

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

76. 2014 NRC SRO 001/NEW/C/A//CSFST, FR-C.1/NONE/EARLY/008AA2.30/SAT

Given the following plant conditions:

- The unit was operating at 100% power
- A Reactor trip and a Safety Injection occurred due to low PZR pressure

Current conditions are:

- All RCPs are off
- RVLIS Full Range is indicating 33% and stable
- PZR level is off scale high
- PZR pressure is 1360 psig and stable
- Containment pressure is 4.2 psig and rising
- All SG levels are 45% and stable
- Core Exit T/Cs are 755°F and stable
- RCS WR Hot Leg temperatures are 678°F and stable

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

A (1) break has occurred.

To allow the injection of the RHR pumps, in accordance with EOP-FR-C.1, Response to Inadequate Core Cooling, (2) is required to depressurize the RCS.

- A. (1) PZR steam space
(2) opening of the Reactor Head Vent valves
- B✓ (1) PZR steam space
(2) the depressuization of all intact SGs at maximum rate
- C. (1) RCS hot leg
(2) opening of the Reactor Head Vent valves
- D. (1) RCS hot leg
(2) the depressuization of all intact SGs at maximum rate

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Feedback

Plausibility and Answer Analysis

Reason answer is correct: *The RCS is superheated and in excess of 730°F (Tc temps) and RCS inventory has lowered below 39% on RVLIS. The actions of EOP-FR-C.1 will direct the operator to depressurize the SGs at maximum rate and as a result the RCS pressure will lower allowing the injection of the RHR pumps. The break is in the PRZ steam space as indicated by the pressurizer being off scale high.*

A. Incorrect. The first part is correct. The second part is plausible since the RCS is vented by opening the Reactor Head Vent valves in response to RCS temperature going above 1200°F, however this is incorrect since the CET temperature is stable at 755°F this method to depressurize the RCS in that situation is not required.

B. Correct.

C. Incorrect. The first part is plausible since RCS pressure has lowered however this is incorrect since the PZR level has not lowered to indicate the leak location is not in the PZR. The second part is plausible since the RCS is vented by opening the Reactor Head Vent valves in response to RCS temperature going above 1200°F, however this is incorrect since the CET temperature is stable at 755°F this method to depressurize the RCS in that situation is not required.

D. Incorrect. The first part is plausible since RCS pressure has lowered however this is incorrect since the PZR level has not lowered to indicate the leak location is not in the PZR. The second part is correct.

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Notes

000008 Pressurizer Vapor Space Accident / 3

008AA2.30; Ability to determine and interpret Inadequate core cooling as it applies to the Pressurizer Vapor Space Accident. (Verified)

(CFR 43.5 / 45.13)

Importance Rating: 4.7

Technical Reference: EOP-CSFST Rev. 11, Page 4

References to be provided: None

Learning Objective: EOP-LP-3.10, Objective 4.a

Question Origin: Modified Bank OIT Development, 2009B Audit SRO 1, to create a new question with different second part and stem conditions.

Comments: K/A match because individual must analyze plant conditions to determine location of break, determine that temperature indications support superheated conditions and that entry requirements for FR-C.1 have been met.

Tier/Group: T1/G1

SRO Justification: 10 CFR Part 55 Content - 43(b)(5): Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by ensuring that the additional knowledge of the procedure's content is required to correctly answer the written test item.

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77. 2014 NRC SRO 002/NEW/C/A//E-1, MCB TEXT/NONE//011EG2.2.44/

Given the following plant conditions:

- 'A' RHR pump is under clearance
- A Large Break LOCA occurred
- The crew is implementing EOP-E-1, Loss of Reactor or Secondary Coolant, and are evaluating if the 'B' RHR train is capable of cold leg recirculation
- 1SI-341, Low Head SI train B to cold leg, red and green lights are not lit

Which ONE of the following completes the statements below?

The position of 1SI-341 can be determined by checking the status of the (1) .

IF this redundant indication determines that 1SI-341 is OPEN, the CRS should transition to (2) .

- A. (1) monitor light box (MLB-3B)
(2) ECA-1.1, Loss Of Emergency Coolant Recirculation
- B✓ (1) monitor light box (MLB-3B)
(2) ES-1.3, Transfer To Cold Leg Recirculation
- C. (1) status light box (SLB-2)
(2) ECA-1.1, Loss Of Emergency Coolant Recirculation
- D. (1) status light box (SLB-2)
(2) ES-1.3, Transfer To Cold Leg Recirculation

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Feedback

Plausibility and Answer Analysis

Reason answer is correct: MONITOR LIGHT BOXES (MLBs) MLBs provide indications for all pumps and valves which are required to function as a part of the Emergency Safeguard Features (ESF) System. E-1 Attachment 2 provides the list of components required to manually align the RHR system for cold leg recirculation. 1SI-341 is required to be in the open position to support the recirculation alignment. With 1SI-341 open Train B is capable of cold leg recirculation and the crew should remain in E-1 until the RWST level lowers to 23.4% at which time the crew will transition to ES-1.3, Transfer To Cold Leg Recirculation

- A. *Incorrect. The first part is correct. The second part is plausible since the RHR A pump is under clearance the Train A is not capable of Cold Leg Recirculation with 1SI-341 not in the correct position not all of the required components would be available to align the RHR system to Cold Leg Recirculation, however this is incorrect because 1SI341 is in the correct position.*
- B. *Correct.*
- C. *Incorrect. The first part is plausible since the status light boxes provide MCB indications for various valves and dampers similarly to the MLBs, however this is incorrect because the status light boxes primarily provide indications for secondary plant equipment and not ESF related equipment. The second part is plausible since the RHR A pump is under clearance the Train A is not capable of Cold Leg Recirculation with 1SI-341 not in the correct position not all of the required components would be available to align the RHR system to Cold Leg Recirculation, however this is incorrect because 1SI341 is in the correct position.*
- D. *Incorrect. The first part is plausible since the status light boxes provide MCB indications for various valves and dampers similarly to the MLBs, however this is incorrect because the status light boxes primarily provide indications for secondary plant equipment and not ESF related equipment. The second part is correct.*

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000011 Large Break LOCA / 3

011EG2.2.44; Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions. (Verified)

(CFR 41.5 / 43.5 / 45.12)

Importance Rating: 4.4

Technical Reference: E-1, page 16, 18 and 30, Rev. 0
MCB Student Text, page 10, Rev. 2

References to be provided: None

Learning Objective: MCB Student Text, Objective 1.a

Question Origin: New

Comments: K/A match because individual determine which location on the MCB will provide the redundant indication of the status for 1SI-341 and that position of the valve is in the correct position to support cold leg recirculation.

Tier/Group: T1/G1

SRO Justification: 10 CFR Part 55 Content - 43(b)(5): Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by ensuring that the additional knowledge of the procedure's content is required to correctly answer the written test item.

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78. 2014 NRC SRO 003/BANK/C/A//OST-1022, TS 3.3.3.6/NONE//025AG2.4.3/

Given the following plant conditions:

- The unit is cooling down and RHR pump 'A' was just placed in Shutdown Cooling Mode

Subsequently the following occurs:

- PRZ level lowers rapidly
- PRZ pressure lowers rapidly
- RHR pump 'A' trips on overcurrent
- RCS temperature is 352°F and rising

Which ONE of the following completes the statements below?

PRZ level indicators 460 and (1) are the Post Accident indicators that should be used to monitor PRZ level.

Based on the conditions above, if ONE PRZ level channel of the Post Accident indicators is NOT operable / available AND is unable to be restored the ACTION required by Technical Specification 3.3.3.6, Accident Monitoring Instrumentation, is to be in Hot Shutdown within (2) hours.

A✓ (1) 461

(2) 6 hours

B. (1) 461

(2) 12 hours

C. (1) 462

(2) 6 hours

D. (1) 462

(2) 12 hours

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Feedback

Plausibility and Answer Analysis

Reason answer is correct: OST-1022, Attachment 3 identifies PI-459, PI-460, and PI-461 satisfy Technical Specification surveillance 4.3.3.6.5 for the post accident instrumentation monitoring of the PRZ level. For the current conditions the plant is in Mode 3 Hot Standby. Technical Specification surveillance 3.3.3.6 action a states with the number of OPERABLE accident monitoring instrumentation channels. except In Core Thermocouples and Reactor Vessel Level. less than the Total Required Number of Channels requirements shown in Table 3.3-10 restore the inoperable channel(s) to OPERABLE status within 7 days. or be in at least Hot Standby within the next 6 hours and in at least Hot Shutdown within the following 6 hours. Because the unit is currently in Hot Standby the 6 hour allowance to reach that mode does not apply and the unit must be placed in Hot Shutdown in the following 6 hours if the level instrument was not restored to the operable status within 7 days.

A. *Correct.*

B. *Incorrect. The first part is correct. The second part is plausible since action a allows 6 hours to achieve Hot Standby, however this is incorrect since the unit is currently in Hot Standby the 6 hour allowance to reach that mode does not apply*

C. *Incorrect. The first part is plausible since the RHR system was placed in Shutdown cooling and PI-462 is the Cold Calibrated PRZ level indicator, however this is incorrect since PI-462 is calibrated for normal cold shutdown conditions not accident conditions. The second part is correct.*

D. *Incorrect. The first part is plausible since the RHR system was placed in Shutdown cooling and PI-462 is the Cold Calibrated PRZ level indicator, however this is incorrect since PI-462 is calibrated for normal cold shutdown conditions not accident conditions. The second part is plausible since action a allows 6 hours to achieve Hot Standby, however this is incorrect since the unit is currently in Hot Standby the 6 hour allowance to reach that mode does not apply*

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000025 Loss of RHR System / 4

025AG2.4.3: Ability to identify post-accident instrumentation. (Verified)

(CFR 41.6 / 45.4)

Importance Rating: 3.9

Technical Reference: OST-1022, Attachment 3 pg 22
Tech Specs 3.3.3.6 action a

References to be provided: None

Learning Objective: PRZ Student Text, Objective 11.d

Question Origin: Bank, 2012 St. Lucie NRC Exam Question modified for
HNP terminology

Comments: None

Tier/Group: T1/G1

SRO Justification: 10 CFR Part 55 Content - 43(b)(2): Facility operating
limitations in the Technical Specifications and their
bases. Per NRC Clarification Guidance for SRO-only
Questions, Rev 1 this question meets the SRO level of
knowledge by testing the SRO knowlegde on the
application of Limiting Condition for Operation (LCO)
requirements (LCO 3.3.3.6)

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79. 2014 NRC SRO 004/NEW/FUNDAMENTAL//AOP-025/NONE//056AA2.54/

Given the following plant conditions:

- The unit is operating at 100% power
- EDG 1B-SB is under clearance

Subsequently, a loss of offsite power occurs

One minute later DP-1A-SA is lost

Which ONE of the following completes the statements below?

Breaker indications are available on the MCB for (1) .

The procedural action required based on the current plant conditions is to dispatch an operator to (2)?

