category B measurements are taken and found to be within their allowable values, and provided all parameter(s) are restored to within limits within the next 6 days.

D. May be considered OPERABLE provided all Category B measurements are within their allowable values and provided the parameter(s) are restored to within limits within the next 7 days. No requirement exists to verify Category B measurements within allowable values within 24 hours.

A. Incorrect, The conditions stated do not require declaring INOPERABLE even though the cell Float Voltage limit and Specific Gravity limit are NOT met due to the weekly test are to verify that the pilot cell parameters meet Category A limits and if they do not, then footnote (1) provides for considering the battery operable provided Category B measurements are taken within 24 hours and found to be within their allowable values. Plausible because if the footnote (1) is not used correctly, the candidate could choose this response. The actions stated are the actions for not meeting the LCO.

B. Incorrect, The conditions stated do not require declaring INOPERABLE even though the Float Voltage is below the Category B limit, there has been no correction for temperature as identified by (c) and the voltage is above the Category B allowable value . The weekly test are to verify that the pilot cell parameters meet Category A limits and do not measure to verify all Category B criteria. Plausible because if the footnotes (1), (2), and (c) are not used correctly, the candidate could choose this response. The actions stated are the actions for not meeting the LCO.

C. Correct, The weekly test measure to verify the pilot cell meets the Category A limits and if as in this case the Float voltage and the Specific Gravity limit are not met, then footnote (1) contains the required actions which are as stated in the answer.

D. Incorrect, This choice which is footnote (2) would result in a failure to meet the 24 hour requirement to perform the Category B measurements and also could extend the time to restore the parameters to within allowable values. Plausible if the candidate applies footnote (2) due to the Float Voltage being below the Category B limit listed.

Question No. 94

Tier 3

K/A G 2.1.12
Ability to apply technical specifications for a system

Importance Rating: 2.9 / 4.0

Technical Reference: T/S, Electrical Power Systems D.C. Distribution - Operating, LCO 3.8.2.3

Proposed references to be provided to applicants during examination:**T/S 3.8.2.3 (4 pages)**

Learning Objective: OPT200.DC B6

Question Source:

Bank # __________
Modified Bank # __________
New ___X___

Question History: New for SQN NRC EXAM 1/2008

Question Cognitive Level:

Memory or fundamental knowledge __________
Comprehension or Analysis __X__

10 CFR Part 55 Content: 43.2 / 43.5 / 45.3

10CFR55.43.b (2)

Comments:

95. Given the following:

- Unit 2 is in Mode 5.
- At 0130 the Control Room Emergency Ventilation system (CREVS) Train B was started.
- At 0200 the CREVS Train A was removed from service for heater repair, with repairs expected to be completed in 12 hours.
- At 0530 the CREVS Train B breaker tripped on overload.

Which ONE (1) of the following describes Unit 2 Tech Spec 3.7.7 "Control Room Emergency Ventilation System" applicability for this condition AND the basis for this Tech Spec?

A. Tech Spec 3.7.7 would NOT be entered in this mode.

Limits the radiation exposure to personnel in the control room to 5 rem or less whole body following all credible accident conditions.

B. Tech Spec 3.7.7 would NOT be entered in this mode.

Limits the radiation exposure to personnel in the control room to 1 rem or less whole body following all credible accident conditions.

C.✓ Tech Spec 3.7.7 would be entered in this mode.

Limits the radiation exposure to personnel in the control room to 5 rem or less whole body following all credible accident conditions.

D. Tech Spec 3.7.7 would be entered in this mode.

Limits the radiation exposure to personnel in the control room to 1 rem or less whole body following all credible accident conditions.

A. *Incorrect, Plausible if student believes Tech Spec 3.7.7 is not applicable in given mode. Limiting control room personnel to 5 rem or less whole body following all credible accident conditions is correct per the basis.*

B. *Incorrect, Plausible if student believes Tech Spec 3.7.7 is not applicable in given mode. Limiting control room personnel to 1 rem is incorrect.*

C. *Correct, Tech Spec 3.7.7 would be applicable in given Mode, and per the basis for this Tech Spec Limits the radiation exposure to personnel in the control room to 5 rem or less whole body following all credible accident conditions.*

D. *Incorrect, Tech Spec 3.7.7 would be applicable in given Mode. Limiting control room personnel to 1 rem is incorrect per the basis*

Question No. 95

Tier 3

K/A G 2.1.33
Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.

Importance Rating: 3.4 / 4.0

Technical Reference: Tech Spec 3.7.7 and basis, Tech Spec 3.0.4

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.CBVENT B2, 5, 6

Question Source:
Bank # __________
Modified Bank # __________
New ____X_____

Question History: New for SQN NRC Exam 1/2008

Question Cognitive Level:
Memory or fundamental knowledge __________
Comprehension or Analysis ___X____

10 CFR Part 55 Content: (CFR 43.2 / 43.3 / 45.3)

10CFR55.43.b (2)

Comments:

96. An engineer has submitted a design change request to replace the controller for FCV-62-93, "Charging Flow Control," with a different type of controller to improve pressurizer level control at low power.