A. (1) B-SB equipment ONLY

(2) locally close breaker 106

B✓ (1) B-SB equipment ONLY

(2) manually control EDG 1A-SA load / speed

C. (1) BOTH A-SA and B-SB equipment

(2) locally close breaker 106

D. (1) BOTH A-SA and B-SB equipment

(2) manually control EDG 1A-SA load / speed

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Feedback

Plausibility and Answer Analysis

Reason answer is correct: *On a loss of DC control power, components lose remote indication and control, so operators must use local indication and control. Therefore for these conditions only the B-SB components will have remote indications. Because offsite power was lost first EDG 'A' will start and sequence on loads using program A. After DP-1A-SA is lost the EDG 'A' will continue to run and the EDG will default to control of the mechanical portion of the governor actuator (EGB-35P) on the engine which would result in the engine running at ~63 Hz if operating in the isochronous mode on the emergency bus or in an overload condition if operating in parallel with offsite power on the emergency bus. This will require taking manual control locally.*

A. Incorrect. The first part is correct. The second part is plausible since offsite power was lost the candidate may misunderstand the expected sequence of events and determine that the EDG 'A' started but the loss of DP-1A-SA requires local operation of the output breaker (breaker 106) to restore power to in accordance with EOP-ECA-0.0, however this is incorrect because the EDG output breaker closes within 10 seconds of a loss of power (UV) condition to restore power to the Emergency Bus and the DP-1A-SA power is lost 60 seconds after the loss of offsite power therefore breaker 106 will be closed and the 6.9KV bus will be energized.

B. Correct.

C. Incorrect. The first part is plausible since the breaker 480 volt MCC breakers local indications are powered which is powered by 2 phases of the 3 main line phases which remains available, however this is incorrect since the MCB breaker indications and control power are supplied by DC power. The second part is plausible since offsite power was lost the candidate may misunderstand the expected sequence of events and determine that the EDG 'A' started but the loss of DP-1A-SA requires local operation of the output breaker (breaker 106) to restore power to in accordance with EOP-ECA-0.0, however this is incorrect because the EDG output breaker closes within 10 seconds of a loss of power (UV) condition to restore power to the Emergency Bus and the DP-1A-SA power is lost 60 seconds after the loss of offsite power therefore breaker 106 will be closed and the 6.9KV bus will be energized.

D. Incorrect. The first part is plausible since the breaker 480 volt MCC breakers local indications are powered which is powered by 2 phases of the 3 main line phases which remains available, however this is incorrect since the MCB breaker indications and control power are supplied by DC power. The second part is correct.

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000056 Loss of Off-site Power / 6

056AA2.54; Ability to determine and interpret breaker position (remote and local) as it applies to the Loss of Offsite Power. (Verified)

(CFR 43.5 / 45.13)

Importance Rating: 3.0

Technical Reference: AOP-025, Section 3.3, page 45, Rev 38

References to be provided: None

Learning Objective: DCP Student Text, Objective 8
AOP-LP-3.25, Objective 4

Question Origin: New

Comments: None

Tier/Group: T1/G1

SRO Justification: 10 CFR Part 55 Content - 43(b)(5): Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by ensuring that the additional knowledge of the procedure's content is required to correctly answer the written test item.

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80. 2014 NRC SRO 005/NEW/C/A//AOP-017, OP-151.01/NONE//065AG2.2.44/

Given the following plant conditions:

- The plant is operating at 100% power
- Instrument Air is aligned in SEQUENCE 2 with all Air Compressors available

The course of the next minute the following indications are observed:

- ALB-002-8-5, Computer Alarm Air Systems
- ALB-002-8-1, Instrument Air Low Press
- Instrument Air pressure is 73 psig and slowly lowering

AOP-017, Loss Of Instrument Air, is being performed.

An AO reports the instrument line to the Condenser Steam Dump valves on the west side of the condenser has ruptured.

Which ONE of the following (1) describes the expected operation of the Instrument Air Compressors AND (2) identifies the Attachment that should be performed?

- A. (1) 1A and 1B running ONLY
(2) Attachment 2, Positioning MCB Controllers
- B. (1) 1A and 1B running ONLY
(2) Attachment 3, Reducing Instrument Air Header Loads
- C. (1) 1A, 1B, and 1C running
(2) Attachment 2, Positioning MCB Controllers
- D✓ (1) 1A, 1B, and 1C running
(2) Attachment 3, Reducing Instrument Air Header Loads

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Plausibility and Answer Analysis

Reason answer is correct: *Computer Alarm Air Systems identifies an issue with the air system either system pressure is too high, too low or too many compressors are running. Service and Instrument Air Low Press indicate the system pressure is 75 psig and 1A and 1B air compressors will be started by CAS and 1C air compressor will start when system header pressure lowers to 101 psig. AOP-017, Attachment 3 systematically reduces the air loads on the IA system based on impact isolating each area will have on the plant.*

- A. *Incorrect. The first part is plausible since 1C air compressor is not controlled by the CAS in sequence 2 and only 1A and 1B air compressors are controlled by CAS. The second part is plausible since the report from the field is that the airline to condenser steam dump valve has ruptured and the steam dump controller is repositioned to manual and 0% output as part of Attachment 2, however this is incorrect because Attachment 2 is not implemented until the Instrument Air system header pressure is below 35 psig and the conditions currently have pressure at 70 psig.*
- B. *Incorrect. The first part is plausible since 1C air compressor is not controlled by the CAS in sequence 2 and only 1A and 1B air compressors are controlled by CAS. The second part is correct.*
- C. *Incorrect. The first part is correct. The second part is plausible since the report from the field is that the airline to condenser steam dump valve has ruptured and the steam dump controller is repositioned to manual and 0% output as part of Attachment 2, however this is incorrect because Attachment 2 is not implemented until the Instrument Air system header pressure is below 35 psig and the conditions currently have pressure at 70 psig.*
- D. *Correct.*

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000065 Loss of Instrument Air / 8

065AG2.2.44; Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions. (Verified)

(CFR 41.5 / 43.5 / 45.12)

Importance Rating: 4.4

Technical Reference: AOP-017, Attachment 3, Page 57, Rev. 39
OP-151.01 Precaution and Limitation 6, Page 8, Rev. 87,

References to be provided: None

Learning Objective: Instrument and Service Air Objective 2.f
AOP-LP-3.17, Rev. 5, Objective 4

Question Origin: NEW

Comments: None

Tier/Group: T1/G1

SRO Justification: 10 CFR Part 55 Content - 43(b)(5): Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by ensuring that the additional knowledge of the procedure's content is required to correctly answer the written test item.

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81. 2014 NRC SRO 006/BANK/C/A///NONE//WE04EA2.1/

Given the following plant conditions:

- A Reactor Trip and Safety Injection has occurred
- EOP-E-0, Reactor Trip Or Safety Injection, is being implemented and SI has been reset

The current conditions are as follows:

- RCS Pressure is 1500 psig and stable
- PZR level is off scale low
- Subcooling is 3°F and improving
- Containment pressure 0.2 psig and rising
- RM-1RR-3597, RHR Pump 1B, is in HIGH alarm and trending up
- MLB-4A-SA-6-3 and MLB-4B-SB-6-3, RAB Equip C/D Sump Alert Lvl, status lights are lit
- SG levels are: A = 23%, B = 24%, C = 15%
- Total AFW flow has been reduced to 215 KPPH

Based on this information, which ONE of the following procedures will be implemented when exiting EOP-E-0?

- A. EOP-FR-H.1, Response to Loss of Secondary Heat Sink
- B✓ EOP-ECA-1.2, LOCA Outside Containment
- C. EOP-ES-1.1, SI Termination
- D. EOP-ES-1.2, Post LOCA Cooldown and Depressurization

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Feedback

Plausibility and Answer Analysis

Reason answer is correct: *The transition to ECA-1.2 is correct. The Radiation Monitor in alarm and sump level alert lights indicate that the leak is in the B RHR Pump Room. LOCA outside containment. Transition to ECA-1.2 would occur at step 60 of E-0.*

A. Incorrect. Plausible since S/G levels are all less than 25%, which meet FR-H.1 entry conditions (Containment conditions normal), however this is not correct because total feed flow must also be less than 210 KPPH.

B. Correct.

C. Incorrect. Plausible if the candidate misunderstands SI termination criteria and determines that positive subcooling satisfies the criteria (+ 3°F and improving), however this is incorrect because PZR level must also be above 10% and the current indication is offscale low which does not meet the requirement for SI termination.

D. Incorrect. Plausible since this is the procedure that would be implemented for the question conditions if Auxiliary Building radiation levels were normal, however this is not correct because the RHR B pump room rad monitor is in High alarm and both channels of the RAB equipment drain sump are in Alert Alarm indicating that the sump level is rising.

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W/E04 LOCA Outside Containment /3

WE04EA2.1; Ability to determine and interpret facility conditions and selection of appropriate procedures during abnormal and emergency operations as they apply to the (LOCA Outside Containment). (Verified)

(CFR 43.5 / 45.13)

Importance Rating: 4.3

Technical Reference: EOP-E-0 Step 60

References to be provided: None

Learning Objective: EOP-LP-2.3/3.3 Objective 1.d

Question Origin: Bank OIT Exam Bank, EOP-3.3 (01D) 1

Comments: None

Tier/Group: T1/G1

SRO Justification: 10 CFR Part 55 Content - 43(b)(5): Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by ensuring that the candidate must know procedural knowledge of diagnostic steps and decision points in the emergency operating procedures (EOP) that involve transitions to event specific subprocedures or emergency contingency procedures.

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82. 2014 NRC SRO 007/NEW/FUNDAMENTAL//TS 3.1.3.1 BASES/TS 3.1.3.1//003G2.2.22/

Given the following plant conditions:

- The unit is operating at 100% power
- Control Bank D group step counters indicate 218 steps

Subsequently the following occurs:

- Control Bank D Rod P-8 drops to 145 steps.
- It will take 2 hours to re-align rod P-8 with the Control Bank D rods

Which ONE of the following statements describes (1) the MAXIMUM Thermal power level the unit is required to maintain in accordance with Tech Spec 3.1.3.1, Movable Control Assemblies - Group Height, One rod not within alignment limits, AND (2) the Basis for reducing Thermal Power?

(Reference provided)

A. (1) 85%

(2) Provides assurance of fuel rod integrity during continued operation.

B. (1) 85%

(2) Minimizes the effect of a Control Rod ejection accident.

C✓ (1) 75%

(2) Provides assurance of fuel rod integrity during continued operation.

D. (1) 75%

(2) Minimizes the effect of a Control Rod ejection accident.

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Plausibility and Answer Analysis

Reason answer is correct: A single Control Bank D rod has dropped to 145 steps and is > 12 steps out of alignment with its "Demanded position". TS 3.1.3.1 will require a Downpower to <75% within 2 hours if the rod cannot be restored to within alignment within 1 hour. The bases of 3.1.3.1 states "Misalignment of a rod requires measurement of peaking factors and a restriction in THERMAL POWER. These restrictions provide assurance of fuel rod integrity during continued operation. In addition, those safety analyses affected by a misaligned rod are reevaluated to confirm that the results remain valid during future operation."

A. Incorrect. The first part is plausible since the Neutron High Flux setpoint must be reduced to 85% within the next 4 hours to comply with action d.3.d. However this is incorrect since the Thermal Power is required to be reduced below 75%. The second part is correct.

B. Incorrect. The first part is plausible since the Neutron High Flux setpoint must be reduced to 85% within the next 4 hours to comply with action d.3.d. However this is incorrect since the Thermal Power is required to be reduced below 75%. The second plausible because one of the reasons for maintaining Control Rod alignment within limits is to ensure the effects of a rod ejection accident are within analyzed limits. For this condition, if the rod ejection occurred on the dropped rod, the reactivity effects would be more pronounced at 75% power than at 100% power. This is not the reason that Bases requires reducing power to < 75%.

C. Correct.

D. Incorrect. The first part is correct. The second plausible because one of the reasons for maintaining Control Rod alignment within limits is to ensure the effects of a rod ejection accident are within analyzed limits. For this condition, if the rod ejection occurred on the dropped rod, the reactivity effects would be more pronounced at 75% power than at 100% power. This is not the reason that Bases requires reducing power to < 75%.

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000003 Dropped Control Rod / 1

003G2.2.22; Knowledge of limiting conditions for operations and safety limits. (Verified)

(CFR 41.5 / 43.2 / 45.2)

Importance Rating: 4.7

Technical Reference: Technical Specification 3.1.3.1 Bases, page B3/4 1-4 (page 26)
Technical Specification 3.1.3.1, page 3/4 1-15 (page 95)

References to be provided: Technical Specification 3.1.3.1

Learning Objective: RODCS Student Text Objective 16.a

Question Origin: New

Comments: None

Tier/Group: T1/G2

SRO Justification: 10 CFR Part 55 Content - 43(b)(2) because application of Technical Specification below the line application of required actions considered to be SRO knowledge level Technical Specification items and the basis for the actions. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by testing the SRO knowlegde on the application of Limiting Condition for Operation (LCO) requirements (LCO 3.1.3.1 and the basis for the action statement).

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83. 2014 NRC SRO 008/NEW/C/A//AOP-009, OST-2044/NONE//060AG2.2.12/

Given the following plant conditions:

- A crane lift above the WGDTs is planned
- A sample of the 'A' GDT had been obtained to release the tank later today

Which ONE of the following completes the statements below?

In accordance with OST-2044, for a planned crane lift above the WGDTs the MAXIMUM time allowed to complete the crane lift AFTER GDT sampling and activity calculations are performed is within (1) hours.

In accordance with PLP-114, the concern with the amount of radioactivity in the Waste Gas System is based on not exceeding a MAXIMUM of (2) Rem exposure to the public in the event of an uncontrolled release as a result of a crane mishap over the GDT.

Note: Procedure titles are as follows -

OST-2044, Radwaste Daily Operations Surveillance Test Modes: At All Times
PLP-114, Relocated Technical Specifications and Design Basis Requirements

A. (1) 12

(2) 2

B. (1) 24

(2) 2

C✓ (1) 12

(2) 0.5

D. (1) 24

(2) 0.5

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Feedback

Plausibility and Answer Analysis

Reason answer is correct: *The time of 12 hours is for the Admin Limit for Crane Lifts Above the Gas Decay Tanks (GDT) after performing the total curie calculations. These calculations are required after sampling of a GDT. The concern is that something being lifted by the crane could drop on the GDTs and cause the tanks to rupture accidentally releasing the contents of the tanks. This check of quantity of radioactivity contained in each gas storage tank will met the limit required in PLP-114 Attachment 5 to ensure that in the event of an uncontrolled release of the tank's contents the resulting whole body exposure to a member of the public will not exceed 0.5 rem. Because of the potential for an accidental release sampling of the GDTs will be performed per requirements of OP-120.07 and RST-211. In accordance with OP-120.07 the crane lift activities may be performed above the GDTs and valve gallery if the OP test is performed within 12 hours after a GDT has been sampled due to the addition of radioactive gas and Radioactivity in the Waste GDT check showed the total activity to be < 20,000 curies.*

- A. *Incorrect. The first part is correct. The second part is plausible since the limit of 2.0 Rem is the yearly limit for Total Effective Dose Equivalent (TEDE) to the whole body found in the occupational annual dose limites of PD-RP-ALL-0001 (Rev. 3)*
- B. *Incorrect. The first part is plausible since the ODCM requires grab samples to be analyzed for radioactivity within 24 hours after they are taken, however this is incorrect because OST-2044 requires the GDT activity to be calculated provided the GDT was sampled within the last 12 hours. The second part is plausible since the limit of 2.0 Rem is the yearly limit for Total Effective Dose Equivalent (TEDE) to the whole body found in the occupational annual dose limites of PD-RP-ALL-0001 (Rev. 3)*
- C. *Correct.*
- D. *Incorrect. The first part is plausible since the ODCM requires grab samples to be analyzed for radioactivity within 24 hours after they are taken, however this is incorrect because OST-2044 requires the GDT activity to be calculated provided the GDT was sampled within the last 12 hours. The second part is correct*

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Notes

000060 Accidental Gaseous Radwaste Rel. / 9

060AG2.2.12; Knowledge of surveillance procedures. (Verified)

(CFR 41.10 / 45.13)

Importance Rating: 4.1

Technical Reference: OST-2044, Page 11, Rev. 29
PLP-114, Attachment 5, Page 15, Rev. 23

References to be provided: None

Learning Objective: GWPS Objective 6.b

Question Origin: NEW

Comments: None

Tier/Group: T1G2

SRO Justification: 10 CFR Part 55 Content - 43(b)(4): Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

84. 2014 NRC SRO 009/BANK/C/A///NONE/EARLY/061AA2.05/SAT

Given the following plant conditions:

- The unit is in Mode 6 with core offload in progress
- A fuel assembly has just been unlatched in the Containment Upender
- The Fuel Handling SRO has reported that Refueling Cavity Level is rapidly lowering
- The crew has entered and is implementing AOP-031, Loss of Refueling Cavity Integrity
- The CRS has directed that the fuel assembly be returned to the Reactor Vessel

Prior to relatching the assembly, the following occurs:

- ALL CNMT Ventilation Isolation radiation monitors have just gone into alarm
- HP reports radiation levels on the Manipulator Crane of 154 mR/hr and increasing

In accordance with AOP-031, what action must be taken in Containment?

- A. Place the fuel assembly in the Reactor Vessel and evacuate ONLY unnecessary personnel
- B. Leave the fuel assembly in the upender and evacuate ONLY unnecessary personnel
- C. Place the fuel assembly in the Reactor Vessel and evacuate ALL personnel
- ☒ D. Leave the fuel assembly in the upender and evacuate ALL personnel

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Feedback

Plausibility and Answer Analysis

Reason answer is correct: *In accordance with AOP-031, when radiation levels on the Manipulator Crane area radiation monitor exceed 150 mR/hr all personnel must be evacuated from the Containment and Security is directed to verify all personnel are clear. The personnel handling the fuel assembly would not move the assembly to a safe location. The assembly would be left in the upender or where ever it happened to be located at the time of the high radiation condition. IF the radiation level on this area radiation monitor were < 150 mR/hr THEN the fuel assembly would have been moved from the upender to a safe storage location defined as: the Reactor vessel, a Spent Fuel Pool fuel rack, or an area physically isolated from the Refueling Cavity. Leaving the fuel assembly in the upender is NOT an option unless radiation levels are high enough to warrant an immediate evacuation.*

Additionally, a note in AOP-031 states: CNMT Ventilation Isolation radiation monitors are set to alarm at less than or equal to 150 mR/hr for fuel movement. (the Containment Ventilation Isolation rad monitors are also area radiation monitors)

A. Incorrect. The first part is plausible because AOP-031 directs this action IF the radiation levels were < 150 mR. The second part is plausible because unnecessary personnel would be evacuated while the Fuel Handlers stored the fuel assembly but only if radiation levels were <150 mR/hr.

B. Incorrect. The first part is correct the fuel assembly should be left in the upender due to radiation levels being > 150 mR/hr BUT all personnel should be evacuated.

C. Incorrect. The first part is plausible because AOP-031 directs this action IF the radiation levels were < 150 mR. The second part is plausible because unnecessary personnel would be evacuated while the Fuel Handlers stored the fuel assembly if radiation levels were <150 mR/hr but with radiation level greater 150 mR/hr ALL personnel should be evacuated prior to storing the fuel assembly.

D. Correct.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Notes

000061 ARM System Alarms / 7

061AA2.05; Ability to determine and interpret the need for area evacuation; check against existing limits as it applies to the Area Radiation Monitoring (ARM) System Alarms. (Verified)

(CFR 43.5 / 45.13)

Importance Rating: 4.2

Technical Reference: AOP-031, Attachment 1, Page 36, Rev 18

References to be provided: None

Learning Objective: AOP-031 Objective 4

Question Origin: Bank OIT Exam Bank AOP-031 (04) 1

Comments: SRO question application tie to 10 CFR Part 55 Content - 43(b)(7) also

Tier/Group: T1/G2

SRO Justification: 10 CFR Part 55 Content - 43(b)(5): Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by ensuring that the candidate must know procedural knowledge of diagnostic steps and decision points in the abnormal operating procedures (AOP) that involve transitions to event specific attachments within the procedure.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

85. 2014 NRC SRO 010/BANK/C/A//FR-Z.1, ECA-1.1/NONE/EARLY/WE14EA2.2/SAT

Given the following plant conditions:

- The unit was operating at 100% power
- The plant experienced a LOCA several hours ago
- Only one Containment Spray Pump is running due to actions taken by the crew in accordance with EOP-ECA-1.1, Loss Of Emergency Coolant Recirculation

Subsequently, a transition has just been made to EOP-FR-Z.1, Response to High Containment Pressure

- Current Containment pressure is 14 psig and slowly lowering
- RWST level is 47% and slowly lowering
- 3 Containment Fan Coolers are available and running

Which ONE of the following actions should be taken for the current plant conditions?

- A. Start the second Containment Spray Pump if Containment pressure does not lower below 10 psig before exiting EOP-FR-Z.1.
- B. Start the second Containment Spray Pump per EOP-FR-Z.1 since pressure is above 10 psig.
- C✓ Continue operation with one Containment Spray pump per EOP-ECA-1.1 unless Containment pressure exceeds 45 psig, then start the second pump.
- D. Continue operation with one Containment Spray pump per EOP-ECA-1.1 unless Containment pressure begins rising, then start the second pump.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Feedback

Plausibility and Answer Analysis

Reason answer is correct: In accordance with FR-Z.1 with Containment pressure >10 psig and with ECA-1.1 is in effect then during the implementation of FR-Z.1 the Containment Spray pumps are to be operated using ECA-1.1. With current plant conditions of RWST level 47% and Containment Pressure of 14 psig the requirement per step 7 table is to have 1 Containment Spray pump running. ECA-1.1 will continue to loop back to step 1 from step 33 until RWST level is < 3%. Prior to RWST depletion to <3% if Containment pressure exceed 45 PSIG (Containment design pressure) then a second Spray Pump would be required to be in operation.

A. *Incorrect. Plausible since ECA-1.1 would direct the operator to verify that the Containment Spray pumps are running. In accordance with the HNP EOP Users Guide General Information section 6.7 definition of "verify" : At HNP, the operator is frequently directed to "verify" or "check" a condition. In several instances the operator is also directed to "actuate" components or signals. The term "verify" means to observe the condition, and if it is not satisfied, attempt to satisfy it using whatever means are available (e.g. manually from the MCB, locally by an AO, etc.). If the condition is still not established, the operator should go to the contingency action or continue on as appropriate. Therefore with only one Containment Spray pump running the Operator would start the second spray pump. But, since ECA-1.1 is in effect the Containment Spray pumps are ran in accordance with the ECA not the FR procedure.*

B. *Incorrect. Plausible since ECA-1.1 would direct the operator to verify that the Containment Spray pumps are running. In accordance with the HNP EOP Users Guide General Information section 6.7 definition of "verify" : At HNP, the operator is frequently directed to "verify" or "check" a condition. In several instances the operator is also directed to "actuate" components or signals. The term "verify" means to observe the condition, and if it is not satisfied, attempt to satisfy it using whatever means are available (e.g. manually from the MCB, locally by an AO, etc.). If the condition is still not established, the operator should go to the contingency action or continue on as appropriate. Therefore with only one Containment Spray pump running the Operator would start the second spray pump. But, since ECA-1.1 is in effect the Containment Spray pumps are ran in accordance with the ECA not the FR procedure.*

C. *Correct.*

D. *Incorrect. Plausible since an increase in Containment pressure would indicate that the current Containment pressure reduction strategy is ineffective but in accordance with ECA-1.1 starting the second pump is not required unless Containment pressure exceeded design pressure (45 psig).*

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Notes

W/E14 High Containment Pressure

WE14EA2.2; Ability to determine and interpret adherence to appropriate procedures and operation within the limitations in the facility's license and amendments as they apply to the (High Containment Pressure). (Verified)

(CFR 43.5 / 45.13)

Importance Rating: 3.8

Technical Reference: EOP-FR-Z.1, Step 3, Page 4, Rev. 0
EOP-ECA-1.1, Step 7 table, Page 6, Rev. 0

References to be provided: None

Learning Objective: LP EOP-3.13 Objective 4.b

Question Origin: Bank, OIT Development Bank, EOP-2.3/3.3-S.2 (1)

Comments: None

Tier/Group: T1/G2

SRO Justification: 10 CFR Part 55 Content - 43(b)(5): Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by ensuring that the additional knowledge of the procedure's content is required to correctly answer the written test item.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

86. 2014 NRC SRO 011/BANK/C/A//OWP-RP, TECH SPECS/NONE/EARLY/012G2.4.11/SAT

Given the following plant conditions:

- The unit is operating at 100% power
- Reactor Engineering is performing a flux map
- OWP-RP-01, Reactor Protection, is in place for Loop B, Tav Δ -T Channel II, due to a failed bistable
- Repair of Loop B, Tav Δ -T Channel II, will not be completed for another 17 hours

I&C discovers the bistables for Power Range channel N-41 are set higher than the allowable values of Technical Specifications and repairs will take 7 hours

Which ONE of the following identifies the LEAST restrictive requirement that must be completed for these conditions in accordance with OWP-RP-01 and Technical Specifications?

- A. Bypass Power Range N-41 until repairs are completed on Loop B Tav Δ -T
- B. Prepare to shutdown in 1 hour and be in Hot Shutdown within 6 hours
- C. Trip the bistables for Power Range N-41 within 6 hours
- D✓ Place the unit in Hot Standby within 13 hours

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Feedback

Plausibility and Answer Analysis

Reason answer is correct: *Requires evaluation of T.S. Table 3.3-1 Action 2.a and determining that based on plant procedures it can not be complied with, resulting in T.S. 3.0.3 entry. Taking the instrument out of service will produce a plant trip, Action 2.a can not be performed. Therefore the unit must be place in Mode 3 (Hot Standby). The LCO requirements are place a channel in trip in 6 hours (Action 2.a) and since the channel cannot be placed in a trip condition TS 3.0.3 applies. The unit must be placed in Mode 3 in 7 hours. The total time that the operators have to get the unit from the current condition to Mode 3 (Hot Standby) is therefore 13 hours.*

A. Incorrect. This is plausible because Action 2.b. says the inoperable channel may be bypassed during the performance of the surveillance testing. Bypassing the channel is only allowed during this time period for up to 4 hours.

B. Incorrect. This is plausible because Action 2.a can not be satisfied without generating a reactor trip and with this action not satisfied entry into TS 3.0.3 is required. T.S. 3.0.3 allows 1 hour to prepare to shut the unit down then requires the unit to be placed in Hot Standby within 6 hours and Hot Shutdown within the following 6 hours. Entry into TS 3.0.3 is not required until the 6 hour time for action 2.a has elapsed. This is not the least restrictive required action.

C. Incorrect. This is plausible because Action 2.a requires tripping bistables but the precautions of the OWP-RP require checking bistables when taking instruments out of service to preclude a plant trip. In the given information the combination of instruments already failed and the discovery of N-41 failure would cause a Reactor Trip.

D. Correct.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Notes

012 Reactor Protection

012G2.4.11; Knowledge of abnormal condition procedures. (Verified)

(CFR: 41.10 / 43.5 / 45.13)

Importance Rating: 4.2

Technical Reference: OWP-RP,
Tech Spec 3.0.3 pg 3/4 0.1, 3.3.1 pg 3/4 3-2, 3/4 3-6&7
(pages 91, 138, 142, and 143)

References to be provided: None

Learning Objective: RPS Objective 14

Question Origin: Bank OIT Exam Bank, RPS (14) 4

Comments: None

Tier/Group: T2/G1

SRO Justification: 10 CFR Part 55 Content - 43(b)(2) because application of Technical Specification below the line application of required actions considered to be SRO knowledge level Technical Specification items and the basis for the actions. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by testing the SRO knowledge on the application of generic Limiting Condition for Operation (LCO) requirements (LCO 3.0.1 thru 3.0.7; SR 4.0.1 thru 4.0.4).

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

87. 2014 NRC SRO 012/NEW/C/A//EP-EAL, EAL MATRIX/EAL MATRIX//039G2.1.19/

Given the following plant conditions:

- The plant was operating at 40%
- 0600, A 15 gpm tube leak develops in the 'A' SG
- 0604, ALB 022-9-1, Start XFMR-B Lockout Trip Or Trouble, alarms
- 0607, ALB-014-8-5, Computer Alarm Steam Generators, alarms
 - Computer Point ID ZMS1254A, 1MS-58 SG A PORV, indicates NOT SHUT
 - Attempts to shut 1MS-58 from the MCB are not successful
- 0610, ALB-026-1-4, Annun Sys 1 Power Supply Failure, alarms

Subsequently the following occurs:

- 0625, An AO reports 1MS-59, MS Line A PORV Isol Vlv, is stuck open
- 0630, 'A' SG tube leakage degrades and a Reactor Trip and Safety Injection are initiated

Which ONE of the following identifies the FIRST required classification for the conditions above?

(Reference provided)

- A✓ FU1.1
- B. SU1.1
- C. SU5.1
- D. SU8.1

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Feedback

Plausibility and Answer Analysis

Reason answer is correct: FU1.1 Unusual Event is defined as Any loss or any potential loss of Containment (Table F-1). The computer alarm indicates the A PORV is not shut and with the SG leakage provides a path to the environment, the A PORV is normally isolable by shutting 1MS-59 locally, but this valve is stuck open and this meets the classification criteria for a potential loss of containment. With the RCS leakage into A SG at 15 gpm the threshold for FU1.1 has been exceeded and the classification is met.

A. Correct.

B. Incorrect. The answer is plausible since the B SUT has lost power, however this is incorrect because the A SUT is available, both sources of offsite power have not been lost to the safety buses.

C. Incorrect. The answer is plausible since the annunciator for the lost of power to system 1 has alarmed, however this is incorrect because the loss of one annunciator system will not result in exceeding 75% of the available annunciation.

D. Incorrect. The answer is plausible since the classification is based on unidentified or pressure boundary leakage > 10 gpm OR Identified leakage > 25 gpm. The candidate may misunderstand the difference in pressure boundary and identified leakage and determine that the tube leak is pressure boundary leakage. However is incorrect because Identified leakage is defined as RCS leakage through a steam generator to the Secondary Coolant System (primary-to-secondary leakage).

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Notes

039 Main and Reheat Steam

039G2.1.19; Ability to use plant computers to evaluate system or component status.
(Verified)

(CFR: 41.10 / 45.12)

Importance Rating: 3.8

Technical Reference: EP-EAL, page 230 and 289, Rev. 12

References to be provided: EAL Matrix

Learning Objective: EP-LP-2.0, Rev. 1, Objective 10

Question Origin: New

Comments: The K/A is met because the candidate must use the status of the computer alarm point to determine if an EAL is classification is met for the FPB matrix.

Tier/Group: T2/G1

SRO Justification: 10 CFR Part 55 Content - 43(b) (5) The Site Emergency Coordinator is an SRO only job function, and thus the SEC actions, and responsibilities for determining the EAL classification during an event is SRO-only knowledge. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by ensuring that the candidate must have procedural knowledge of diagnostic steps and decision points in the EAL Matrix that involve declaring an event classification.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

88. 2014 NRC SRO 013/NEW/C/A//TS 3.6.2.1, 3.6.2.3/TS 3.6.2.1, 3.6.2.3//022A2.04/

Given the following plant conditions:

- The unit was operating at 100% power
- Containment Spray Pump 'A' is under clearance
- 1A3-SA, cubicle 4A, Emerg MCC 1A34-SA Supply Brkr, is under clearance

Subsequently a Service Water leak develops downstream of 1SW-91, CNMT Fan Cooler AH-2 Inlet CIV, which requires Service Water to be isolated.

Which ONE of the following identifies (1) the impact of isolating Service Water to AH-2 AND (2) a required action in accordance with Technical Specification 3.6.2.3, Containment Cooling System?

(Reference provided)

- A. (1) Service Water is isolated to ONLY AH-2 1A-SA
 - (2) restore the inoperable spray system to operable status within 72 hours or be in at least Hot Standby within the next 6 hours.
- B. (1) Service Water is isolated to ONLY AH-2 1A-SA
 - (2) restore the inoperable train of fan coolers to operable status within 72 hours or be in at least Hot Standby within the next 6 hours.
- ☒ C. (1) Service Water is isolated to BOTH AH-2 1A-SA and 1B-SA
 - (2) restore the inoperable spray system to operable status within 72 hours or be in at least Hot Standby within the next 6 hours.
- D. (1) Service Water is isolated to BOTH AH-2 1A-SA and 1B-SA
 - (2) restore the inoperable train of fan coolers to operable status within 72 hours or be in at least Hot Standby within the next 6 hours.

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Feedback

Plausibility and Answer Analysis

Reason answer is correct: Four containment fan coolers (AH-1, AH-2, AH-3, and AH-4) shall be OPERABLE with one of two fans in each cooler capable of operation at low speed. Train SA consists of AH-2 and AH-3. Train SB consists of AH-1 and AH-4. 1A34-SA is the power supply to AH-3 which is inoperable without power. With A Containment Spray Pump under clearance it is also inoperable. Isolating service water flow to AH-2 will make both AH-2 fans inoperable and with the current inoperable equipment require entry into LCO 3.6.2.3 action c. One inoperable train of Containment Spray must be restored within 72 hours or be in HSB within 6 hours

- A. *Incorrect. The first part is plausible since each Air handler has two fans in each unit and the fan coolers have individual isolations, however this is incorrect because the service water flow is common to each fan on a cooler unit and will isolate cooling to both fans making the Fan cooler inoperable. The second part is correct.*
- B. *Incorrect. The first part is plausible since each Air handler has two fans in each unit and the fan coolers have individual isolations, however this is incorrect because the service water flow is common to each fan on a cooler unit and will isolate cooling to both fans making the Fan cooler inoperable. The second part is plausible since this is the correct action if both trains of fan coolers are inoperable with both containment spray pumps inoperable, however this is not correct since the loss of the electrical MCC only results in the loss of AH-3 and not the loss of both trains of Fan coolers.*
- C. *Correct.*
- D. *Incorrect. The first part is correct. The second part is plausible since this is the correct action if both trains of fan coolers are inoperable with both containment spray pumps inoperable, however this is not correct since the loss of the electrical MCC only results in the loss of AH-3 and not the loss of both trains of Fan coolers.*

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Notes

022 Containment Cooling System (CCS)

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 (CFR: 41.5 / 43.5 / 45.3 / 45.13)

Importance Rating: 3.2

Technical Reference: Technical Specification 3.6.2.1
Technical Specification 3.6.2.3

References to be provided: Technical Specification 3.6.2.1
Technical Specification 3.6.2.3

Learning Objective: CCS Student Text, Objective 11.b

Question Origin: New

Comments: Unable to write a question to SRO level for original K/A 063 A2.02 due to the lack procedural actions or an SRO task for the original K/A

Replace with randomly selected K/A 022 A2.04 by David Lanyi 5/09/2014

Tier/Group: T2/G1

SRO Justification: 10 CFR Part 55 Content - 43(b)(2) because application of Technical Specification below the line application of required actions considered to be SRO knowledge level Technical Specification items and the basis for the actions. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by testing the SRO knowlegde on the application of generic Limiting Condition for Operation (LCO) requirements (LCO 3.0.1 thru 3.0.7; SR 4.0.1 thru 4.0.4).

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

89. 2014 NRC SRO 014/MODIFIED/C/A//AOP-022, TS 3.7.4/NONE//076A2.01/

Given the following plant conditions:

- The unit is operating at 85% power
- The following annunciator is received in the Control Room:
 - ALB-002-7-2, Serv Wtr Pumps Discharge Low Press
- Cooling Tower Basin Level is lowering rapidly
- Service Water header pressure is 50 psig and lowering

One minute later the following conditions exist:

- Service Water header pressure is 35 psig and rising
- The Cooling Tower Basin Level is stable
- The RAB AO reports that a large volume of water is gushing from the upstream flange of 1SW-274, Header B Return To Normal Header valve

Which ONE of the following completes the statements below?

The leak is located in the (1) system.

In accordance with Technical Specification 3.7.4, Emergency Service Water, the bases for the Limiting Condition of Operation is to ensure that sufficient cooling capacity is available for continued operation of safety related equipment during (2) conditions.

- A. (1) Normal Service Water
(2) normal AND accident
- B. (1) Normal Service Water
(2) ONLY accident
- C✓ (1) Emergency Service Water
(2) normal AND accident
- D. (1) Emergency Service Water
(2) ONLY accident

Feedback

Plausibility and Answer Analysis

Reason answer is correct: *Based on SW pressure indications, ESW should have automatically started and isolated ESW from NSW. Cooling Tower level stabilizes indicates the leak is isolated from the NSW system therefore indicates a leak on ESW. Additionally the report is the leak is on the ustream side of the ESW Train B return header and therefore is isolated from the NSW system. The bases for technical specification 3.7.4 states the OPERABILITY of the Emergency Service Water System*

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ensures that sufficient cooling capacity is available for continued operation of safety-related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure is consistent with the assumptions used in the safety analyses.

A. Incorrect. The first part is plausible if candidate misunderstands that ESW would automatically initiated and isolated from NSW in response to the lowering NSW pressure. The second part is correct.

B. Incorrect. The first part is plausible if candidate misunderstands that ESW would automatically initiated and isolated from NSW in response to the lowering NSW pressure. The second part is plausible because the ESW system does provide cooling capacity for accident conditions to safety related equipment, however the normal system line up of the ESW header which is supplied by the NSW system during normal operation and components on the ESW header such as the CSIPs and CCW pumps are required to be cooled during these normal operating conditions.

C. Correct.

D. Incorrect. The first part is correct The second part is plausible because the ESW system does provide cooling capacity for accident conditions to safety related equipment, however the normal system line up of the ESW header which is supplied by the NSW system during normal operation and components on the ESW header such as the CSIPs and CCW pumps are required to be cooled during these normal operating conditions.

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(2) ONLY accident

C. (1) Emergency Service Water

(2) normal AND accident

D. (1) Emergency Service Water

(2) ONLY accident

Notes

076 Service Water System (SWS)

076 A2.01 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: Loss of SWS (CFR: 41.5 / 43.5 / 45/3 / 45/13) (Verified)

Importance Rating: 3.7

Technical Reference: AOP-022, Section 3.2, Rev 35, pg 30
ALB-002-7-2, Rev. 48 , pg 33
Technical Specification 3.7.4 Bases, Amendment 102,
pg B 3/4 7-3

References to be provided: None

Learning Objective: AOP-022 Objective 4

Question Origin: Modified Previous 2013 NRC SRO radomly selected

Comments: None

Tier/Group: T2G1

SRO Justification: 10 CFR Part 55 Content - 43(b)(2) because application of Technical Specification below the line application of required actions considered to be SRO knowledge level Technical Specification items and the basis for the actions. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by testing the SRO knowlegde on the application of Limiting Condition for Operation (LCO) requirements (LCO 3.7.4 and the basis for the LCO).

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

90. 2014 NRC SRO 015/NEW/FUNDAMENTAL//TS 3.9.2, ALB-13-2-1/NONE//103A2.04/

The following conditions are occurring with the unit in Mode 6 and refueling activities in progress:

- Source range audible counts are unexpectedly rising
- Annunciator ALB-013-2-1, Source Range High Flux Lvl at Shutdown, has gone into alarm due to both NI-31 and NI-32 responses

Which ONE of the following completes the statements below?

The Containment local evacuation alarm (1) actuated.

Subsequently:

- It was determined that both Source Range detectors were not responding correctly

Technical Specifications requires the RCS boron concentration to be determined within (2) hours.

A. (1) should be manually

(2) 4

B. (1) should be manually

(2) 12

C✓ (1) will be automatically

(2) 4

D. (1) will be automatically

(2) 12

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Feedback

Plausibility and Answer Analysis

Reason answer is correct: The High Flux At Shutdown annunciator ALB-13-2-1 alarm will alarm when Source Range levels are > 1.9 times background with the plant in Mode 5 for refueling. This level is required to provide an alarm for a significant positive reactivity addition during a dilution heatup, cooldown, core alterations...ect. Tech Spec Action 3.9.2 action b would apply for this situation. With both of the Source Range detectors inoperable or not operating core alterations must be immediately suspended and take actions to restore one Source Range to operable status. RCS boron concentration must be determined within 4 hours and once per 12 hours thereafter.

A. Incorrect. The first part is plausible since actions of both AOP-013 and AOP-31 is to verify all unnecessary personnel are evacuated from Containment by sounding the local evacuation alarm and making a PA announcement. But the Containment evacuation alarm will automatically sound when High Flux at Shutdown occurs. The second part is correct.

B. Incorrect. The first part is plausible since actions of both AOP-013 and AOP-31 is to verify all unnecessary personnel are evacuated from Containment by sounding the local evacuation alarm and making a PA announcement. But the Containment evacuation alarm will automatically sound when High Flux at Shutdown occurs. The second part is plausible since the Tech Spec action is to obtain the RCS boron concentration every 12 hours after the initial concentration is determined within 4 hours of the entry into the action statement.

C. Correct.

D. Incorrect. The first part is correct. The second part is plausible since the Tech Spec action is to obtain the RCS boron concentration every 12 hours after the initial concentration is determined within 4 hours of the entry into the action statement.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Notes

103 Containment

103A2.04; Ability to (a) predict the impacts of Containment evacuation (including recognition of the alarm) on the containment system and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences. (Verified)

(CFR: 41.5 / 43.5 / 45.3 / 45.13)

Importance Rating: 3.6

Technical Reference: ALB-013-2-1, Rev. 34,
Tech Spec section 3.9.2

References to be provided: None

Learning Objective: AOP-LP-3.13, Objective 5

Question Origin: New

Comments: NRC Chief Examiner David Lanyi on 9/18/2014
determine it was satisfactory to address the (b) part of
this K/A by having the candidate apply the action
requirements of T.S. 3.9.2

Tier/Group: T2/G1

SRO Justification: 10 CFR Part 55 Content - 43(b)(2) because application
of Technical Specification below the line application of
required actions considered to be SRO knowledge level
Technical Specification items and the basis for the
actions. Per NRC Clarification Guidance for SRO-only
Questions, Rev 1 this question meets the SRO level of
knowledge by testing the SRO knowlegde on the
application of Limiting Condition for Operation (LCO)
requirements (LCO 3.9.2 and the basis for the LCO).

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

91. 2014 NRC SRO 016/NEW/C/A//OWP-RP, TECH SPECS/NONE//015G2.1.23/

Given the following plant conditions:

- A Reactor startup is in progress at 10^{-8} amps in accordance with GP-004, Reactor Startup (Mode 3 To Mode 2)
- Power Range N-42 instrument power fuse was found in the blown condition

Which ONE of the following identifies (1) the procedure required to be implemented to remove Power Range N-42 from service AND (2) the mode change requirement for the current conditions?

- A✓ (1) OWP-RP, Reactor Protection
(2) Entry in to Mode 1 is allowed.
- B. (1) OWP-RP, Reactor Protection
(2) Must be returned to Mode 3 within 6 hours.
- C. (1) OP-105, Excore Nuclear Instrumentation
(2) Entry in to Mode 1 is allowed.
- D. (1) OP-105, Excore Nuclear Instrumentation
(2) Must be returned to Mode 3 within 6 hours.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Feedback

Plausibility and Answer Analysis

Reason answer is correct: OWP-RP-24 for Power Range N-42 provides the LCO action required due to inoperable Channel 2 Power Range Nuclear Instrumentation. Technical Specification 3.3.1 for the Power Range NI's requires three detectors to be operable and if not the apply action two of the LCO. Action 2 states with the number of OPERABLE channels one less than the Total Number of Channels. STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

- a. The inoperable channel is placed in the tripped condition within 6 hours.

Provided N-42 is placed in the tipped condition within 6 hours continued operation is allowed and therefore entry into Mode 1 is allowed per Technical Specification 3.0.4 as well.

A. *Correct.*

B. *Incorrect. The first part is correct. he second part is plausible since the unit is in mode 2 at 10^{-8} amps and the action statement allows 6 hours to place the channel in trip the candidate may misunderstand the application of the action statement and assume placing the unit in a condition when the action statement doesn't apply (Mode 3) is the correct action to perform, however is incorrect because Technical Specifications allow continued operation of the unit with one Power Range NI removed from service.*

C. *Incorrect. The first part is plausible since OP-105 is used to adjust the gain on the gain of the Power Range NI's during normal operations, however this is incorrect because performing a gain adjustment does not require the NI to be removed from operation. The second part is correct.*

D. *Incorrect. The first part is plausible since OP-105 is used to adjust the gain on the gain of the Power Range NI's during normal operations, however this is incorrect because performing a gain adjustment does not require the NI to be removed from operation. The second part is plausible since the unit is in mode 2 at 10^{-8} amps and the action statement allows 6 hours to place the channel in trip the candidate may misunderstand the application of the action statement and assume placing the unit in a condition when the action statement doesn't apply (Mode 3) is the correct action to perform, however is incorrect because Technical Specifications allow continued operation of the unit with one Power Range NI removed from service.*

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Notes

015 Nuclear Instrumentation

015G2.1.23; Ability to perform specific system and integrated plant procedures during all modes of plant operation. (Verified)

(CFR: 41.10 / 43.5 / 45.2 / 45.6)

Importance Rating: 4.4

Technical Reference: Technical Specification 3.0.4
Technical Specification 3.3.1
OWP-RP

References to be provided: None

Learning Objective: TS-LP-2.0, Objective 3.a
NIS Student Text, Objective 12

Question Origin: New

Comments: None

Tier/Group: T2/G2

SRO Justification: 10 CFR Part 55 Content - 43(b)(5): Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by ensuring that the additional knowledge of the procedure's selection is required to correctly answer the written test item.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

92. 2014 NRC SRO 017/NEW/C/A//AOP-041, AOP-041-BD/NONE//033G2.4.18/

Given the following plant conditions:

- Spent Fuel Pool temperature is rising
- Spent Fuel Pool level is lowering

Which ONE of the following in accordance with AOP-041, Spent Fuel Pool Events, identifies (1) the FIRST action required to be taken to address the above conditions AND (2) the basis for the action?

- A. (1) Restore Spent Fuel Pool level using Attachment 4, SFP Makeup Water Source Availability.
- (2) To prevent boiling of the Spent Fuel Pools that could result in boron plating on the fuel assemblies.
- B✓ (1) Restore Spent Fuel Pool level using Attachment 4, SFP Makeup Water Source Availability.
- (2) Adequate cooling to the Spent Fuel Pools will likely be provided through the feed and bleed process.
- C. (1) Reduce Spent Fuel Pool temperature using Attachment 5, Aligning SFP Cooling with Cross-Connected Pump and HX.
- (2) To prevent boiling of the Spent Fuel Pools that could result in boron plating on the fuel assemblies.
- D. (1) Reduce Spent Fuel Pool temperature using Attachment 5, Aligning SFP Cooling with Cross-Connected Pump and HX.
- (2) Adequate cooling to the Spent Fuel Pools will likely be provided through the feed and bleed process.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Feedback

Plausibility and Answer Analysis

Reason answer is correct: SFP Cooling is a longer-term concern, as long as fuel pool inventory remains normal. In the event of an ongoing loss of inventory, providing makeup water will likely provide adequate cooling through the feed and bleed process. If necessary, deliberate feed and bleed can be initiated to provide long term SFP cooling. With SFP level lowering the temperature section directs the candidate to return to section 3.1 and address the lowering level first. The Section 3.1 step 10 RNO actions refer the candidate to Attachment 4 to determine the methods available to restore SFP level.

A. Incorrect. The first part is correct. The second part is plausible since the lowering level will reduce the total height of the water in the pool which reduces the margin to boiling. As the water boils off from the pool which causes a higher boron concentration in the SFP. A higher boron concentration will result a higher probability of the boron coming out of solution and adhering to the hotter localized areas plating out on the fuel assembly.

B. Correct.

C. Incorrect. The first part is plausible since AOP-041 addresses both lowering level and rising temperature. The SFP Cooling system is used to provide both makeup inventory and cooling capacity therefore the candidate may have a misconception on the priority required to address each condition. The second part is plausible since the lowering level will cause a higher boron concentration in the SFP. A higher boron concentration will result a higher probability of the boron coming out of solution and adhering to the hotter localized areas plating out on the fuel assembly.

D. Incorrect. The first part is plausible since AOP-041 addresses both lowering level and rising temperature. The SFP Cooling system is used to provide both makeup inventory and cooling capacity therefore the candidate may have a misconception on the priority required to address each condition. The second part is correct.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Notes

033 Spent Fuel Pool Cooling

033G2.4.18; Knowledge of the specific bases for EOPs. (Verified)

(CFR: 41.10 / 43.1 / 45.13)

Importance Rating: 4.0

Technical Reference: AOP-041, Section 3.1 step 10 RNO, page 7, 8 Rev. 2
AOP-041-BD, Section 3.2 step 1 Note, page 12, Rev 1

References to be provided: None

Learning Objective: AOP-LP-3.41, Objective 4

Question Origin: Modified Bank OIT Exam Bank, AOP-041 (03) 1, to
create a new question with different second part and
stem conditions.

Comments: 8/29/2014 Dave Lanyi (NRC Chief Examiner) says it is
OK to write question to AOP-041 basis since the EOP's
don't have any relationship to the Spent Fuel Pool
Cooling system.

Tier/Group: T2/G2

SRO Justification: 10 CFR Part 55 Content - 43(b)(5): Assessment of
facility conditions and selection of appropriate
procedures during normal, abnormal, and emergency
situations. Per NRC Clarification Guidance for SRO-only
Questions, Rev 1 this question meets the SRO level of
knowledge by ensuring that the additional knowledge of
the procedure's content is required to correctly answer
the written test item.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

93. 2014 NRC SRO 018/NEW/C/A//OP-120.07, ODCM/ODCM 3.3.3.11//071A2.06/
A release of WGDT 'E' is in progress.

Subsequently:

- REM-1WV-3546, WPB Stack 5 PIG Monitor has gone into HIGH ALARM
- 3WG-229, WG Decay Tanks E&F To Plant Vent Valve, failed to shut

Which ONE of the following completes the statement below?

In accordance with AOP-005, Radiation Monitoring System (1) is required to be implemented to stop the release in progress.

In accordance with ODCM 3.3.3.11, Radioactive Gaseous Effluent Monitoring Instrumentation, (2) is (are) required to resume the release.

(Reference provided)

- A. (1) OP-100, Reactor Coolant System
- (2) the initiation of the preplanned alternate method of monitoring the appropriate parameter(s) within 72 hours
- B. (1) OP-100, Reactor Coolant System
- (2) samples, release rate calcs, and an Independent Verification of the valve line-up
- C. (1) OP-120.07, Waste Gas Processing
- (2) the initiation of the preplanned alternate method of monitoring the appropriate parameter(s) within 72 hours
- D✓ (1) OP-120.07, Waste Gas Processing
- (2) samples, release rate calcs, and an Independent Verification of the valve line-up

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Feedback

Plausibility and Answer Analysis

Reason answer is correct: *In accordance with AOP-005, Radiation Monitoring System Attachment 3 if a Waste Gas Decay Tank the release is in progress and accidental release of waste gas is occurring in the Waste Process Building (WPB) then to stopping the release would be accomplished using OP-120.07, Waste Gas Processing.*

WASTE PROCESSING BUILDING VENT STACK 5 functional unit a.1 Noble Gas Activity Monitor (PIG) requires one monitor at all times or performance of actions 45 and 51. With the malfunction of 3WG-229 to automatically shut only the Stack 5 PIG is inoperable therefore only action 45 applies. Prior to initiating the release at least 2 independent samples of the tank's contents are analyzed and at least 2 tech qualified members of the facility staff independently verify the release rate calc and discharge valve lineup.

- A. *Incorrect. The first part is plausible since in AOP-009 Attachment 1 step 2 would apply if the PRT was being vented (which is vented to the WGDT) then it would require the use of OP-100, Reactor Coolant System to stop the venting process which would stop the release. The second part is plausible since this is partially correct if both the Stack 5 PIG and WRGM are inoperable, however this is incorrect because 3WG-229 only automatically shuts due to a High alarm from the PIG. Both the Stack 5 PIG and WRGM high alarms functioned therefore the automatic function of the PIG did not operate correctly which make only the PIG inoperable.*
- B. *Incorrect. The first part is plausible since in AOP-009 Attachment 1 step 2 would apply if the PRT was being vented (which is vented to the WGDT) then it would require the use of OP-100, Reactor Coolant System to stop the venting process which would stop the release. The second part is correct.*
- C. *Incorrect. The first part is correct. The second part is plausible since this is partially correct if both the Stack 5 PIG and WRGM are inoperable, however this is incorrect because 3WG-229 only automatically shuts due to a High alarm from the PIG. Both the Stack 5 PIG and WRGM high alarms functioned therefore the automatic function of the PIG did not operate correctly which make only the PIG inoperable.*
- D. *Correct.*

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Notes

071 Waste Gas Disposal

071A2.06: Ability to (a) predict the impacts of a supply failure to the isolation valve on the Waste Gas Disposal System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences. (Verified)

(CFR: 41.5 / 43.5 / 45.3 / 45.13)

Importance Rating: 2.5

Technical Reference: AOP-005, Attachment 3, page 15, Rev. 30,
AOP-009, Attachment 1, Page 6, Rev. 18
ODCM 3/4.3.3.11 Radioactive Gaseous Effluent
Monitoring Instrumentation

References to be provided: None

Learning Objective: Lesson Plan AOP-LP-3.5 (AOP-005) Objective 4
GWPS Student Text, Objective 9

Question Origin: NEW

Comments: None

Tier/Group: T2/G2

SRO Justification: 10 CFR Part 55 Content - 43(b)(5): Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by ensuring that the additional knowledge of the procedure's content is required to correctly answer the written test item.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

94. 2014 NRC SRO 019/BANK/C/A//TS 3.4.8/NONE/EARLY/G2.1.34/SAT

Given the following plant information:

- The unit was operating at 79% power when a Turbine runback occurred
- The crew has stabilized the plant at 58% power

- Fifteen minutes after stabilization, annunciator ALB 026-2-1, Gross Failed Fuel Det Trouble, alarmed
- An RCS activity sample was taken with the following results:
 - Gross (beta-gamma) specific activity has been calculated to be $165/\bar{E}$
 - Dose-equivalent I-131 specific activity (DEI) is $130 \mu\text{Ci/gm}$

Which ONE of the following conditions would (1) satisfy Technical Specifications requirements, AND (2) what is the basis for the requirement?

- A✓ (1) Be in Mode 3 with $T_{\text{avg}} < 500^\circ\text{F}$ within the following 6 hours.
(2) To minimize the potential release of activity in the event of a SG Tube Rupture.
- B. (1) Be in Mode 3 with $T_{\text{avg}} < 500^\circ\text{F}$ within the following 6 hours.
(2) To reduce the production of fission products until DEI is restored to the Tech Spec required value of $\leq 0.35 \mu\text{Ci/gm}$.
- C. (1) Reduce power below 50% within 3 hours.
(2) To minimize the potential release of activity in the event of a SG Tube Rupture.
- D. (1) Reduce power below 50% within 3 hours.
(2) To reduce the production of fission products until DEI is restored to the Tech Spec required value of $\leq 0.35 \mu\text{Ci/gm}$.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Feedback

Plausibility and Answer Analysis

Reason answer is correct: Requires evaluation of T.S. 3.4.8 Action b and determining the bases for that action. Tech Spec 3.4.8 limit for specific activity of the RCS in Modes 1, 2, 3, 4, and 5 is:

- a. Less than or equal to 1 microCurie per gram DOSE EQUIVALENT 1-131.*
- and*
- b. Less than or equal to 100/E microCuries per gram of gross radioactivity.*

The Chemistry results provided for the RCS activity samples have exceeded the Tech Spec limits. With the limit exceeded the action required is be in at least HOT STANDBY (Mode 3) with Tavg <500°F within 6 hours.

The Tech Spec basis for reducing Tavg to < 500°F is that with the RCS at or below 500°F the RCS saturation pressure during a SGTR event will be below the lift pressure of the atmospheric steam relief valves.

A. Correct.

B. Incorrect. The first part is correct. The second part is plausible since Tech Specs requires restoring DEI to < 0.35 µCi/gm but the time given is within 48 hours.

C. Incorrect. The first part is plausible since Secondary chemistry limits do not apply when the unit is operating below 50% power. AOP-016 for SG tube leakage requires the unit to be reduced to < 50% within 3 hours. The second part is correct.

D. Incorrect. The first part is plausible since Secondary chemistry limits do not apply when the unit is operating below 50% power. AOP-016 for SG tube leakage requires the unit to be reduced to < 50% within 3 hours. The second part is plausible since Tech Specs requires restoring DEI to < 0.35 µCi/gm but the time given is within 48 hour

QUESTIONS REPORT

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Notes

2.1 Conduct of Operations

G2.1.34 Knowledge of primary and secondary plant chemistry limits. (Verified)

(CFR: 41.10 / 43.5 / 45.12)

Importance Rating: 3.5

Technical Reference: Tech Spec 3.4.8 pg 3/4 4.29, 3.4.8 Bases pg 3/4 4-6
(pages 229 and 60)

References to be provided: Tech Spec 3.4.8

Learning Objective: RCS Objective 16

Question Origin: Bank OIT Exam Bank RCS (16) 3

Comments: None

Tier/Group: T3

SRO Justification: 10 CFR Part 55 Content - 43(b)(2): Facility operating limitations in the technical specifications and their bases. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by testing the SRO knowlegde of TS bases that are required to analyze TS required actions and terminology.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

95. 2014 NRC SRO 020/NEW/C/A//TS 3.3.1/NONE//G2.1.45/

Given the following plant conditions:

- The unit is operating at 100% power
- Annunciator ALB-009-4-3, Pressurizer Low Level Ltn Secured and Htrs Off, has alarmed due to a transmitter failure

Which ONE of the following completes the statements below regarding the system failure and Technical Specification requirements?

1CS-231, FK-122.1, Charging Flow demand has increased due to the failure of PRZ level transmitter ____ (1) ____ .

AND

The Technical Specifications required action is to place the channel in the tripped condition within ____ (2) ____ hours.

A. (1) 459

(2) 4

B. (1) 460

(2) 4

C✓ (1) 459

(2) 6

D. (1) 460

(2) 6

Feedback

Plausibility and Answer Analysis

Reason answer is correct: *With PRZ level control in the normal configuration PRZ LT-459 and LT-460 are selected as controlling channels. Although either channel failing low will cause annunciator ALB-009-4-3 to alarm, secure PRZ heaters and secure letdown ONLY LT-459 will cause 1CS-231, FK-122.1 to increase demand. LT-459 failing low will cause a level error signal between perceived actual level and programmed level. The level will appear low when actually has not changed. The level error signal will continue to cause excessive Charging flow until operator action places the controller in manual and lowers the output demand. A failure of LT-460 low does not affect 1CS-231, FK-122.1 since the signal from LT-460 does not input to Charging flow controls. Identifying that LT-459 has failed low by using diverse indications of what 1CS-231 response is validates that LT-459 is the transmitter that failed. Tech Spec 3.3.1 requires a minimum Reactor Trip system instrumentation channels to be*

QUESTIONS REPORT

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channels and 2 required to trip and also be operable. Since LT-459 has failed Action 6 applies. The inoperable channel is required to be placed in the tripped conditions within 6 hours.

- A. *Incorrect. The first part is correct. The second part is plausible since Tech Spec Action 6 for the inoperable channel allows the inoperable channel to be bypassed for up to 4 hours for surveillance testing of other channels but this is not the time required to place the channel in the tripped condition.*
- B. *Incorrect. The first part is plausible since both LT-459 and LT-460 will cause the annunciator window to alarm. It requires detailed system knowledge to determine that LT-459 failure is the only possibility for the increase in Charging flow. If LT-460 had failed low Charging flow would eventually decrease since actual level would continue to rise due to letdown securing. The actual level sensed by LT-459 and compared to program level would cause 1CS-231 to reduce Charging flow to the PRZ based on level becoming higher than program level. The second part is plausible since Tech Spec Action 6 for the inoperable channel allows the inoperable channel to be bypassed for up to 4 hours for surveillance testing of other channels but this is not the time required to place the channel in the tripped condition.*
- C. *Correct.*
- D. *Incorrect. The first part is plausible since both LT-459 and LT-460 will cause the annunciator window to alarm. It requires detailed system knowledge to determine that LT-459 failure is the only possibility for the increase in Charging flow. If LT-460 had failed low Charging flow would eventually decrease since actual level would continue to rise due to letdown securing. The actual level sensed by LT-459 and compared to program level would cause 1CS-231 to reduce Charging flow to the PRZ based on level becoming higher than program level. The second part is correct.*

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Notes

2.1 Conduct of Operations

G2.1.45 Ability to identify and interpret diverse indications to validate the response of another indication (Verified)

(CFR: 41.7 / 43.5 / 45.4)

Importance Rating: 4.3

Technical Reference: ALB-009-4-3, Tech Spec 3.3.1, Student Text PZR Level Control

References to be provided: None

Learning Objective: Lesson Plan PZRLC Objectives 9.c and (SRO ONLY) Objective 11.a

Question Origin: NEW

Comments: SRO question application tie to 10 CFR Part 55 Content - 43(b)(2) also

Tier/Group: T3

SRO Justification: 10 CFR Part 55 Content - 43(b)(5) - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. The applicant's knowledge can be evaluated at the level of 10 CFR 55.43(b)(5) by ensuring that the additional knowledge of the procedure's content is required to correctly answer the written test item. In this instance the applicant must know the information contained in an annunciator procedure (RO knowledge). To make this question SRO specific a Tech Spec action was added to the second part of the question.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

96. 2014 NRC SRO 021/BANK/FUNDAMENTAL///NONE/EARLY/G2.2.17/SAT

Given the following plant conditions:

- The unit is operating at 100% power
- You are working a weekend backshift (Off-Normal Hours)
- An instrumentation failure has resulted in the crew entering AOP-001, Malfunction of Rod Control and Indication System and placing the rod control system to manual

In accordance with WCM-001, On-Line Maintenance Risk Management, which ONE of the following personnel are RESPONSIBLE for assessing the impact on scheduled work and plant risk?

- A. STA
- B. WCC-SRO
- C. Work Week Manager
- ☒ D. Shift Manager (or designee)

Feedback

Plausibility and Answer Analysis

Reason answer is correct: This question deals with off normal hour shift problems. In accordance with WCM-001 the responsibilities of the Shift Manager: When an emergent failure or other non-discretionary condition arises, the impact on scheduled work and risk should be assessed. The Shift Manager (or designee), is responsible for assessing this impact during off-normal working hours.

- A. Incorrect. Plausible since the STA's responsibility is to determine the blended risk associated with equipment configuration through the use of EOOS and as directed by WCM-001 or the Shift Manager. The STA would not be required to perform WCM-001 Attachment 2.*
- B. Incorrect. Plausible since the WCC-SRO is required to perform a real time risk assessment at the time of work release in accordance with ADM-NGGC-0104, Work Management Process but would not be responsible for assessing the impact of this failure per WCM-001, Attachment 2.*
- C. Incorrect. Plausible since the Work Week Manager would perform a risk assessment of the schedule and any emergent work that arises that must be worked in that week. But, they are not responsible to assess the impact of weekend backshift equipment failures. That is the responsibility of the SM.*
- D. Correct.*

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Notes

2.2 Equipment control

G2.2.17 Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, and coordination with the transmission system operator. (Verified)

(CFR: 41.10 / 43.5 / 45.13)

Importance Rating: 3.8

Technical Reference: WCM-001, SM responsibilities, Page 6 and Attachment 2, Page 28, Rev. 21

References to be provided: None

Learning Objective: PP-3.6 Objective 5.b

Question Origin: Bank, OIT Exam Bank, PP-3.6 (05B) 1

Comments: None

Tier/Group: T3

SRO Justification: 10 CFR Part 55 Content - 43(b)(3): Facility licensee procedures required to obtain authority for design and operating changes in the facility. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by use of Site procedure that require the Shift Manager specifically to perform the evaluation of plant risk in the event of emergent work release.

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

97. 2014 NRC SRO 022/BANK/FUNDAMENTAL///NONE//G2.2.25/

Which ONE of the following satisfies the Technical Specification bases requirement for off-site power distribution with the plant in Mode 1?

- A✓ The requirement can be satisfied by any two separate off-site transmission lines that can power the SUTs.
- B. The requirement can ONLY be satisfied by two off-site transmission lines that feed the SUTs directly (Cary, Regency Park and Cape Fear North).
- C. The requirement can ONLY be satisfied by the off-site transmission lines that do not feed the respective North or South switchyard bus through a jumper.
- D. The requirement is satisfied as long as the switchyard alignment is such that power is available from the off-site transmission network to both SUTs regardless of the number of transmission lines available.

Feedback

Plausibility and Answer Analysis

Reason answer is correct: *The minimum offsite power sources will be maintained so that at least 2 independent offsite circuits are available. Circuits may consist of any two of the incoming transmission lines to the SATs (either through the switchyard or directly).*

- A. *Correct.*
- B. *Incorrect. Plausible since this would meet the operability requirement, but is not the only permitted alignment.*
- C. *Incorrect. Plausible since BKR 52-16 can only be used to maintain operability of Train B power if the disconnects for 52-17 are closed with the jumpers installed, but this is an acceptable source.*
- D. *Incorrect. Plausible since a single transmission line can provide power to both SUTs, but 2 transmission lines are required for redundancy.*

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Notes

2.2 Equipment control

G2.2.25 Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits. (Verified)

(CFR: 41.5 / 41.7 / 43.2)

Importance Rating: 4.2

Technical Reference: TS Basis section 3.8, OST-1023

References to be provided: None

Learning Objective: ADEL-2.7-2

Question Origin: Bank, OIT Development Bank, ADEL-2.2-2 (5)

Comments: 2011 NRC SRO Q#4

Tier/Group: T3

SRO Justification: 10 CFR Part 55 Content - 43(b)(2): Facility operating limitations in the technical specifications and their bases. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by testing the SRO knowledge of TS bases that are required to analyze TS required actions and terminology.

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98. 2014 NRC SRO 023/PREVIOUS/C/A///AP-617 ATT. 1//G2.3.14/

Given the following plant conditions:

- An employee was injured and contaminated
- The employee was transported to Western WakeMed for treatment before he was de-contaminated
- Duke Energy is planning a news release for this event

Which ONE of the following completes the statements below?

In accordance with AP-617, Reportability Determination And Notification, the EARLIEST required NRC notification of this event is within (1) hours.

In accordance with AOP-013, Fuel Handling Accident, (2) is the primary radiological concern for fuel off-loaded more than 6 months ago because it will NOT be detected by personal dosimetry or area radiation monitors.

(Reference provided)

- A✓ (1) 4
(2) Krypton-85
- B. (1) 4
(2) Iodine-131
- C. (1) 8
(2) Krypton-85
- D. (1) 8
(2) Iodine-131

Feedback

Plausibility and Answer Analysis

Reason answer is correct: The Fuel in the Spent Fuel Pool has been there for more than 6 months. The personal non-detectable radiation hazard would be Krypton-85 which is a beta emitter. AOP-013 has a note stating: Kr-85 is the primary radiological concern for fuel off-loaded more than 6 months ago. Kr-85 is a beta hazard and will NOT be detected by personal dosimetry or area radiation monitors. There is also a caution stating: Airborne radiation may be present and gas bubbles may be visible if a fuel assembly is ruptured. Personnel should remain clear until Health Physics has established access controls

The basis document states the activity of most concern is that which is contained in the volatile fission product gases contained in the fuel pellet to cladding gap. When a fuel

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pin is damaged, this fission product inventory can be released to the SFP water. Technical Specifications 3.9.10 and 3.9.11 require a minimum water level of 23 feet in the SFP and Refueling Cavity specifically to reduce the potential dose resulting from a fuel handling accident. This amount of water will capture 99% of the assumed 10% iodine activity present in the pellet to clad gap before it breaks the surface of the water. However, although the water is expected to retain a large fraction of this activity, a portion of it will reach the surface and bubble out into the FHB or CNMT atmosphere. (Since halogens are soluble, a large fraction of these halogens will be retained by the water, whereas noble gases, being insoluble, will not be retained.) Once in the atmosphere, much of this fission product activity will cause an observed increase in area radiation levels. (Gases such as Kr-85 which are primarily beta hazards will not be detectable using installed monitors.)

The transportation of a potentially contaminated individual must be reported to the NRC within 8 hours per AP-617. However, since a press release regarding the event is planned by Duke Energy the incident must be reported to the NRC within 4 hours per Attachment 1 and note 12 of AP-617 (Offsite Notification has been or will be made).

A. *Correct.*

B. *Incorrect. The first part is correct. The second part is plausible since volatile fission product gases have escaped from the damaged fuel assembly and would be observable as bubbles coming to the surface of the SFP. Iodine 131 would be part of the volatile gases. I-131 is gamma emitter which would be detectable with personal dosimetry and therefore would NOT be a non-detectable radiation concern.*

C. *Incorrect. The first part is plausible since under other other circumstances an 8-hour NRC report would be required for transport of a potentially contaminated individual. A 4-hour report applies only because a related offsite notification to another agency will be made. The second part is correct.*

D. *Incorrect. The first part is plausible since under other other circumstances an 8-hour NRC report would be required for transport of a potentially contaminated individual. A 4-hour report applies only because a related offsite notification to another agency will be made. The second part is plausible since volatile fission product gases have escaped from the damaged fuel assembly and would be observable as bubbles coming to the surface of the SFP. Iodine 131 would be part of the volatile gases. I-131 is gamma emitter which would be detectable with personal dosimetry and therefore would NOT be a non-detectable radiation concern.*

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Notes

2.3 Radiation Control

G2.3.14 Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.

(CFR: 41.12 / 43.4 / 45.10)

Importance Rating: 3.4 3.8

Technical Reference: AOP-013-BD Rev. 3
AP-617 Rev 35, pg 13

References to be provided: AP-617, Attachment 1, Rev. 35

Learning Objective: LPPP2-17, Obj 5; Lesson Plan AOP3-13, Obj 2a

Question Origin: Previous 2013 NRC SRO radomly selected

Comments: SRO question application tie to 10 CFR Part 55
Content - 43(b)(1) / (4) also

Tier/Group: T3

SRO Justification: 10 CFR Part 55 Content - 43(b)(7): Fuel Handling Facilities and Procedures. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge because the SRO must have knowledge of such as coolant activity and emergency classifications, (i.e. notifying the NRC) based on core conditions.

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99. 2014 NRC SRO 024/BANK/FUNDAMENTAL//OP-120.07/NONE//G2.3.6/

Which ONE of the following personnel are RESPONSIBLE for preparing and approving a Batch Gaseous Effluent Permit?

	<u>Prepares Permit</u>	<u>Approves Permit</u>
A✓	Chemistry	Control Room Supervisor
B.	Chemistry	Shift Manager
C.	Radiation Protection	Control Room Supervisor
D.	Radiation Protection	Shift Manager

Feedback

Plausibility and Answer Analysis

Reason answer is correct: *In accordance with OP-120.07, Waste Gas Processing, prior to discharging a gaseous batch release a copy of the Discharge Log is given to Chemistry for issuance of the Batch Gaseous Effluent Permit (CRC 853). Chemistry prepares the permit in accordance with CRC 853. Prior to starting the release the CRS reviews and signs the Batch Gaseous Effluent Permit. Additionally, OMM-001, Operations Administrative Requirements responsibilities for the CRS section 4.1.2.1.a states that the CRS is responsible to ensure operation of radwaste systems is in a safe, efficient manner per approved operating procedures and within requirements of the National Pollutant Discharge Elimination System permits.*

A. Correct.

B. Incorrect. The first part is correct. The second part is plausible since the Shift Manager is the senior licensed on-shift crew member in charge of the station but is not responsible for approving the release of gaseous permits for the station.

C. Incorrect. Plausible since the release is a radioactive release and Radiation Protection is responsible for monitoring the dose of station activities and related radioactive conditions but they are not responsible for preparing Batch Gaseous Effluent permits. The second part is correct.

D. Incorrect. Plausible since the release is a radioactive release and Radiation Protection is responsible for monitoring the dose of station activities and related radioactive conditions but they are not responsible for preparing Batch Gaseous Effluent permits. The second part is plausible since the Shift Manager is the senior licensed on-shift crew member in charge of the station but is not responsible for approving the release of gaseous permits for the station.

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Notes

2.3 Radiation Control

G2.3.6 Ability to approve release permits

(CFR: 41.13 / 43.4 / 45.10)

Importance Rating: 3.8

Technical Reference: OP-120.07, Section 8.12.2, Rev. 67

References to be provided: None

Learning Objective: Lesson Plan Gaseous Waste Processing System
Objective 5

Question Origin: Bank

Comments: None

Tier/Group: T3

SRO Justification: 10 CFR Part 55 Content - 43(b)(4) Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by questioning the process for gaseous/liquid release approvals, i.e., release permits.

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100. 2014 NRC SRO 025/NEW/C/A//PEP-330/NONE//G2.4.38/

Given the following plant conditions:

- An event has occurred that has resulted in the activation of the Emergency Response Organization (ERO)
- The Technical Support Center (TSC) has completed turnover from the MCR
- A Maintenance Mechanic is standing by to enter the RAB to isolate a release in progress. This will result in a dose of 11,400 mrem TEDE for the individual

Which ONE of the following describes the dose limit basis for the type of entry AND the position that must approve the expected dose the Mechanic will receive in accordance with PEP-330, Radiological Consequences?

(NOTE: The titles for the positions are listed below)

SEC-TSC Site Emergency Coordinator - Technical Support Center
RCD Radiological Control Director

<u>Limit Basis</u>	<u>Position</u>
A✓ Protection of large populations ONLY	SEC-TSC
B. Protection of large populations ONLY	RCD
C. Protect valuable property AND large populations	SEC-TSC
D. Protect valuable property AND large populations	RCD

QUESTIONS REPORT

for 2014 NRC RO SRO Written Rev 4 - 45 Day Submittal

Feedback

Plausibility and Answer Analysis

PEP-330 Attachment 1 identifies that exposures up to 25 REM are allowed for lifesaving or protection of large populations (when a lower dose is not practicable).

PEP-230, SEC-TSC Attachment 1 step 29 states the following: Authorize Progress Energy emergency worker exposures > 5 Rem TEDE or entry into fields > 25 Rem/Hr per PEP-330, Att. 1, as necessary.

- A. Correct
- B. *Incorrect- The first part correct. The second part is incorrect. Plausible since the RCD evaluates the need for and coordinates with the SEC -TSC authorization of the allowance of onsite emergency worker exposures > 5 Rem TEDE or entry into fields > 25 Rem/Hr per Attachment 8 of PEP-240.*
- C. *Incorrect The first part is plausible since the activities table for dose limits exceeding 10 Rem contains two separate activities but the other activity is for lifesaving NOT protecting valuable property. The second part is correct.*
- D. *Incorrect- The first part is plausible since the activities table for dose limits exceeding 10 Rem contains two separate activities but the other activity is for lifesaving NOT protecting valuable property. The second part is incorrect. Plausible since the RCD evaluates the need for and coordinates with the SEC -TSC authorization of the allowance of onsite emergency worker exposures > 5 Rem TEDE or entry into fields > 25 Rem/Hr per Attachment 8 of PEP-240.*

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Notes

2.4 Emergency Procedures / Plan

G2.4.38 Ability to take actions called for in the facility emergency plan, including supporting or acting as emergency coordinator if required.

(CFR: 41.10 / 43.5 / 45.11)

Importance Rating: 4.4

Technical Reference: PEP-330, Page 17, Rev. 12
PEP-240, Attachment 8 – RADIOLOGICAL CONTROL
DIRECTOR CHECKLIST, Rev.17, page 43

References to be provided: None

Learning Objective: Lesson Plan EP-LP-2.0/3.0 SRO objective 1

Question Origin: Bank, OIT Development, 2012 Audit SRO 23

Comments: SRO question application tie to 10 CFR Part 55
Content - 43(b)(4) also

Tier/Group: T3

SRO Justification: 10 CFR Part 55 Content - 43(b)(5): Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. Per NRC Clarification Guidance for SRO-only Questions, Rev 1 this question meets the SRO level of knowledge by questioning the Emergency Coordinator SRO only job function, and thus the EC actions, and responsibilities for directing entries into hazardous areas during an emergency are SRO-only knowledge.