Which ONE (1) of the following correctly describes the MINIMUM required qualifications for the person(s) PREPARING the safety evaluation paperwork in accordance with SPP-9.4, 10CFR50.59 Evaluations of Changes, Tests, and Experiments?

A.✓ 50.59 qualified **ONLY**.

B. SRO Licensed Operator **ONLY**.

C. Degreed Engineer **AND** 50.59 qualified.

D. SRO Licensed Operator **AND** 50.59 qualified.

A. Correct. 10CFR50.59 qualified individuals shall (1) be technically qualified managers, supervisors, engineering specialists, TVA personnel who are degreed engineers with a minimum of four years nuclear experience or equivalent per BP-105, licensed (or formerly licensed) operators or equivalent contract personnel, or recognized subject matter experts approved by the site 10CFR50.59 Program Manager and (2) have completed the required 10CFR50.59 training.

B. Incorrect. Not required to be licensed and required to be 50.59 qualified. Plausible if student thinks having an SRO License is the minimum required due to what it takes to get a license.

C. Incorrect. Not required to be a licensed engineer. Plausible if student thinks having a Degree and knowing individual must be 50.59 qualified. Student may think a degreed Engineer may be required due to Engineering being involved with plant design.

D. Incorrect. Not required to be a licensed SRO. Plausible if student knows the individual must be 50.59 qualified and may think having an SRO License is also required due to what it takes to get a license.

Question No. 96

Tier 3

K/A 2.2.8
Knowledge of the process for determining if the proposed change, test, or experiment involves an unreviewed safety question.

Importance Rating: 1.8 / 3.3

Technical Reference: SPP-9.4

Proposed references to be provided to applicants during examination: None

Learning Objective: No Lesson Objective identified

Question Source:
Bank # X
Modified Bank # ____
New ____

Question History: SQN Bank SPP-9.49, SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge X
Comprehension or Analysis ____

10 CFR Part 55 Content: (CFR 43.3 / 45.13)

10CFR55.43.b (3)

Comments:

97. Given the following:

- Unit 2 is in Mode 4
- The Chemistry Lab Technician notifies the control room that both the Inside and Outside Containment RCS Hot leg Sample isolation valves failed to close after drawing a sample.

Which of the following is correct concerning the initial action time requirement

and

the applicability of the associated 31 day penetration isolation verification requirement due to the failure listed above (incorporating ALARA considerations), if the selected isolation valve is in a High Radiation Area?

Action	31 day Penetration Isolation Verification
A.✓ Isolate within 1 hour	Is required every surveillance period and can be verified Closed by administrative means
B. Isolate within 4 hours	Is required every surveillance period and can be verified Closed by administrative means
C. Isolate within 1 hour	Is NOT required if the selected penetration isolation valve is locked in the Closed position
D. Isolate within 4 hours	Is NOT required if the selected penetration isolation valve is locked in the Closed position

A. *Correct. Per TS 3.6.3 the action is to isolate the penetration within 1 hour. The 31 day surveillance would always be applicable but per note at bottom of TS can be verified using administrative means.*

B. *Incorrect. Per TS 3.6.3 the action is to isolate the penetration within 1 hour. So the 4 hour action is wrong. The 31 day surveillance would always be applicable but per note at bottom of TS can be verified using administrative means.*

C. *Incorrect. Per TS 3.6.3 the action is to isolate the penetration within 1 hour. The 31 day surveillance would always be applicable but per note at bottom of TS can be verified using administrative means. Plausible if student thinks that due to ALARA concerns the 31 day verification requirement can be waived if the valve is locked closed.*

D. *Incorrect. Per TS 3.6.3 the action is to isolate the penetration within 1 hour. The 31 day surveillance would always be applicable but per note at bottom of TS can be verified using administrative means. Plausible if student thinks that due to ALARA concerns the 31 day verification requirement can be waived if the valve is locked closed.*

Question No. 97

Tier _3_

K/A 2.3.1
Knowledge of 10 CFR:20 and related facility radiation control requirements.

Importance Rating: 2.6 / 3.0

Technical Reference: Tech Spec 3.6.3

Proposed references to be provided to applicants during examination: None

Learning Objective: None Identified

Question Source:
Bank # _______
Modified Bank # _________
New ____X_____

Question History: SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge _____X____
Comprehension or Analysis _______

10 CFR Part 55 Content: (CFR 41.12 / 43.4 / 45.9 / 45.10)

10CFR55.43.b (2)

Comments:

98. Given the following conditions on Unit 1:

- You are the Unit Supervisor.
- Rad Waste water inventory is approaching storage capacity.
- A release of the Monitor Tank is planned.
- Sample results indicate non gaseous activity in the tank is slightly higher than the 3.0E-5 uci/ml value listed in 0-SI-CEM-077-400.1, Liquid Waste Effluent Batch Release, for opening a Batch Release Permit.
- The source check on 0-RM-90-122, Liquid Radwaste Release Monitor has failed.
- The Shift Manager has declared 0-RM-90-122, Liquid Radwaste Release Monitor Inoperable.

Which ONE (1) of the following statements is correct regarding approving/disapproving the permit for releasing the Monitor Tank in accordance with 0-SI-CEM-077-400.1?

A. Approval not permitted. Cannot release Monitor Tank until contents is reprocessed to lower activity.

B. Approval not permitted. Cannot release monitor tank until 0-RM-90-122 has been returned to OPERABLE status.

C.✓ Approval is permitted. Provided it is released in accordance with ODCM. Shift Manager approval is required for release due to activity level.

D. Approval is permitted. Provided it is released in accordance with ODCM. Shift Manager approval is NOT required for release at this activity level.

A. *Incorrect, RM does not required to be operable as long as 2 Independent samples of tank contents are analyzed, 2 Independent discharge valve alignment, 2 Independent release rate calculations are verified per ODCM 1.1.1. High activity level requires SM approval for release. Plausible if student knows high activity limit but does not know that the SM can authorize the release.*

B. *Incorrect, 2 Independent samples of tank contents are analyzed, 2 Independent discharge valve alignment, 2 Independent release rate calculations are verified per ODCM 1.1.1. High activity level requires SM approval for release. Plausible if student believes that to release a tank with high activity it would require active monitoring during the release.*

C. *Correct, 2 Independent samples of tank contents are analyzed, 2 Independent discharge valve alignment, 2 Independent release rate calculations are verified per ODCM 1.1.1. The high activity level requires SM approval for release.*

D. *Incorrect, 2 Independent samples of tank contents are analyzed, 2 Independent discharge valve alignment, 2 Independent release rate calculations are verified per ODCM 1.1.1. The high activity level requires SM approval for release. Plausible is student does not know requirement to have SM approval for releasing tank with high activity levels. Raising dilution flow adds to the plausibility of being able to release with a higher activity versus getting additional approvals.*

Question No. 98

Tier _3_

K/A 2.3.6
Knowledge of the requirements for reviewing and approving release permits.

Importance Rating: 2.1 / 3.1

Technical Reference: 0-SI-CEM-077-400.1 Liquid Waste Effluent Batch Release.
ODCM 1.1.1 and Table 1.1.1.
0-SO-77-1, Waste Dispoal System, Rev 46

Proposed references to be provided to applicants during examination: None

Learning Objective: OPT200.LRW B0, B6

Question Source:
Bank # __________
Modified Bank # ___X____
New __________

Question History: Draft Vogtle 2006 Exam SQN NRC EXAM 1/2008

Question Cognitive Level:
Memory or fundamental knowledge ____X___
Comprehension or Analysis _________

10 CFR Part 55 Content: (CFR 43.4 / 45.10)

10CFR55.43.b (2)

Comments:

99. Given the following:

- Mode 5.
- RCS Boron Concentration = 2210 ppm.
- Required Shutdown Margin Boron Concentration = 2100 ppm.
- RWST Boron Concentration = 2600 ppm.
- Chemistry reports Volume Control Tank Boron Concentration = 2000 ppm due to Primary Water inleakage into the VCT which has now been stopped.
- RCS is being drained to 696' for maintenance, per 0-GO-13, "Reactor Coolant System Drain and Fill Operations."
- RCS level is inadvertently lowered to 695'.
- RHR pump amps, discharge pressure, and flow begin to fluctuate excessively.

Which ONE (1) of the following describes the required action(s) and mitigating response in accordance with AOP-R.03, RHR System Malfunction, and Technical Specifications?

	Action	Mitigating Response
A.✓	Stop RHR Pump	Raise RCS level using RWST gravity fill.
B.	Stop RHR Pump	Raise RCS level using charging pump taking suction from VCT
C.	Lower RHR Pump Flow rate to 1000 - 1500 gpm	Raise RCS level using RWST gravity fill
D.	Lower RHR Pump Flow rate to 1000 - 1500 gpm	Raise RCS level using charging pump taking suction from VCT

A. *Correct - The required procedural action to trip the RHR pump is correct. The mitigating action is correct due to Tech Spec 3.4.1.4 action requirement to not dilute RCS with concentration less than required by shutdown margin. The RWST Concentration is greater than required SDM concentration.*

B. *Incorrect - The required procedural action to trip the RHR pump is correct. The mitigating action is incorrect due to Tech Spec 3.4.1.4 action requirement to not dilute RCS with concentration less than required by shutdown margin. The VCT Concentration is less than required SDM concentration. Plausible is student does not remember this requirement.*

C. *Incorrect - The required procedural action is to trip the RHR pump. Lowering the flow rate is plausible due to procedure containing actions to lower flow rate to the values listed if RCS level is greater than 695' 4". Since RCS level is less than that as stated in the stem then this action would not be performed and is incorrect. The mitigating action is correct due to Tech Spec 3.4.1.4 action requirement to not dilute RCS with concentration less than required by shutdown margin. The RWST Concentration is greater than required SDM concentration.*

D. *Incorrect - The required procedural action is to trip the RHR pump. Lowering the flow rate is plausible due to procedure containing actions to lower flow rate to the values listed if RCS level is greater than 695' 4". Since RCS level is less than that as stated in the stem then this action would not be performed and is incorrect. The mitigating action is incorrect due to Tech Spec 3.4.1.4 action requirement to not dilute RCS with concentration less than required by shutdown margin. The VCT Concentration is less than required SDM concentration.*

Question No. 99

Tier 3

K/A G 2.4.9
Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.

Importance Rating: 3.3 / 3.9

Technical Reference: AOP-R.03,
Tech Spec 3.4.1.4

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271AOP-R.03 B3, 9

Question Source:

Bank # ____X_____
Modified Bank # __________
New __________

Question History: SQN NRC Exam 1/2008, SQN Bank AOP-R.03-B.0 001

Question Cognitive Level:

Memory or fundamental knowledge __________
Comprehension or Analysis __X_____

10 CFR Part 55 Content: 41.10 / 43.5 / 45.13

10CFR55.43.b (2, 5)

Comments: Modified Bank question C and D distractors to eliminate subset issues and for plausibility

100. Given the following:

- An event is occurring on Unit 1 that requires an ALERT emergency be declared in accordance with the Radiological Emergency Plan (REP).
- The Shift STA does NOT have an active SRO license.
- Prior to making the declaration the Shift Manager becomes incapacitated due to a medical problem.

Which ONE (1) of the following identifies both the individual who is responsibile for the making the REP declaration in accordance with EPIP-1, Emergency Plan Classification Matrix, and the requirement for conducting Assembly and Accountibility in accordance with EPIP-3, Alert?

	Responsible for making REP Declaration	Assembly and Accountibility
A.	Unit Supervisor	Required
B.✓	Unit Supervisor	**NOT** required but can be conducted.
C.	Shift Technical Advisor	Required
D.	Shift Technical Advisor	**NOT** required but can be conducted.

A. *Incorrect, First part correct Per EPIP-1 Purpose" The responsibility for declaring an emergency, based on the criteria in this procedure, belongs to the SM or SED, the designated Unit Supervisor when acting as the SM, or the TSC SED. Second part incorrect. A Site Area Emergency is the lowest level REP declaration where performance of EPIP-8 is REQUIRED. Plausible due to EPIP-8 is not required in all REP declarations.*

B. *Correct, Per EPIP-1 Purpose" The responsibility for declaring an emergency, based on the criteria in this procedure, belongs to the SM or SED, the designated Unit Supervisor when acting as the SM, or the TSC SED. Per EPIP-3, Alert EPIP-8 Personnel accountablility and Evacuation can be performed but is not required. A Site Area Emergency is the lowest level REP declaration where performance of EPIP-8 is REQUIRED.*

C. *Incorrect, Plausible due to STA does backup the SED on REP declarations but by procedure does not have the responsiblility for making the declarations. A Site Area Emergency is the lowest level REP declaration where performance of EPIP-8 is REQUIRED. Plausible due to EPIP-8 is not required in all REP declarations.*

D. *Incorrect, Plausible due to STA does backup the SED on REP declarations but by procedure does not have the responsiblility for making the declarations. Second part correct. Per EPIP-3, Alert EPIP-8 Personnel accountablility and Evacuation can be performed but is not required. A Site Area Emergency is the lowest level REP declaration where performance of EPIP-8 is REQUIRED.*

Question No. 100

Tier 3

K/A G2.4.40
Emergency Procedures/Plan: Knowledge of the SRO's responsibilities in emergency plan implementation.

Importance Rating: 2.3 / 4.0

Technical Reference: EPIP-1 purpose, EPIP-3, EPIP-8

Proposed references to be provided to applicants during examination: None

Learning Objective: OPL271REP

Question Source:
Bank # ________
Modified Bank # ____X_____
New ________

Question History: SQN NRC EXAM 1/2008: **SQN question REP-B.1.C 006 modified by adding the first part of the question.**

Question Cognitive Level:
Memory or fundamental knowledge ____X_____
Comprehension or Analysis ________

10 CFR Part 55 Content: (CFR 45.11)

10CFR55.43.b (5)

Comments: