2009B ONS SRO NRC Examination QUESTION 1 1 B

KA	KA_desc
APE008	APE008 GENERIC Ability to perform without reference to procedures those actions that require immediate operation of system components and controls. (CFR: 41.10 / 43.2 / 45.6)
2.4.49	

Given the following Unit 1 conditions:

Initial conditions:
- Reactor power = 100%

Current conditions:
- RCS pressure = 2078 psig decreasing
- Pzr level = 350 inches increasing
- 1SA-18/A-1 (Pressurizer Relief Valve Flow) actuated
- ALL 1RC-66 flow monitor red lights are illuminated

Immediate Manual Actions of AP/44 (Abnormal Pressurizer Pressure Control) directs the operator to __(1)__ AND the actual setpoint (psig) for the Low RCS Pressure RPS trip is __(2)__.

Which ONE of the following completes the above statement?

A. 1. Close 1RC-4
   2. 1800

B. 1. Close 1RC-4
   2. 1810

C. 1. Manually trip the reactor
   2. 1800

D. 1. Manually trip the reactor
   2. 1810

General Discussion

x

Answer A Discussion

Incorrect. First part is correct. Second part is plausible since 1800 psigt is the minimum allowed TS setpoint.

Answer B Discussion

Correct: AP/44 IMAs state:
_ IAAT all of the following conditions exist:
__ PORV open
__ RC pressure < 2300 psig (HIGH) or 480 psig (LOW)
__ PZR level <375"
THEN close 1RC-4.

The actual low RCS pressure setpoint for the RPS trip is 1810 psig.

Answer C Discussion

Incorrect: First part is plausible since it would be the correct actions if pressurizer level were > 375" and therefore 1RC-4 could not be closed. Second part is plausible since 1800 psig is the minimum allowed TS setpoint.

Answer D Discussion

Incorrect: First part is plausible since it would be the correct actions if pressurizer level were > 375" and therefore 1RC-4 could not be closed. Second part is correct.

Basis for meeting the KA

This question requires knowledge of AP/44 IMAs for a failed open PORV.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj EAP-APG R9 OBJ EC-RPS R3 EAP-APG R9 AP/44 ARG 1SA-18 RPS trip setpoints

Student References Provided

KA	KA_desc
APE008 2.4.49	APE008 GENERIC□Ability to perform without reference to procedures those actions that require immediate operation of system components and controls. (CFR: 41.10 / 43.2 / 45.6)

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 2

2

C

KA	KA_desc
EPE011	EPE011 GENERIC□Knowledge of the operational implications of EOP warnings, cautions, and notes. (CFR: 41.10 / 43.5 / 45.13)
2.4.20	

Given the following Unit 1 conditions:

- Time = 03:00
- Reactor power = 100%
- 1A and 1C RBCUs operating in HIGH speed
- 1B RBCU is operable and OFF
- Large Break LOCA occurs

Which ONE of the following describes RBCU status at 03:04?

A. 1A and 1C RBCUs operating in HIGH speed and 1B RBCU is OFF

B. 1A and 1C RBCUs operating in LOW speed and 1B RBCU is OFF

C. ALL RBCUs operating in LOW speed

D. ALL RBCUs will be OFF

General Discussion

Answer A Discussion

Incorrect. Plausible since this is the Pre-ES status of the RBCU's therefore if the 3 minute time delay is mis-applied it would be plausible for the RBCU's to not yet have changed position.

Answer B Discussion

Incorrect. Plausible since the 1B RBCU switch is in OFF therefore it is plausible to believe that ES would not reposition the RBCU with the switch in OFF. Under that misconception this would be a correct choice.

Answer C Discussion

Correct. Based on the note in Enclosure 5.1 (step 41), the RBCU's do not transfer to SLOW speed until after the 3 minute time delay has expired. Since it has been 4 minutes since the ES actuation, all RBCU's would be operating in SLOW speed.

Answer D Discussion

Incorrect. Plausible since it would be correct if the time since ES actuation was < 3 minutes. ON ES 5&6 actuation, all RBCU's turn off which starts a 3 minute time delay. At the end of the time delay all RBCU's go to the LOW speed. Misapplying the 3 minute time delay (ex. Using 5 minutes instead of 3) would lead to this choice.

Basis for meeting the KA

Requires knowledge of the NOTE in Encl. 5.1 that describes the operational implications of the 3 minute time delay on RBCU's transfer to slow speed following ES actuation due to a Large Break LOCA..

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	MODIFIED	NRC 2009A Q41

Development References
Obj. PNS-RBC R1, R5 Encl. 5.1 of EOP PNS-RBC

Student References Provided

KA	KA_desc
EPE011 2.4.20	EPE011 GENERIC□Knowledge of the operational implications of EOP warnings, cautions, and notes. (CFR: 41.10 / 43.5 / 45.13)

401-9 Comments:

Remarks/Status

KA	KA_desc
APE015/017 AK2.07	Knowledge of the interrelations between the Reactor Coolant Pump Malfunctions (Loss of RC Flow) and the following: (CFR 41.7 / 45.7)□RCP seals ....

Given the following Unit 1 conditions:

- Reactor power = 100%

	1B1 RCP	**1B2 RCP**
UPPER Cavity Pressure	1426 psig stable	714 psig stable
LOWER Cavity Pressure	2140 psig stable	1412 psig stable
Motor Stand Velocity Vibration	0.8 mil stable	3.2 mils stable
Spool Piece Displacement	6.5 mils stable	14.5 mils stable

Which ONE of the following describes the required actions in accordance with AP/16 (Abnormal Reactor Coolant Pump Operation)?

A. Immediately trip the reactor and then trip the 1B1 RCP

B. Immediately trip the reactor and then trip the 1B2 RCP

C. Reduce reactor power to < 70% and then trip 1B1 RCP

D. Reduce reactor power to < 70% and then trip 1B2 RCP

2009B ONS SRO NRC Examination QUESTION 3 | 3 | C

General Discussion

With RCS at 2100 psi, Normal cavity pressures would be 1400 psig in lower cavity and 700 psig in upper cavity since each seal breaks down approx. 1/3 of system pressure.

Answer A Discussion

Incorrect. Immediately tripping the Rx then tripping the RCP is plausible since it would be correct if plant conditions were such that there were only 3 RCP's operating at the time of the failure or if the candidate believed that the RCP seal pressures were part of the ITC. If ANY RCP meets Immediate Trip Criteria when Rx power is > 70%, AP/16 directs tripping the Rx then stopping the affected RCP. Additionally, the RCP seal cavity pressures are displayed on the same OAC screen the operator monitors when determining if Immediate Trip Criteria are met so it would be plausible to believe that the Seal Cavity pressures are part of the ITC. Second part is correct.

Answer B Discussion

Incorrect. Immediately tripping the Rx then tripping the RCP is plausible since it would be correct if plant conditions were such that there were only 3 RCP's operating at the time of the failure or if the candidate believed that the RCP seal pressures were part of the ITC. If ANY RCP meets Immediate Trip Criteria when Rx power is > 70%, AP/16 directs tripping the Rx then stopping the affected RCP. Additionally, the RCP seal cavity pressures are displayed on the same OAC screen the operator monitors when determining if Immediate Trip Criteria are met so it would be plausible to believe that the Seal Cavity pressures are part of the ITC. Securing the 1B1 RCP is plausible since both the 1B1 and 1B2 RCP's show a decrease of 33% of normal RCS pressure between lower and upper cavity pressures. 1B1 could be correct under the misconception that the lower cavity is below the first seal or if the first seal was not a pressure breakdown type seal. It could also be correct under the misconception that there were 3 cavities and two seals (vs. the inverse which is correct).

Answer C Discussion

Correct. This lower cavity pressure is an indication of a lower seal failure. With <100 psig dp across the lower seal (2155 vs. 2140), AP/16 directs reducing Rx power to < 70& and securing the affected RCP.

Answer D Discussion

Incorrect. The first part is correct. Securing the 1B2 RCP is plausible since both the 1B1 and 1B2 RCP's show a decrease of 33% of normal RCS pressure between lower and upper cavity pressures. 1B2 could be correct under the misconception that the lower cavity is below the first seal or if the first seal was not a pressure breakdown type seal. It could also be correct under the misconception that there were 3 cavities and two seals (vs. the inverse which is correct).

Basis for meeting the KA

Requires knowledge of RCP seal pressure indications that indicate a RCP seal malfunction that would result in a loss of RCS flow as a result of securing the pump because of the seal failure. Discussed this concept with the Chief Examiner.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj EAP APG R5 AP/16 PNS-CPS

Student References Provided

KA	KA_desc
APE015/017 AK2.07	Knowledge of the interrelations between the Reactor Coolant Pump Malfunctions (Loss of RC Flow) and the following: (CFR 41.7 / 45.7)□RCP seals ....

401-9 Comments:

Remarks/Status

KA	KA_desc
APE022	APE022 GENERIC□Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. (CFR: 41.5 / 43.5 / 45.12 / 45.13)
2.1.7	

Given the following Unit 1 conditions:

Initial conditions:
- Reactor power = 100%

Current conditions:
- 1HP-120 (RC VOLUME CONTROL) air line is severed

Pzr level will INITIALLY __(1)__ AND __(2)__ will be used FIRST to control Pzr level in accordance with plant procedures.

Which ONE of the following completes the statement above?

A.
1. increase
2. 1HP-26

B.
1. increase
2. 1HP-122 (RC Volume Control Bypass)

C.
1. decrease
2. 1HP-26

D.
1. decrease
2. 1HP-122 (RC Volume Control Bypass)

2009B ONS SRO NRC Examination QUESTION 4

4

C

General Discussion

Answer A Discussion

Incorrect, first part is plausible since it would be correct if 1HP-120 failed open on loss of air as do some other HPI valves (ex. 1HP-31 does fail open on a loss of IA). Generally if a valve failed open it would be isolated and another valve would be used to control level. Misapplying that knowledge would lead to this choice. Second part is correct.

Answer B Discussion

Incorrect, first part is plausible since it would be correct if 1HP-120 failed open on loss of air as do some other HPI valves (ex. 1HP-31 does fail open on a loss of IA). Generally if a valve failed open it would be isolated and another valve would be used to control level. Misapplying that knowledge would lead to this choice. Second part is plausible because 1HP-122 is the manual bypass around 1HP-120 and is used to control pzr level per AP/14 if 1HP-26 fails to open.

Answer C Discussion

Correct, 1HP-120 will fail closed on a loss of IA. This will result in no HPI makeup flow which will cause the PZR level to decease. AP/14 (Loss of Normal HPI Makeup and/or RCP Seal Injection) will direct the used of 1HP-26 to control Pzr level.

Answer D Discussion

Incorrect, first part is correct. Second part is plausible because 1HP-122 is the manual bypass around 1HP-120 and is used to control pzr level per AP/14 if 1HP-26 fails to open.

Basis for meeting the KA

Question requires knowledge of operating characteristics of 1HP-120 and determine actions to take as a result of loss IA. Plant performance must be evaluated based on HP-120 being failed closed and operational judgments regarding mitigation of the failed valve must be made.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	ONS 2007 retest Q#6

Development References
Obj. SSS-IA R48 SSS-IA AP/14

Student References Provided

KA	KA_desc
APE022 2.1.7	APE022 GENERIC□Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. (CFR: 41.5 / 43.5 / 45.12 / 45.13)

401-9 Comments:

Remarks/Status

KA	KA_desc
APE027 AK3.04	Knowledge of the reasons for the following responses as they apply to the Pressurizer Pressure Control Malfunctions: (CFR 41.5,41.10 / 45.6 / 45.13)□Why, if PZR level is lost and then restored, that pressure recovers much more slowly ....

Given the following two sets of plant conditions:

1. Reactor trips from 100% power. Pressurizer level decreases off scale low during the initial cooldown then returns on scale. Lowest Subcooling margin indication during the transient = 18° F. Pressurizer level is returned to 100 inches, RCS pressure = 2100 psig and Pressurizer temperature = 635° F.

2. From an initial Reactor power of 100%, ICS MAX Runback is used to decrease power to 80% to stop the 1D2 HDP. Pressurizer level remains approximately 220 inches during the runback and when the runback is stopped, RCS pressure = 2100 psig and Pressurizer temperature = 643° F.

Which ONE of the following describes the response of the two scenarios if attempting to increase RCS pressure to 2200 psig with ALL Pressurizer heaters energized and Pressurizer level maintained constant AND the reason for the response?

A. Scenario # 1 will reach 2200 psig first because Pressurizer level is lower and therefore less heat is required to raise the temperature of the water.

B. Scenario # 2 will reach 2200 psig first because the Pressurizer in Scenario #1 is subcooled.

C. Both scenarios would reach 2200 psig at approximately the same time because starting pressure is equal in both scenarios.

D. Neither scenario would reach 2200 psig because the spray valve will overcome the RCS pressure increase even with ALL Pressurizer heaters energized.

2009B ONS SRO NRC Examination QUESTION 5

5

B

General Discussion

Answer A Discussion

Incorrect. Plausible since the reason given is actually a true statement however the Pzr in scenario 1 is subcooled and would therefore require time to heat up to saturation before RCS pressure would begin to increase.

Answer B Discussion

Correct. Saturation temp for 2100 psig is approximately 643 degrees therefore Scenario 1 would require returning the pressurizer to saturation temp before RCS pressure would begin to increase.

Answer C Discussion

Incorrect. This answer would be correct if both pressurizers were saturated.

Answer D Discussion

Incorrect. Plausible since the spray valve will overcome RCS pressure increasing with all Pzr heaters energized however 2200 psig is just below the setpoint for it to open (2205). It is plausible to believe the spray valve would be open since RCS pressure would be above normal operating pressure of 2155 psig.

Basis for meeting the KA

Requires knowledge of the reason it would take longer than normal to return RCS pressure to a setpoint following a transient where pressurizer level had been lost and then returned to a normal operating level. The fact that the Pzr is subcooled is the Pzr pressure control malfunction. Discussed KA issues and got agreement with the concept of this question with NRC chief examiner. Had chief examiner review version 1.03 of question and agreed with KA match.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj. PNS-PZR R22, R27, R5 PNS-PZR

Student References Provided

KA	KA_desc
APE027 AK3.04	Knowledge of the reasons for the following responses as they apply to the Pressurizer Pressure Control Malfunctions: (CFR 41.5,41.10 / 45.6 / 45.13)□Why, if PZR level is lost and then restored, that pressure recovers much more slowly ....

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 6 6 **C**

KA	KA_desc
EPE038	Ability to operate and monitor the following as they apply to a SGTR: (CFR 41.7 / 45.5 / 45.6)□Isolation of a ruptured S/G ....
EA1.32	

Given the following Unit 1 conditions:

- Reactor in MODE 3
- RCS temperature = 555 °F slowly decreasing
- SGTR tab in progress due to SGTR in 1A SG

Which ONE of the following;

1) is the range (minimum - maximum) of RCS temperature (degrees F) where the EOP directs isolating the 1A SG?

2) would require steaming the 1A SG after isolation in accordance with the EOP?

A. 1. 535 - 552
   2. When the 1A SG approaches overfill conditions

B. 1. 535 - 552
   2. When the 1A SG tube-to-shell delta T = (-)76 degrees F

C. 1. 525 - 532
   2. When the 1A SG approaches overfill conditions

D. 1. 525 - 532
   2. When the 1A SG tube-to-shell delta T = (-)76 degrees F

2009B ONS SRO NRC Examination QUESTION 6

6

C

General Discussion

Answer A Discussion

Incorrect: First part is plausible because it is the lower end of the band for isolating the affected SG. The band is 525 - 532 degrees. The second part is correct.

Answer B Discussion

Incorrect: First part is plausible because it is the lower end of the band for isolating the affected SG. The band is 525 - 532 degrees The second part is plausible since it would be correct if Tensile stress limits were exceeded (+130) however the value given exceeds the compressive stress limit of -70.

Answer C Discussion

Correct: The EOP allows SG isolation when RCS temperature is within the band of 525 - 532 degrees. The EOP directs steaming the effected SG when it approaches overfill conditions.

Answer D Discussion

Incorrect: First part is correct. The second part is plausible since it would be correct if Tensile stress limits were exceeded (+130) however the value given exceeds the compressive stress limit of -70.

Basis for meeting the KA

Question requires the ability to monitor a SG level and determine at what level it will be isolated with SGTR. Additionally requires knowledge of when the EOP would require steaming after it has been isolated and therefore the ability to "operate" and isolated SG.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj EAP-SGTR R5, R26 EAP-SGTR EOP SGTR Tab

Student References Provided

KA	KA_desc
EPE038	Ability to operate and monitor the following as they apply to a SGTR: (CFR 41.7 / 45.5 / 45.6)□Isolation of a ruptured S/G ....
EA1.32	

401-9 Comments:

Remarks/Status

KA	KA_desc
EPE055 EK1.01	Knowledge of the operational implications of the following concepts as they apply to the Station Blackout : (CFR 41.8 / 41.10 / 45.3)□Effect of battery discharge rates on capacity ....

Given the following conditions:

Initial conditions:

- All three units Reactor power = 100%

Current conditions:

- All Unit's 4160v Main Feeder Busses are de-energized
- Unit 1, 2, and 3 EOP Blackout tabs in progress

Which ONE of the following describes the required status of Unit 1 Essential Inverters in accordance with the EOP Enclosure 5.38 (Restoration of Power) AND the reason for the status?

A. remain energized to provide power to ES channels

B. remain energized to provide control power to 4160v switchgear

C. de-energized to prevent inverter damage

D. de-energized to extend available battery life

General Discussion

Answer A Discussion

Incorrect: Plausible since ES Channels are powered by inverters however they are vital loads powered from the "KVI" inverters (which do remain energized) and not the essential inverters (KI, KU, & KX),

Answer B Discussion

Incorrect: Plausible if control power (ex. for breakers, switches, etc) is incorrectly assumed to be essential inverter loads.

Answer C Discussion

Incorrect: Incorrect but plausible in that inverters could be damaged due to high current as input voltages start to decrease when battery voltages begin to decrease.

Answer D Discussion

Correct: Essential Inverters KI, KU, & KX DC input breakers are opened to extend battery life per direction given from the EOP SBO tab (Encl. 5.38 and tab Step 2.38)

Basis for meeting the KA

Requires knowledge of required actions within procedures and the correlation of the impact of high battery load on available battery capacity as the bases for actions directed in the EOP

This question matched this KA on 2009 NRC exam.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	2009 ONS RO exam Q48

Development References
Obj. EAP-SBO R8 EAP-SBO EOP Encl. 5.38

Student References Provided

KA	KA_desc
EPE055 EK1.01	Knowledge of the operational implications of the following concepts as they apply to the Station Blackout : (CFR 41.8 / 41.10 / 45.3)□Effect of battery discharge rates on capacity ....

401-9 Comments:

Remarks/Status

D

2009B ONS SRO NRC Examination QUESTION 8

8

KA	KA_desc
APE056 AA1.25	Ability to operate and / or monitor the following as they apply to the Loss of Offsite Power: (CFR 41.7 / 45.5 / 45.6)□Main steam supply valve control switch ....

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- Loss of offsite power occurs

Current conditions:

- Main Feeder Buses remain de-energized

1) The position of 1MS-112 (SSRH Control) is __(1)__.

2) 1MS-77 (MS to MSRH) __(2)__ be operated from the control room switch.

Which ONE of the following completes the statements above?

A. 1. open
   2. can

B. 1. closed
   2. can

C. 1. open
   2. can NOT

D. 1. closed
   2. can NOT

General Discussion

Answer A Discussion

Incorrect: Plausible since 1MS-112 is normally open at 100% power and it would be logical to assume that the valve would not operate with no AC power. Second part is plausible because other electric valves can be operated from the control room with the MFBs de-energized (Ex.. CCW-8).

Answer B Discussion

Incorrect: Plausible since 1MS-112 is normally open at 100% power and it would be logical to assume that the valve would not operate with no AC power. Second part is correct.

Answer C Discussion

Incorrect: First part is correct. Second part is plausible because other valves can be operated from the control room with the MFBs de-energized (Ex. CCW-8.).

Answer D Discussion

Correct: 1MS-112 will close on a loss of power due to IA porting off. 1MS-77 is an electric valve which cannot be operated from its control room switch.

Basis for meeting the KA

Question requires the ability to determine if a main steam control valve (1MS-77) will be operable from the control room switch following a Loss of Offsite Power..

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj. STG-MSR R17 STG-MSR

Student References Provided

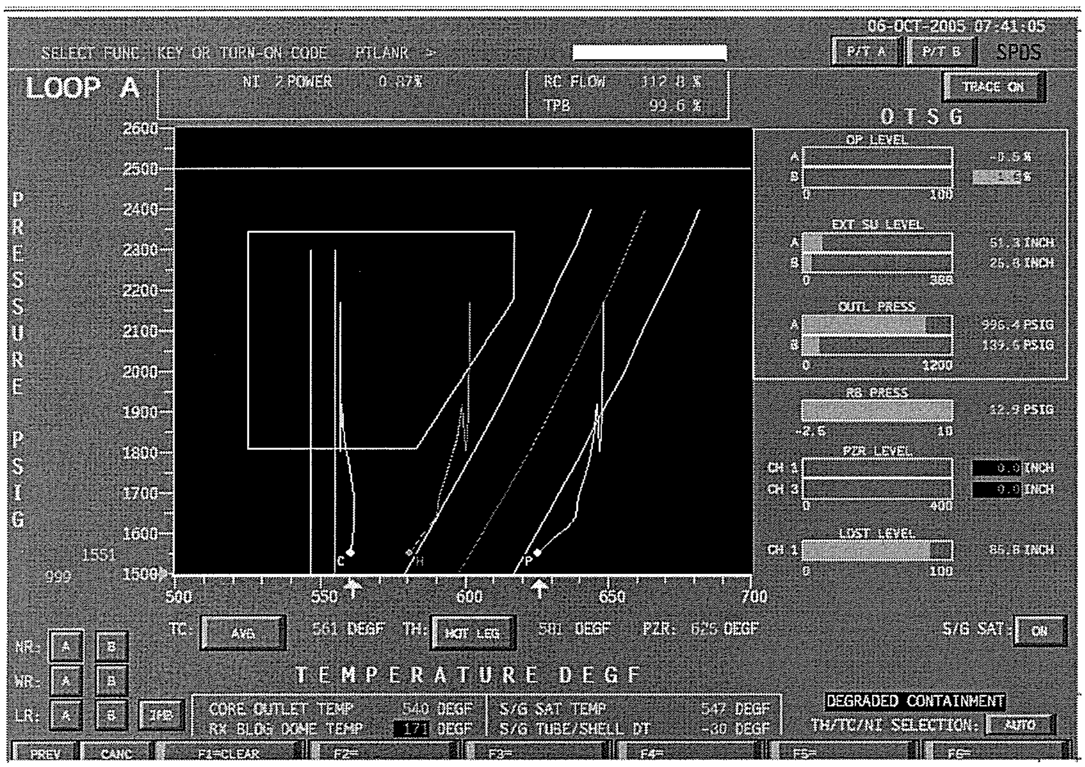
KA	KA_desc
APE056 AA1.25	Ability to operate and / or monitor the following as they apply to the Loss of Offsite Power: (CFR 41.7 / 45.5 / 45.6)□Main steam supply valve control switch ....

401-9 Comments:

Remarks/Status

KA	KA_desc
APE040	Ability to determine and interpret the following as they apply to the Steam Line Rupture: (CFR: 43.5 / 45.13)□When ESFAS systems may be secured ....
AA2.05	

Given the following Unit 1 conditions:



- Main Steam Line Break occurred 20 seconds ago
- Plant response as indicated above

1) The EOP will direct the operator to __(1)__.

2) The __(2)__ MDEFWP(s) will automatically start.

Which ONE of the following completes the statement above?

A. 1. Secure LPI pumps
   2. 1A ONLY

B. 1. Throttle HPI
   2. 1A ONLY

C. 1. Secure LPI pumps
   2. 1A and 1B

D. 1. Throttle HPI
   2. 1A and 1B

2009B ONS SRO NRC Examination QUESTION 9

9

A

General Discussion

Answer A Discussion

Correct. EOP Enclosure 5.1 directs the RO to secure any running LPIP's if LPIP's are running against shutoff head. TDH of an LPIP is about 180 psig therefore anything over about 200 psig would be shutoff head. Since RCS pressure is still 1550 psig the LPIP's would have no flow and would therefore need to be secured.
With a rapid depressurization of the 1B SG, AFIS will have secured the TDEFWP and the affected SG's MDEFWP.

Answer B Discussion

Incorrect. First part is plausible since it would be correct if Pressurizer level had returned to on scale however it still indicates 0". Second part is correct.

Answer C Discussion

Incorrect. First part is correct, Second part is plausible since it would be correct if there had not been a MSLB OR if the MSLB had been a small break that depressurized the SG at a rate of less than 3 psig/sec.

Answer D Discussion

Incorrect. First part is plausible since it would be correct if Pressurizer level had returned to on scale however it still indicates 0". Second part is plausible since it would be correct if there had not been a MSLB OR if the MSLB had been a small break that depressurized the SG at a rate of less than 3 psig/sec.

Basis for meeting the KA

Question requires knowledge of when the ES LPI pumps can be secured during a MSLB.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj. EAP-ESA R12 Obj. CF-EF R58 EAP-EHT EOP Enclosure 5.1, ES Actuation CF-EF

Student References Provided

KA	KA_desc
APE040	Ability to determine and interpret the following as they apply to the Steam Line Rupture: (CFR: 43.5 / 45.13)□When ESFAS systems may be secured ....
AA2.05	

401-9 Comments:

Remarks/Status

B

2009B ONS SRO NRC Examination QUESTION 10

10

KA	KA_desc
APE051 AK3.01	Knowledge of the reasons for the following responses as they apply to the Loss of Condenser Vacuum: (CFR 41.5,41.10 / 45.6 / 45.13)□Loss of steam dump capability upon loss of condenser vacuum ....

Given the following Unit 3 conditions:

Initial conditions:
- Reactor power = 100%
- Reactor trip

Current conditions:
- ALL TBV's are in AUTO and closed
- Main Steam pressure cycling between 1050 psig and 1070 psig

1) The current conditions are a result of __(1)__.

2) The __(2)__ will be used to restore control of MS pressure in accordance with the EOP.

Which ONE of the following completes the statements above?

A. 1. Condenser vacuum = 6" hg
   2. TBV's in MANUAL

B. 1. Condenser vacuum = 6" hg
   2. Atmospheric Dump Valves

C. 1. Selected Turbine Header Pressure failed low
   2. TBV's in MANUAL

D. 1. Selected Turbine Header Pressure failed low
   2. Atmospheric Dump Valves

2009B ONS SRO NRC Examination QUESTION 10

10

B

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible for two reasons: (1) For other conditions that would have the TBV's closed (ex. Inst failures), the TBV's can still be controlled in HAND however the vacuum interlock is downstream of the control room bailey and therefore controlling in HAND from the control room will not work. (2) If you realize that the low Vacuum will not allow manual control from the control room, it is still plausible since manual control from the Aux SD panel is still available however the EOP does not use this option.

Answer B Discussion

Correct. The cycling MS pressure is indicative of steam pressure being controlled by the Main Steam Relief Valves. There is a low vacuum interlock with the TBV's to protect the condenser from overpressurization which at 7" vacuum fails the TBV's closed. The interlock is downstream of the control room bailey stations and therefore even manual control from the control room is lost. If the TBV's are unavailable, the EOP directs using the ADV's to control steam pressure.

Answer C Discussion

Incorrect. First part is plausible since under normal conditions with the turbine in AUTO, Turbine Header Pressure is the pressure used to control the TBV's however after the Rx trip, TBV control uses SG Outlet Pressure so this failure would have no impact on TBV operation at this time. Second part is plausible since manual control of TBV's would be used if an instrument failure had caused the TBV's to be closed.

Answer D Discussion

Incorrect. First part is plausible since under normal conditions with the turbine in AUTO, Turbine Header Pressure is the pressure used to control the TBV's. However, after the Rx trip, TBV control uses SG Outlet Pressure so this failure would have no impact on TBV operation at this time. Second part is plausible since the EOP directs using the ADV's if the TBV's are unavailable.

Basis for meeting the KA

Requires knowledge of the reason normal steam pressure control is unavailable during a loss of condenser vacuum.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	MODIFIED	2007 NRC retest Q21

Development References
Obj STG-ICS R10 STG-ICS Chapter 3 EOP SA tab AP27

Student References Provided

KA	KA_desc
APE051 AK3.01	Knowledge of the reasons for the following responses as they apply to the Loss of Condenser Vacuum: (CFR 41.5,41.10 / 45.6 / 45.13)□Loss of steam dump capability upon loss of condenser vacuum ....

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 11

11

C

KA	KA_desc
EPE009	Ability to determine or interpret the following as they apply to a small break LOCA: (CFR 43.5 / 45.13)□Existence of head bubble ....
EA2.38	

Given the following Unit 1 conditions:

- SBLOCA has occurred
- ALL SCM's = 0°F stable
- RCS pressure = 745 psig slowly decreasing
- LOCA Cooldown Tab in progress

Which ONE of the following describes:

1) the HIGHEST Rx vessel head level (inches) that would indicate voiding in the Rx vessel head?

2) conditions that would make the RV head level NOT valid?

A.
1. 523
2. Starting 1A LPI pump

B.
1. 523
2. Open Reactor vessel head high point vents

C.
1. 161
2. Starting 1A LPI pump

D.
1. 161
2. Open Reactor vessel head high point vents

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11

C

General Discussion

Answer A Discussion

Incorrect: First part is plausible because this would be correct regarding hot leg voiding since the range of the hot leg level instrument is 0 - 600 inches and EOP LCD tab takes actions on hot leg voids if <537 inches. Second part is correct,

Answer B Discussion

Incorrect: First part is plausible because this would be correct regarding hot leg voiding since the range of the hot leg level instrument is 0 - 600 inches and EOP LCD tab takes actions on hot leg voids if <537 inches. Second part is plausible. When utilizing the ICCM Hot Leg level instrumentation, the indications are made not valid if the hot leg high point vents are opened therefore it would be plausible to believe that if the RV level high point vents are opened it would make the RV level indications not valid.

Answer C Discussion

Correct: As per EOP LCD guidance, a Rx vessel head void is indicated d if head level is less than or equal to 163 inches. If either an RCP or an LPI pump is started it makes the RV head level indications NOT valid.

Answer D Discussion

Incorrect: First part is plausible. Second part is plausible. When utilizing the ICCM Hot Leg level instrumentation, the indications are made not valid if the hot leg high point vents are opened therefore it would be plausible to believe that if the RV level high point vents are opened it would make the RV level indications not valid.

Basis for meeting the KA

Question requires knowledge of the level indications that would indicate a Rx vessel head void during a SBLOCA. Also required knowledge of what makes the RV head level indications not valid.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj. EAP-LOCA CD T1, R9 EAP-LOCA CD LOCA CD Tab IC-RCI

Student References Provided

KA	KA_desc
EPE009	Ability to determine or interpret the following as they apply to a small break LOCA: (CFR 43.5 / 45.13)□Existence of head bubble ....
EA2.38	

401-9 Comments:

Remarks/Status

KA	KA_desc
APE025 AA1.03	Ability to operate and / or monitor the following as they apply to the Loss of Residual Heat Removal System: (CFR 41.7 / 45.5 / 45.6)□LPI pumps ....

Given the following Unit 1 conditions:

Initial conditions:

- Reactor in MODE 5
- Reactor vessel level = 84 inches stable
- Normal LPI decay heat removal in service
- 1C LPI pump operating

Current conditions:

- Reactor vessel level = 84 inches stable
- 1C LPI pump amps are cycling 5 – 55 amps
- 1C LPI pump discharge pressure is fluctuating

Which ONE of the following describes:

1) the Immediate Manual Action(s) required by AP/26 (Loss of Decay heat Removal)?

2) how RCS temperature will be controlled once normal decay heat removal has been restored?

A. 1. Secure the 1C LPI pump ONLY
   2. Adjusting LPSW to LPI coolers

B. 1. Secure the 1C LPI pump ONLY
   2. Adjusting LPI flow through LPI coolers

C. 1. Secure the 1C LPI pump and start the 1A LPI pump
   2. Adjusting LPSW to LPI coolers

D. 1. Secure the 1C LPI pump and start the 1B LPI pump
   2. Adjusting LPI flow through LPI coolers

General Discussion

Answer A Discussion

Correct: AP/26 IMA's step 3.2 states IAAT LPI pump is cavitating THEN secure the affected pump. On units 1&2, LPSW to the LPI coolers is used to adjust RCS temperature when on normal DHR.

Answer B Discussion

Incorrect: First part is correct. Second part is plausible since it would be correct if on Unit 3..

Answer C Discussion

Incorrect: First part is plausible since securing the pump is correct and starting one of the other LPI pumps is plausible since it would restore LPI flow and is ultimately actions that would be directed by AP/26 however it is not part of the IMA's as the cause of cavitation is diagnosed prior to starting one of the other pumps. Second part is correct.

Answer D Discussion

Incorrect: First part is plausible since securing the pump is correct and starting one of the other LPI pumps is plausible since it would restore LPI flow and is ultimately actions that would be directed by AP/26 however it is not part of the IMA's as the cause of cavitation is diagnosed prior to starting one of the other pumps. Second part is plausible since it would be correct if on Unit 3..

Basis for meeting the KA

Question requires knowledge of the action to take when LPI (DHR) pump is cavitating as well as the ability to recognize indications of LPI pump cavitation.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj. TA-DHR R16 TA-DHR AP-26 (not available electronically)

Student References Provided

KA	KA_desc
APE025 AA1.03	Ability to operate and / or monitor the following as they apply to the Loss of Residual Heat Removal System: (CFR 41.7 / 45.5 / 45.6)□LPI pumps ....

401-9 Comments:

Remarks/Status

KA	KA_desc
EPE029	Knowledge of the operational implications of the following concepts as they apply to the ATWS: (CFR 41.8 / 41.10 / 45.3)□Reactor nucleonics and thermo-hydraulics behavior ....
EK1.01	

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- Feedwater and Reactor in MANUAL

Current conditions:

- BOTH Main Feedwater pumps trip
- Reactor power = 35% decreasing
- RCS pressure = 2378 psig increasing
- Rule 1 (ATWS/Unanticipated Nuclear Power Production) in progress

__(1)__ will be the FIRST to add negative reactivity to the reactor AND the position of the PORV is __(2)__.

Which ONE of the following completes the statement above?

A. 1. Moderator temperature coefficient
   2. open

B. 1. Moderator temperature coefficient
   2. closed

C. 1. Control Rods
   2. open

D. 1. Control Rods
   2. closed

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B

General Discussion

Answer A Discussion

Incorrect: First part is correct. Second part is plausible because the pressure is above the spray setpoint and it would be plausible to confuse the spray setpoint with the PORV actuation setpoint since they are both related to RCS pressure control.

Answer B Discussion

Correct: Moderator temperature coefficient will be the first to add reactivity to the core and the PORV will be closed due to RCS pressure below the setpoint of 2450 psig.

Answer C Discussion

Incorrect: Plausible because this would be the correct answer for normal power decreases done in accordance with plant procedures. Additionally, inserting Control Rods is the first action taken in Rule 1 however RCS heatup would already have caused a negative reactivity insertion due to Moderator Temp. Second part is plausible because the RCS pressure used in the stem is above the pressurizer spray setpoint and it would be plausible to confuse the spray setpoint with the PORV actuation setpoint since they are both related to RCS pressure control. Additionally, the pressure used is above the RCS High Pressure trip setpoint (as is the actual PORV setpoint). Since actual setpoint is 2450, it is a reasonable misconception that the setpoint is 2350 since both are above the high pressure trip setpoint and below the Code Safety valve setpoints.

Answer D Discussion

Incorrect: Plausible because this would be the correct answer for normal power decreases done in accordance with plant procedures. Additionally, inserting Control Rods is the first action taken in Rule 1 however RCS heatup would already have caused a negative reactivity insertion due to Moderator Temp. Second part is correct.

Basis for meeting the KA

Question requires knowledge of the reactor theory (nucleonics) and the operational impact of Rx theory (Moderator Temperature coefficient) during an ATWS.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj. PNS-PZR R5 EOP Rule 1

Student References Provided

KA	KA_desc
EPE029 EK1.01	Knowledge of the operational implications of the following concepts as they apply to the ATWS: (CFR 41.8 / 41.10 / 45.3)□Reactor nucleonics and thermo-hydraulics behavior ....

401-9 Comments:

Remarks/Status

KA	KA_desc
APE054	Ability to determine and interpret the following as they apply to the Loss of Main Feedwater (MFW): (CFR: 43.5 / 45.13)□AFW adjustments needed to maintain proper T-ave. and S/G level ....
AA2.06	

Given the following Unit 2 conditions:

Initial conditions:

- Reactor power = 100%
- Both Main FDW pumps trip
- 2A and 2B MDEFDW pumps did NOT start
- TDEFWP did NOT start

Current conditions:

- Tave = 566°F stable
- Recovery from CBP feed with the TDEFDW pump is in progress
- TDEFWP is running and flow has been verified

1) Tave will INITIALLY be controlled by throttling __(1)__.

2) INITIALLY a SG level __(2)__ be established.

Which ONE of the following completes the statements above?

A. 1. EFDW flow
2. will NOT

B. 1. the TBVs
2. will NOT

C. 1. EFDW flow
2. will

D. 1. the TBVs
2. will

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14

A

General Discussion

Answer A Discussion

Correct: Because Tave is greater than 547 degrees a level will not initially be established and temperature will be controlled by throttling EFD flow.

Answer B Discussion

Incorrect: Plausible because SG pressure normally dictates RCS temperature and therefore TBV's are used to control RCS temperature. However during CBP feed recovery with RCS temp > 547 degrees, the TBV's are placed in AUTO with setpoint at 885 psig which will result in TBV's being initially closed and temp being controlled with feed rate. Second part is correct.

Answer C Discussion

Incorrect: First part is correct. Second part is plausible because it would be correct if Tave was less than 547 degrees which would allow establishing a SG level without excessive cooldown.

Answer D Discussion

Incorrect: Plausible because SG pressure normally dictates Tave however with no level in the SG, RCS temp is controlled by EFDW flow instead of SG pressure. Second part is plausible because it would be correct if Tave was less than 547 degrees which would allow establishing a SG level without excessive cooldown.

Basis for meeting the KA

Question requires knowledge of how to control Tave (by way of controlling Aux feedwater flow and/or SG level) following a loss of Main FDW while recovering from CBP feed.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj EAP LOHT R6 EAP-LOHT LOHT Tab

Student References Provided

KA	KA_desc
APE054 AA2.06	Ability to determine and interpret the following as they apply to the Loss of Main Feedwater (MFW): (CFR: 43.5 / 45.13)□AFW adjustments needed to maintain proper T-ave. and S/G level ....

401-9 Comments:

Remarks/Status

KA	KA_desc
APE057	Ability to operate and / or monitor the following as they apply to the Loss of Vital AC Instrument Bus: (CFR 41.7 / 45.5 / 45.6)□Backup instrument indications ....
AA1.05	

Given the following Unit 1 conditions:

- Reactor power = 100%
- OAC Computer Out of Service
- 1KVIC deenergized

Which ONE of the following describes the instrumentation used to determine axial imbalance in accordance with OP/1/A/1105/014 (Control Room Instrumentation Operation And Information)?

A. Incore Detectors

B. Backup Incore Detectors

C. Imbalance readout indications in RPS cabinets

D. Control Room Power Range Dixon gauge indications

General Discussion

Answer A Discussion

Incorrect. Plausible since it would be correct if the Computer Reactor Calculation Package were operable but with the OAC OOS, it is not.

Answer B Discussion

Correct. Per OP/1105/014, the order of preference of measurement systems to determine axial imbalance and quadrant power tilt is as follows:
1. Incore Detectors (Computer Reactor Calculation Package).
2. Outcore Detectors (Power Range Outcore Detectors).
3. Backup Incore Detectors. Refer to PT/0/A/1103/019 (Backup Incore Detector System).

Incores cannot be used since the Computer Calc Package is not running.

Per procedure, if at least one power range outcore detector is NOT operable in each quadrant (NI-5 thru NI-8), outcore detectors shall NOT be used to measure axial imbalance or quadrant power tilt.

Since 1KVIC is de-energized, one of the power range detectors is not available therefore outcore detectors should not be used since one not available in each quadrant.

Answer C Discussion

Incorrect. Plausible since there is an analog excore imbalance meter indication available on the Linear Amplifier meter face in the RPS cabinet that can be used as a backup or validation of the control room imbalance Dixon gages.

Answer D Discussion

Incorrect. Per 1105/14:

Order of preference of measurement systems to determine axial imbalance and quadrant power tilt is as follows:
1. Incore Detectors (Computer Reactor Calculation Package).
2. Outcore Detectors (Power Range Outcore Detectors).
3. Backup Incore Detectors. Refer to PT/0/A/1103/019 (Backup Incore Detector System).

Per procedure, if at least one power range outcore detector is NOT operable in each quadrant (NI-5 thru NI-8), outcore detectors shall NOT be used to measure axial imbalance or quadrant power tilt.

Since 1KVIC is de-energized, one of the power range detectors is not available therefore outcore detectors should not be used since one not available in each quadrant.

Basis for meeting the KA

Requires the ability to determine what instrumentation to utilize when monitoring Reactor Imbalance with a loss of one of the Vital AC instrument busses (KVIC).

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj. ADM-PIS R5 OP/1105/014

Student References Provided

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B

KA	KA_desc
APE057 AA1.05	Ability to operate and / or monitor the following as they apply to the Loss of Vital AC Instrument Bus: (CFR 41.7 / 45.5 / 45.6)□Backup instrument indications ....

401-9 Comments:

Remarks/Status

KA	KA_desc
APE065 AK3.04	Knowledge of the reasons for the following responses as they apply to the Loss of Instrument Air: (CFR 41.5,41.10 / 45.6 / 45.13)□Cross-over to backup air supplies ....

Given the following Unit 1 conditions:

- Reactor power = 100%
- SA-141 (SA to IA Controller) failed closed

Which ONE of the following would result in the Auxiliary Instrument Air system being required to maintain 1HP-5 OPEN assuming NO operator actions are taken?

A. Unit 1 blackout occurs

B. Mechanical failure of the Primary IA compressor

C. 2 inch IA header rupture in Unit 1 East Penetration room

D. 230KV Red Bus lockout occurs in the 230KV switchyard

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16

C

General Discussion

Answer A Discussion

Incorrect. Plausible since these conditions would result in losing all but 1 of the IA supply systems. Additionally plausible since this would mean that no 4160V power is available to Unit 1 and all unit AC powered equipment would lose power.

Answer B Discussion

Incorrect. Plausible since the Primary IA compressor is the normal supply to the IA header however the Backup IA compressors can maintain IA header pressure on a loss of the Primary IA compressor. This choice is incorrect since a mechanical failure of the Primary IA compressor would not impact the operability of the Backup IA compressors and since they are maintained in Standby they would start and supply the IA system which means the Auxiliary Instrument Air system would not be required.

Answer C Discussion

Correct. The existing Instrument Air system, including the Primary Instrument Air Compressor, can handle a 1.5-inch diameter or smaller break. This means that if the break is > 1.5 inches, the system is not capable of maintaining the air pressure high enough to operate components.
The AIA system has spring loaded check valves located at major junctions of the IA and AIA systems and at each of the individual components served. These will close if the IA system begins to depressurize

Answer D Discussion

Incorrect. Plausible since the normal supply to 1HP-5 is provided by the Primary IA system and the normal power supply to the Primary IA compressor is from the 230KV switchyard red buss and would therefore be unavailable to provide power to the Primary IA compressor following a red buss lockout. Additional plausibility is from having to assess if the backup IA compressors are going to be available following the red buss lockout however 4160V power would not be lost therefore the Backup IA compressors would still be available.

Basis for meeting the KA

Requires knowledge of the reason for providing Auxiliary Instrument Air supply to selected components. Knowledge of the fact that the AIA system is meant to provide air to selected components in the event of a line break of > 1.5 inches in the normal IA supply to the valve is required to arrive at the correct choice.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj. SSS-IA R38 SSS-IA

Student References Provided

KA	KA_desc
APE065 AK3.04	Knowledge of the reasons for the following responses as they apply to the Loss of Instrument Air: (CFR 41.5,41.10 / 45.6 / 45.13)□Cross-over to backup air supplies ....

401-9 Comments:

Remarks/Status

KA	KA_desc
APE077 AK2.07	Knowledge of the interrelations between Generator Voltage and Electric Grid Disturbances and the following: (CFR: 41.4, 41.5, 41.7, 41.10 / 45.8)□Turbine / generator control..

Given the following Unit 3 conditions:

- A voltage disturbance is occurring
- AP/34 (Degraded Grid) initiated
- Power Factor is leading
- Generator Mwe = 900
- Generator Hydrogen pressure = 60 psig
- Generator output voltage = 18.3 kV

Which ONE of the following is the limit on MVARs in accordance with the Generator Capacity Curve?

REFERENCE PROVIDED

A. 250

B. 290

C. 350

D. 475

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General Discussion

Adjusted format based on Chief Examiners feedback.

Answer A Discussion

Incorrect. Plausible since this is the correct answer if the wrong curve is chosen based on generator output voltage but the curve is read correctly for the given conditions.

Answer B Discussion

Incorrect. Plausible since this is the correct answer if the wrong curve is chosen based on generator output voltage and then interpolated for Generator Output Voltage rather then dropping to lower line.

Answer C Discussion

Correct. Using Encl. 5.1 Capability curve and the parameters described in the stem, this is the MVAR limit.

Answer D Discussion

Incorrect, plausible since this is correct for a lagging power factor which is the normal status of the power factor.

Basis for meeting the KA

Requires knowledge of the relationship between degraded generator output voltage and MVAR limit based on power factor.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	MODIFIED	NRC 2009 NRC Q17 Modified

Development References
Obj. EAP-APG R9 AP/34

Student References Provided
AP/34

KA	KA_desc
APE077 AK2.07	Knowledge of the interrelations between Generator Voltage and Electric Grid Disturbances and the following: (CFR: 41.4, 41.5, 41.7, 41.10 / 45.8)□Turbine / generator control..

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 18

18 D

KA	KA_desc
BWE04	Knowledge of the operational implications of the following concepts as they apply to the (Inadequate Heat Transfer):
EK1.2	(CFR: 41.8 / 41.10 / 45.3)□Normal, abnormal and emergency operating procedures associated with (Inadequate Heat Transfer).

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%

Current conditions:

- Both Main Feedwater pumps tripped
- EFDW NOT available
- 1TD de-energized
- RCS pressure = 2217 psig slowly increasing

1) The __(1)__ will be aligned FIRST to provide decay heat removal in accordance with the EOP.

2) AP/11 (Recovery from Loss of Power) __(2)__ be used to restore power to 1TD.

Which ONE of the following completes the statements above?

A. 1. HPI Pumps
   2. will

B. 1. HPI Pumps
   2. will NOT

C. 1. Condensate Booster Pumps
   2. will

D. 1. Condensate Booster Pumps
   2. will NOT

2009B ONS SRO NRC Examination QUESTION 18

18

D

General Discussion

Answer A Discussion

Incorrect. First part is plausible since it would be correct if RCS pressure were > 2300 psig. Additionally plausible since 1TD is de-energized therefore ALL CBP's are not available. Second part is plausible since there is a loss of one of the 4160V busses and AP/11 can be used if only one or two of the three 4160V busses are energized (as long as all of them had originally lost power and then power had been restored to any of them). The entry conditions for AP/11 would be met if all 4160V busses had been lost and then power restored to any one of them.

Answer B Discussion

Incorrect. First part is plausible since it would be correct if RCS pressure were > 2300 psig. Additionally plausible since 1TD is de-energized therefore ALL CBP's are not available. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible since there is a loss of one of the 4160V busses. It would be correct if all 4160V busses had been lost.

Answer D Discussion

Correct. With a loss of Main and EFDW, Rule 3 will establish CBP feed as long as it can be accomplished prior to reaching RCS pressure of 2300 psig. The LOHT tab would be used since there is not a TOTAL loss of 4160V power.

Basis for meeting the KA

Requires knowledge of the operational implications of a loss of all Main and Emergency Feedwater in that knowledge of the procedural directed hierarchy of desired core cooling and the criteria for its use is required.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj EAP-LOHT R24, R1 EOP LOHT tab Rule 4 Rule 3 AP/11 Entry Conditions

Student References Provided

KA	KA_desc
BWE04 EK1.2	Knowledge of the operational implications of the following concepts as they apply to the (Inadequate Heat Transfer): (CFR: 41.8 / 41.10 / 45.3)□Normal, abnormal and emergency operating procedures associated with (Inadequate Heat Transfer).

401-9 Comments:

Remarks/Status

KA	KA_desc
BWE10	Knowledge of the interrelations between the (Post-Trip Stabilization) and the following:
EK2.2	(CFR: 41.7 / 45.7)□Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.

Given the following Unit 3 conditions:

- Reactor power = 100%

Which ONE of the following would result in an AUTOMATIC injection of HPI AND would require performing EOP Encl. 5.1 (ES Actuation)?

A reactor trip ______.

A. followed by an inadvertent ES channel 1 actuation

B. due to a Steam Line break on piping between 3B2 MSR outlet and inlet to C LP Turbine

C. with main and startup feedwater control valves in HAND

D. concurrent with a failure of the TBV 125 psi bias to be applied following the trip

General Discussion

Answer A Discussion

Incorrect. Plausible since the EOP would be in progress due to the Rx trip and the inadvertent ES-1 would result in HPI injection however Enclosure 5.1 would not be entered since it is not a valid ES actuation.

Answer B Discussion

Incorrect. Plausible since it is a steam line break and would cause a Rx trip and EOP entry however the overcooling and RCS depressurization normally associated with a steam line break would not occur since the location of the leak would mean it is isolated on the Rx trip when the MSSV's close.

Answer C Discussion

Incorrect. Plausible since the feedwater valves remaining open would cause an overcooling event that would lead to ES actuation on low RCS pressure. Incorrect because ICS automatically returns the feedwater control valves to Auto on a Rx trip to prevent an overcooling event.

Answer D Discussion

Correct. Failure of the 125 psig bias would result in TBV's controlling SG pressure at setpoint (885) which would result in a rapid cooldown to around 532 degrees. The associated RCS depressurization would result in ES 1&2 actuation on low RCS pressure. This event actually occurred on Unit 3.

Basis for meeting the KA

Requires knowledge of the relationship of post trip stabilization and the correct operations of heat removal systems. Additionally requires knowledge of how a malfunction of the heat removal system impacts operation of the facility.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj STG-ICS R10 MSRH drawing STG-ICS Shutdown Procedure

Student References Provided

KA	KA_desc
BWE10 EK2.2	Knowledge of the interrelations between the (Post-Trip Stabilization) and the following: (CFR: 41.7 / 45.7)□Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility.

401-9 Comments:

Remarks/Status

KA	KA_desc
APE005 AA1.01	Ability to operate and / or monitor the following as they apply to the Inoperable / Stuck Control Rod: (CFR 41.7 / 45.5 / 45.6)□CRDS ....

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 68% stable
- 1B2 RCP secured
- Control Rod Group 7 position = 65% withdrawn

Current conditions

- Control Rod Group 7 Rod 1 drops to 40% withdrawn

1) The CRD system __(1)__ generate a runback fault.

2) The MAXIMUM final power level (Core Thermal Power) directed by AP/1 (Unit Runback) is __(2)__.

Which ONE of the following completes the statements above?

A. 1. will
   2. $\leq$60%

B. 1. will
   2. $\leq$45%

C. 1. will NOT
   2. $\leq$60%

D. 1. will NOT
   2. $\leq$45%

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D

General Discussion

Answer A Discussion

Incorrect: First part is plausible because an asymmetric fault does exist. However the runback fault is not met because the affected rod does not have a 0% or in limit. Second part is plausible since it would be correct if all 4 RCP's were operating.

Answer B Discussion

Incorrect: First part is plausible because an asymmetric fault does exist. However the runback fault is not met because the affected rod does not have a 0% or in limit. Second part is correct.

Answer C Discussion

Incorrect: First part is correct. Second part is plausible since it would be correct if all 4 RCP's were operating.

Answer D Discussion

Correct: If any individual rod in groups 1-7 has a 0% or In Limit indication along with an individual rod asymmetric rod fault a runback fault will be generated. These conditions are not met. With 3 RCP's operating, the maximum allowable thermal power is 75%. With a dropped or misaligned rod, power must be reduced to 60% of allowable thermal power. AP/1 directs decreasing power to less than or equal to 45%.

Basis for meeting the KA

Question requires the ability to monitor the CRDS response to an inoperable rod including when a runback fault is generated by the CRD system and the plant response. Also requires ability to determine when/if manual operation of the CRDS is required. Since there is no automatic runback generated in this case, a manual power reduction must be performed to reach the appropriate power level.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj. IC-CRI R33 IC-CRI

Student References Provided

KA	KA_desc
APE005 AA1.01	Ability to operate and / or monitor the following as they apply to the Inoperable / Stuck Control Rod: (CFR 41.7 / 45.5 / 45.6)□CRDS ....

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 21

21

C

KA	KA_desc
APE032	Knowledge of the operational implications of the following concepts as they apply to Loss of Source Range Nuclear Instrumentation: (CFR 41.8 / 41.10 / 45.3)□Effects of voltage changes on performance ....
AK1.01	

Given the following Unit 1 conditions:

Initial conditions:

- Mode 6
- Fuel assemblies are being loaded into the core
- All four SR NIs in service
- SR 1NI-1 and SR 1NI-3 are the designated NIs for Fuel Handling

Current conditions:

- Power supply to SR 1NI-1 fails (0 vdc)

Which ONE of the following describes the impact on fuel movement in accordance with OP/1/A/1502/007 (Operations Defueling/Refueling Responsibilities)?

A. Allowed to continue because two other SR NIs remain in service

B. Allowed to continue because SR NI-3 is still in service

C. Required to be stopped until another SR NI is designated because other NIs are procedurally allowed to be designated

D. Required to be stopped and cannot be resumed until SR 1NI-1 is returned to service because other NIs are NOT procedurally allowed to be designated

2009B ONS SRO NRC Examination QUESTION 21

21

C

General Discussion

Answer A Discussion

Incorrect: Plausible because the two SR NIs remain in service however the procedure requires the NIs used to monitor core reactivity be designated in advance.

Answer B Discussion

Incorrect: Plausible if it is not understood that the procedure requires 2 designated NIs to be operable.

Answer C Discussion

Correct: Procedure requires movement to be stopped until 2 NIs used to monitor core reactivity can be designated.

Answer D Discussion

Incorrect: Plausible as restoring SR NI-1 would restore 2 designated NIs however the procedure allows an alternate NI to be designated and then continue fuel movement. It is not required to restore NI-1 if another NI can be designated to replace it.

Basis for meeting the KA

Requires knowledge of the operational implications of a loss of a designated SR NI due to low voltage during fuel handling.

This KA matched this question on 2009 NRC exam.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	2009 ONS RO Q23

Development References
Obj. FH-FHS R20 FH-FHS OP/1/A/1502/007

Student References Provided

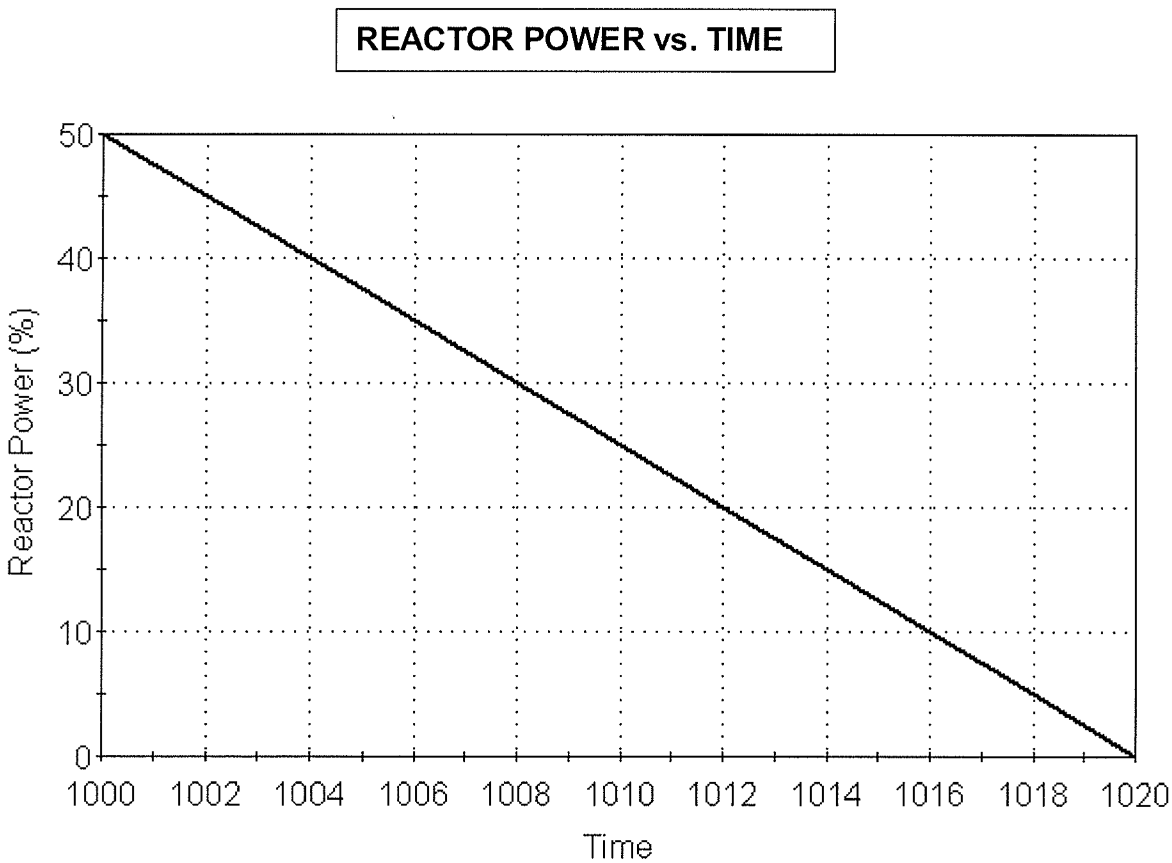
KA	KA_desc
APE032 AK1.01	Knowledge of the operational implications of the following concepts as they apply to Loss of Source Range Nuclear Instrumentation: (CFR 41.8 / 41.10 / 45.3)□Effects of voltage changes on performance ....

401-9 Comments:

Remarks/Status

KA	KA_desc
APE061	Knowledge of the operational implications of the following concepts as they apply to Area Radiation Monitoring (ARM) System Alarms: CFR 41.8 / 41.10 / 45.3)□Detector limitations ....
AK1.01	

Given the following graph:



Which ONE of the following states the LATEST time that 1RIA-59 and 1RIA-60 (Main Steam Line N16 Detectors) will be used to provide a valid indication of Steam Generator tube leakage in accordance with the EOP?

A. 1004

B. 1012

C. 1014

D. 1020

General Discussion

Answer A Discussion

Correct. To ensure a valid indication of SGTL rate, 40% power level is the power level that the EOP uses as a threshold value to determine if the RIA's should be used.

Answer B Discussion

Incorrect. Plausible since 20% power is the power level at which the indications for the RIA's will turn Magenta in color.

Answer C Discussion

Incorrect. Plausible since this time correlates to 15% power which is a threshold power level in the SGTR tab where the EOP determines to trip the Main Turbine. 15% is also the target power level for the ICS MAX Runback circuit which adds additional plausibility.

Answer D Discussion

Incorrect. Plausible since this time correlates to 0% power. Since the RIA's are N16 detectors and N16 production is a function of power level it would be plausible to believe that the RIA's would be accurate once the Rx was critical since that is where N16 production would begin.

Basis for meeting the KA

Requires knowledge of the operational implications of the administrative limitations of the N16 detectors (which are based on its physical limitations) associated with RIA-59/60. Specifically requires knowing the threshold value used in the EOP to ensure that the detector is providing a valid indication to be used as actual SGTL rate.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj Rad-RIA R2 RAD-RIA EOP SGTR tab

Student References Provided

KA	KA_desc
APE061 AK1.01	Knowledge of the operational implications of the following concepts as they apply to Area Radiation Monitoring (ARM) System Alarms: CFR 41.8 / 41.10 / 45.3)□Detector limitations ....

401-9 Comments:

Remarks/Status

KA	KA_desc
APE069	APE069 GENERIC□Knowledge of conditions and limitations in the facility license. (CFR: 41.7 / 41.10 / 43.1 / 45.13)
2.2.38	

Given the following Unit 1 conditions:

- Reactor in MODE 3
- Unit shutdown in progress
- Containment declared NOT OPERABLE

The MAXIMUM Completion Time allowed by Tech Spec 3.6.1 (Containment) to restore Containment to OPERABLE is __(1)__ AND the HIGHER RCS temperature (degrees F) that would result in being in MODE 4 is __(2)__.

Which ONE of the following completes the statement above?

A. 1. One hour
   2. 245

B. 1. Immediately
   2. 245

C. 1. One hour
   2. 255

D. 1. Immediately
   2. 255

General Discussion

Answer A Discussion

Correct. TS 3.6.1 provides 1 hour to restore containment to operable and MODE 4 entry occurs at 250 degrees.

Answer B Discussion

Incorrect. First part is plausible since Immediately is a common completion time in TS. Immediately is plausible since it is discussed in Section 1 of TS and does not require "immediate" completion of a task only that the task be pursued "without delay and in a controlled manner". Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible since it would be correct regarding MODE 5 entry.

Answer D Discussion

Incorrect. First part is correct. Immediately is a plausible completion time since the TS definition of "Immediately" as a completion time does not require the act be completed immediately, only actions taken to begin completing the act be initiated immediately. Additionally, this completion time is a common completion time used throughout Tech Specs. Second part is plausible since it would be correct regarding MODE 5 entry.

Basis for meeting the KA

Requires knowledge of limitation in the facility license (Tech Specs) regarding time allowed to restore Containment to Operable prior to requiring additional compensatory actions.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj ADM-TSS R4 TS 3.6.1 TS Definitions

Student References Provided

KA	KA_desc
APE069	APE069 GENERIC□Knowledge of conditions and limitations in the facility license. (CFR: 41.7 / 41.10 / 43.1 / 45.13)
2.2.38	

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 24 24 **B**

KA	KA_desc
APE076	Knowledge of the interrelations between the High Reactor Coolant Activity and the following: (CFR 41.7 / 45.7)□Process radiation monitors ....
AK2.01	

Given the following Unit 1 conditions:

Initial conditions:
- Time = 1200
- Reactor power = 100%
- 1A steam generator tube leak = 2.1 gpd stable
- RCS activity = 0.25 µCi/ml DEI increasing

Current conditions:
- Time = 1400
- NO change in 1A SG tube leak rate
- RCS activity = 0.65 µCi/ml DEI increasing

Which ONE of the following describes the response of the radiation monitors between 1200 and 1400?

A. 1RIA-59 (N-16 monitor) and 1RIA-40 (CSAE Off-gas) increased.

B. 1RIA-16 (Main Steam Line Monitor) and 1RIA-40 increased.

C. 1RIA-59 increased while1RIA-40 remained constant.

D. 1RIA-16 increased while 1RIA-40 remained constant.

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B

General Discussion

Answer A Discussion

Incorrect. RIA-40 will be affected by the fuel failure, whereas RIA 59 (N-16 detectors) will not. Plausible since RIA-59 & 60 are Main Steam Line monitors and activity that leaks to the secondary side will pass by the RIA's on the way to the Main Turbine however since they are N16 monitiors, the increase in activity will not impact their readings.

Answer B Discussion

Correct: RIA-16 and 40 will respond to ALL activity, therefore an increase in RCS activity, which the stem provides with a degrading fuel failure, would cause both to increase.

Answer C Discussion

Incorrect. RIA-40 will be affected by the fuel failure, whereas RIA 59 (N-16 detectors) will not. Plausible since RIA-40 is reading Air Ejector off gas flow and not directly monitoring the RCS.

Answer D Discussion

Incorrect. RIA-16 is correct however RIA-40 will be affected by the fuel failure as described in A. Plausible since RIA-40 is reading Air Ejector off gas flow and not directly monitoring the RCS.

Basis for meeting the KA

Knowledge of the interrelations between increasing RCS activity and process radiation monitor response is required.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	NRC 2009A Q51

Development References	Student References Provided
Obj RAD-RIA R2 RAD-RIA	

KA	KA_desc
APE076 AK2.01	Knowledge of the interrelations between the High Reactor Coolant Activity and the following: (CFR 41.7 / 45.7)□Process radiation monitors ....

401-9 Comments:	Remarks/Status

KA	KA_desc
BWA07	Ability to operate and / or monitor the following as they apply to the (Flooding): (CFR: 41.7 / 45.5 / 45.6)□Operating behavior characteristics of the facility.
AA1.2	

Given the following Unit 1 conditions:

Initial conditions:
- Reactor power = 100%
- Turbine Building Flood occurs

Current conditions:
- AP/10 (Turbine Building Flood) in progress

1) CCW pumps are tripped __(1)__ in accordance with AP/10.

2) Core decay heat is removed using __(2)__ in accordance with the EOP.

Which ONE of the following completes the statements above?

A. 1. to establish gravity flow through CCW-8
   2. SSF-ASW

B. 1. to establish gravity flow through CCW-8
   2. HPI Forced Cooling

C. 1. as part of isolating the most probable source of the flooding
   2. SSF-ASW

D. 1. as part of isolating the most probable source of the flooding
   2. HPI Forced Cooling

General Discussion

Answer A Discussion

Incorrect. First part is plausible since securing CCW pumps would be the initial steps of establishing CCW gravity flow. These actions are directed by an AP (Dam Failure) for the purpose of establishing gravity flow and therefore it is plausible to believe that is the strategy being implemented. Additional plausibility is from the fact that re-directing CCW flow (which occurs when aligning gravity flow) would be one way of stopping the flooding. Even if re-directing flow through CCW-8 did not re-align flow away from the leak, going to gravity flow (vs forced flow with CCW pumps) would dramaticlly reduce the amouth of water leaking to the basement and would therefore be plausible as a mitigation strategy. Second part is correct.

Answer B Discussion

Incorrect. First part is plausible since securing CCW pumps would be the initial steps of establishing CCW gravity flow. These actions are directed by an AP (Dam Failure) for the purpose of establishing gravity flow and therefore it is plausible to believe that is the strategy being implemented. Additional plausibility is from the fact that re-directing CCW flow (which occurs when aligning gravity flow) would be one way of stopping the flooding. Even if re-directing flow through CCW-8 did not re-align flow away from the leak, going to gravity flow (vs forced flow with CCW pumps) would dramaticlly reduce the amouth of water leaking to the basement and would therefore be plausible as a mitigation strategy. Second part is plausible since it is correct for all scenarios except a Turbine Building Flood.

Answer C Discussion

Correct. The CCW inlet expansion joints are the most likely failure to result in a TB flood. Therefore the CCW pumps are tripped and siphon is broken to stop the source of the flood. Since LPSW pumps will eventually be lost, HPI FC is not used since there would be no cooling of the RBES once recirc were established. The TBF tab alters the normal priority of cooling choices based on that fact and chooses SSF-ASW ahead of HPI FC.

Answer D Discussion

Incorrect. First part is correct. Second part is plausible since it is correct for all scenarios except a Turbine Building Flood.

Basis for meeting the KA

Requires ability to monitor for proper behavior of the facility as it relates to the response to a Turbine Building flood. The first part of this question requires an understanding of operating behavior of the plant during a TB flood in that it is a characteristic of our facility that the CCW inlet piping expansion joints are the most susceptible locations for a TB flood to originate and therefore the behavior of shutting down the CCW system and breaking its siphon would isolate the flood source.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj. EAP-TBF R5,6,9 EAP APG R6 AP/10 EAP-TBF

Student References Provided

KA	KA_desc
BWA07 AA1.2	Ability to operate and / or monitor the following as they apply to the (Flooding): (CFR: 41.7 / 45.5 / 45.6)□Operating behavior characteristics of the facility.

401-9 Comments:

Remarks/Status

KA	KA_desc
BWE03	Knowledge of the reasons for the following responses as they apply to the (Inadequate Subcooling Margin)
EK3.2	(CFR: 41.5 / 41.10, 45.6, 45.13)□Normal, abnormal and emergency operating procedures associated with (Inadequate Subcooling Margin).

Given the following Unit 1 conditions:

- Reactor tripped from 100% power due to SBLOCA
- Subcooling Margin = 0°F stable

Which ONE of the following is the reason the EOP directs increasing SG levels to the Loss of Subcooling Margin Setpoint level?

A. Establish a large secondary side inventory in support of a rapid RCS cooldown.

B. Establish a large secondary side inventory to ensure that a loss of coupling will NOT occur if a momentary loss of EFDW occurs.

C. Ensure a secondary water level higher than the primary water level inside the SG tubes to establish boiler condenser mode heat transfer

D. Ensure a secondary side inventory sufficient to minimize the consequences of a total loss of feedwater during boiler condenser mode heat transfer

General Discussion

Answer A Discussion

Incorrect: Plausible since SG heat transfer would assist in RCS cooldown and depressurization and SG heat transfer is credited for heat removal for certain break sizes and locations of SBLOCA's. The EOP does perform rapid RCS cooldown and depressurization only under other circumstances (If HPI were degraded). With the RCS saturated, the higher the SG level the more boiler condenser type heat transfer can occur as there would be more steam coming in contact with tubes that have secondary water on the other side. This means that it is plausible to deduce that I could perform a more rapid cooldown by increasing the SG levels.

Answer B Discussion

Incorrect. Plausible since an increased inventory would help mitigate a momentary loss of EFDW during normal single phase natural circulation and once SG levels reach the LOSCM setpoint, momentary losses of EFDW flow would not stop heat transfer as long as secondary side water level is above primary side water level during boiler condenser heat transfer. Additionally, the EOP does increase SG levels to help mitigate a loss of feed availability to the SG's however that strategy is specific to a TB flood.

Answer C Discussion

Correct. Establishing LOSCM setpoint ensures that the secondary water level is higher than the primary side water level inside the tubes thus allowing the steam in the primary side of the tubes to be condensed at locations where the secondary side water level exists thereby ensuring boiler condenser mode of heat transfer.

Answer D Discussion

Incorrect. Plausible since increasing the secondary side to ensure heat transfer is not lost if FDW is lost is a mitigation strategy employed by the EOP however the strategy is used during a Turbine Building Flood in anticipation of the loss of feed pumps in the basement.

Basis for meeting the KA

Requires knowledge of the reasons for steps contained in the EOP to be performed during a loss of subcooling margin.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	EAP060601

Development References
Obj. EAP-LOSCM R6 EAP-LOSCM Att. 01 Rule 2

Student References Provided

KA	KA_desc
BWE03	Knowledge of the reasons for the following responses as they apply to the (Inadequate Subcooling Margin)
EK3.2	(CFR: 41.5 / 41.10, 45.6, 45.13)□Normal, abnormal and emergency operating procedures associated with (Inadequate Subcooling Margin).

401-9 Comments:

Remarks/Status

KA	KA_desc
BWE09	Ability to operate and / or monitor the following as they apply to the (Natural Circulation Cooldown)
EA1.2	(CFR: 41.7 / 45.5 / 45.6)□Operating behavior characteristics of the facility.

Given the following Unit 1 conditions:

Initial conditions:
- Time = 1200
- Reactor power = 100%
- 1TA and 1TB lockout occurs

Current condition:
- Time = 1300
- Plant cooldown in progress

1) The source of feedwater to the steam generators is __(1)__.

2) Steam generator levels are __(2)__.

Which ONE of the following completes the statements above?

A. 1. Main Feedwater
   2. 25 inches SUR

B. 1. Main Feedwater
   2. 50% OR

C. 1. Emergency Feedwater
   2. 30 inches XSUR

D. 1. Emergency Feedwater
   2. 240 inches XSUR

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible since it would be correct if there were any RCP's operating.

Answer B Discussion

Correct, Main Feedwater would still be available and feeding through the aux feed ring. Steam Generator levels would be being controlled at 50% OR by the SU feedwater valves.

Answer C Discussion

Incorrect. First part is plausible since it would be correct for a natural circ cooldown with a loss of SCM. Second part is plausible in conjunction with the first part since it is the SG level used when on EFDW if RCP's are operating.

Answer D Discussion

Incorrect. This answer is plausible since it would be correct during natural circulation cooldown using Emergency Feedwater.

Basis for meeting the KA

Requires ability to operate and monitor operating characteristics of the facility during a natural circ cooldown. SG levels are increased to 50% on the OR if main FDW remains available during a natural circ cooldown.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj TA-AM1 TA-AM1

Student References Provided

KA	KA_desc
BWE09	Ability to operate and / or monitor the following as they apply to the (Natural Circulation Cooldown)
EA1.2	(CFR: 41.7 / 45.5 / 45.6)□Operating behavior characteristics of the facility.

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 28

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C

KA	KA_desc
SYS003	Knowledge of the physical connections and/or cause-effect relationships between the RCPS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)□RCP bearing lift oil pump ....
K1.13	

Given the following Unit 1 conditions:

- EOP in progress
- RCP starting interlock jumpers installed on 1A1 RCP

Which ONE of the following will PREVENT the start of the 1A1 RCP?

A. CC-7 and CC-8 are closed

B. Total Seal Injection flow = 20 gpm

C. RCP Motor Oil Lift system pressure = 575 psig

D. RCP start switch NOT being placed in the BYPASS position

General Discussion

Answer A Discussion

Incorrect. Plausible since CC flow is one of the RCP starting interlocks however this interlock is bypassed when the RCP interlock jumpers are installed.

Answer B Discussion

Incorrect. Plausible since seal injection flow is one of the RCP starting interlocks however this interlock is bypassed when the RCP interlock jumpers are installed.

Answer C Discussion

Correct: The oil lift system starting interlock cannot be jumpered and pressure must be > 650 psig for the interlock to be satisfied.

Answer D Discussion

Incorrect. This switch position was originally designed to bypass the seal injection and CC interlocks and has no effect on jumpers. Plausible since it would be a reasonable misconception to believe that the switch must be in the bypass position to bypass the interlocks.

Basis for meeting the KA

Requires knowledge of the cause-effect relationship between the RCP bearing oil lift pump and starting the RCP.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	PNS061702

Development References	Student References Provided
Obj PNS-CPM R17, 19 PNS-CPM	

KA	KA_desc
SYS003 K1.13	Knowledge of the physical connections and/or cause-effect relationships between the RCPS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)□RCP bearing lift oil pump ....

401-9 Comments:	Remarks/Status

KA	KA_desc
SYS003	Knowledge of RCPS design feature(s) and/or interlock(s) which provide for the following : (CFR: 41.7)□Adequate cooling of RCP motor and seals ....
K4.04	

Given the following Unit 1 conditions:

- Reactor power = 100%
- 1HP-31 (RCP Seal Flow Control) is closed

1) The cooling medium for the RCP MOTORS is __(1)__.

2) ALL cooling for the RCP SEALS __(2)__ been lost.

Which ONE of the following completes the statements above?

A. 1. LPSW
   2. has

B. 1. LPSW
   2. has NOT

C. 1. CC
   2. has

D. 1. CC
   2. has NOT

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible since HP-31 being closed results in a loss of seal injection to the RCP's and seal injection water is the normal cooling medium for the RCP seals.

Answer B Discussion

Correct. LPSW is the cooling medium supplied to the RCP motors. Seal Injection water is the normal cooling medium for the RCP seals as it moves up through the seal package. If Seal Injection is lost (HP-31 being closed) then RCS water is able to move up through the seal package. As it moves through the thermal barrier, CC is provided as a cooling medium to cool the hot RCS water and therefore provide seal cooling.

Answer C Discussion

Incorrect. First part is plausible since CC is supplied to the Reactor Building as a cooling medium for several components (ex. CRD, QT Coolers) however LPSW cools the RCP motors. Second part is plausible since HP-31 being closed results in a loss of seal injection to the RCP's and seal injection water is the normal cooling medium for the RCP seals.

Answer D Discussion

Incorrect. First part is plausible since CC is supplied to the Reactor Building as a cooling medium for several components (ex. CRD, QT Coolers) however LPSW cools the RCP motors. Second part is correct.

Basis for meeting the KA

Requires knowledge of design features which provide cooling to the RCP Motors and RCP seals.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj. PNS-CPS R8, 9, 12, 20 Obj SSS-LPW R2 PNS-CPS SSS-LPW

Student References Provided

KA	KA_desc
SYS003 K4.04	Knowledge of RCPS design feature(s) and/or interlock(s) which provide for the following : (CFR: 41.7)□Adequate cooling of RCP motor and seals ....

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 30

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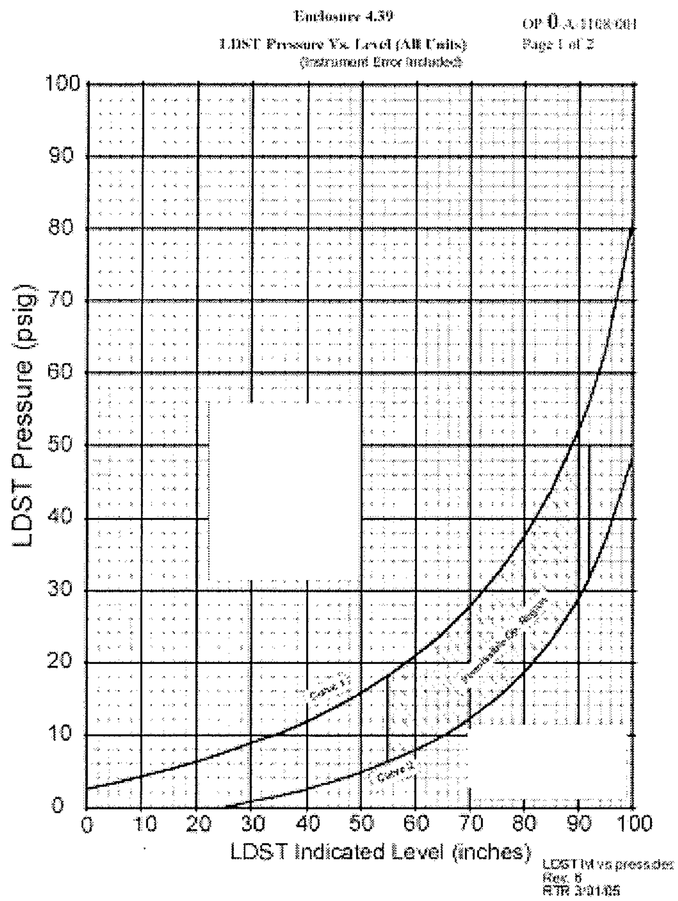
D

KA	KA_desc
SYS004 2.1.32	SYS004 GENERIC□Ability to explain and apply system limits and precautions. (CFR: 41.10 / 43.2 / 45.12)

Given the following chart:



Which ONE of the following sets of LDST parameters would require declaring BOTH HPI trains inoperable when in MODE 1?

Level (inches) / Pressure (psig)

A. 95 / 10

B. 90 / 35

C. 60 / 10

D. 50 / 30

2009B ONS SRO NRC Examination QUESTION 30

30

D

General Discussion

Answer A Discussion

Incorrect, This data results in being below and to the right of the curve however the required actions for this area do not require declaring both HPI trains inoperable. Being here requires carrying a note on turnover sheet regarding opening HP-24 and 25 if a transient occurs.

Answer B Discussion

Incorrect. This data results in being in the permissible region of the curve. Plausible since misapplying the curve by using the numbers on the wrong axis would result in being above and to the left of the curve and therefore make it a correct answer.

Answer C Discussion

Incorrect. This data would result in being in the permissible region. Plausible since misapplying the curve by inverting the data and using the wrong axis would result in this being a correct answer.

Answer D Discussion

Correct. This data results in being above and to the left of the permissible region which requires declaring both HPI trains inoperable.

Basis for meeting the KA

Requires ability to apply Limit and Precaution of 1104/02 (HPI) requiring compliance with LDST Pressure Vs Level curve and then requires ability to explain the consequences of non-compliance with the requirement of the L&P.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

Obj PNS-HPI R35
LDST Pressure vs level curve
OP/1104/02 L&P's

Student References Provided

KA	KA_desc
SYS004 2.1.32	SYS004 GENERIC□Ability to explain and apply system limits and precautions. (CFR: 41.10 / 43.2 / 45.12)

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS005 K6.03	Knowledge of the effect of a loss or malfunction on the following will have on the RHRS: (CFR: 41.7 / 45.7)□RHR heat exchanger ....

Given the following Unit 2 conditions:

- Reactor in MODE 3
- RCS Cooldown in progress
- 2A LPI cooler isolated due to cooler leak

Which ONE of the following states the LPI Decay Heat Removal mode that will be used for the INITIAL transition to LPI cooling in accordance with OP/2/A/1104/004 (Low Pressure Injection System)?

A. Series

B. Normal

C. Switchover

D. High Pressure

2009B ONS SRO NRC Examination QUESTION 31

31

C

General Discussion

Answer A Discussion

Incorrect. Plausible since the Series mode is one of the LPI cooler modes and it only uses one LPI pump however it uses both coolers..

Answer B Discussion

Incorrect. Plausible since this would be correct for Unit 3. Additionally, the Normal mode is one of the LPI modes and it only uses one LPI pump however it uses both LPI coolers. Additionally, due to design restrictions the Normal MODE of LPI is not used for the initial transition to LPI cooling.

Answer C Discussion

Correct. Switchover mode does not utilize the A cooler and is designed for the initial transition to LPI cooling.

Answer D Discussion

Incorrect. Plausible since High Pressure mode only uses one cooler however it is the A cooler.

Basis for meeting the KA

Requires knowledge of the effect that a loss of one of the DHR coolers will have on available DHR alignments.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj. PNS-LPI R29 PNS-LPI

Student References Provided

KA	KA_desc
SYS005 K6.03	Knowledge of the effect of a loss or malfunction on the following will have on the RHRS: (CFR: 41.7 / 45.7)□RHR heat exchanger ....

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS006	Knowledge of the effect that a loss or malfunction of the ECCS will have on the following: (CFR: 41.7 / 45.6)□Fuel
K3.02	

Given the following Unit 1 conditions:

Initial conditions:
- Reactor power = 100%
- Emergency Feedwater NOT available
- 1C LPI pump NOT available
- 1HP-27 is failed closed

Current conditions:
- Reactor Trips on loss of Main Feedwater
- 1HP-409 will NOT open

1) A __(1)__ would be a precursor to fuel temperatures exceeding design limits.

2) __(2)__ would indicate fuel uncovery has occurred or is imminent.

Which ONE of the following completes the above statements?

A. 1. SBLOCA
 2. Core SCM = (-)2°F stable

B. 1. LBLOCA
 2. Core SCM = (-)2°F stable

C. 1. SBLOCA
 2. Reactor Vessel head level = 12 inches stable

D. 1. LBLOCA
 2. Reactor Vessel head level = 12 inches stable

General Discussion

Answer A Discussion

CORRECT. For certain break sizes and locations of SBLOCA's, both trains of HPI are required to provide adequate heat removal. If one train is not available then credit is taken for SG heat removal. With both one train of HPI and SG heat removal unavailable, ECCS can not perform its design functions and could be a precursor to fuel temps exceeding design limits. For core SCM to indicate superheated, at least partial uncovery of the core has occurred.

Answer B Discussion

Incorrect. First part is plausible since the 1C LPI Pump is not available and if LPI were not available then this would be a correct answer. Additional plausibility is from the unavailable HPI train since it is plausible to believe HPI is needed for a LBLOCA because it injects core cooling water however HPI flow is not credited for a LBLOCA. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible since RV head level can be used to determine if core uncovery has occurred or is imminent and 12 inches is far below the maximum level of 200 inches available however it must be less than or equal zero for it to be correct.

Answer D Discussion

Incorrect. First part is plausible since the 1C LPI Pump is not available and if LPI were not available then this would be a correct answer. Additional plausibility is from the unavailable HPI train since it is plausible to believe HPI is needed for a LBLOCA since it injects core cooling however HPI is not credited for a LBLOCA. Second part is plausible since RV head level can be used to determine if core uncovery has occurred or is imminent and 12 inches is far below the maximum level of 200 inches available however it must be less than or equal zero for it to be correct.

Basis for meeting the KA

Requires knowledge of the effect of a loss of 1 train of ECCS HPI will have on fuel during a SBLOCA with no feedwater.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References

Obj. TA-AT R1
EAP-ICC R1
Obj. IC-RCI R42
Obj EAP-LOSCM R12
EAP-LOSCM
IC-RCI
TA-AT

Student References Provided

KA	KA_desc
SYS006 K3.02	Knowledge of the effect that a loss or malfunction of the ECCS will have on the following: (CFR: 41.7 / 45.6)□Fuel ....

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS007	Ability to monitor automatic operation of the PRTS, including: (CFR: 41.7 / 45.5)□Components which discharge to the PRT ....
A3.01	

Given the following Unit 1 conditions:

- Reactor power = 100%
- Loss of ALL feedwater occurs

1) The MINIMUM RCS pressure (psig) at which Quench Tank level would begin to INCREASE is __(1)__.

2) The MINIMUM Quench Tank Pressure (psig) at which Containment pressure would begin to INCREASE is __(2)__.

Which ONE of the following completes the statements above?

A. 1. 2450
2. 49

B. 1. 2450
2. 55

C. 1. 2500
2. 49

D. 1. 2500
2. 55

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible because 49 psig is the max operating pressure per L&P's of the Quench Tank procedure (1104/017).

Answer B Discussion

Correct. The setpoint for the RC-66 PORV is 2450 psig which would begin relieving steam under the water level in the QT therefore level would begin to increase. At 55 psig in the QT, the rupture disc would blow and therefore result in containment pressure beginning to increase.

Answer C Discussion

Incorrect. First part is plausible since 2500 psig is the setpoint for the two Pressurizer Code safety relief valves RC-67/68. Second part is plausible because 49 psig is the max operating pressure per L&P's of the Quench Tank procedure (1104/017).

Answer D Discussion

Incorrect. First part is plausible since 2500 psig is the setpoint for the two Pressurizer Code safety relief valves RC-67/68. Second part is correct.

Basis for meeting the KA

Requires ability to monitor RCS pressure to predict operation of a component that relieves to the QT (RC-66) and also requires ability to monitor Quench Tank pressure to predict when the rupture disc will blow.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj. PNS-CS R7 PNS-CS 1104/17 PNS-PZR

Student References Provided

KA	KA_desc
SYS007	Ability to monitor automatic operation of the PRTS, including: (CFR: 41.7 / 45.5)□Components which discharge to the PRT ....
A3.01	

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 34

34

A

KA	KA_desc
SYS008	Ability to predict and/or monitor changes in parameters to prevent exceeding design limits) associated with operating the CCWS controls including : (CFR: 41.5 / 45.5)□CCW temperature ....
A1.02	

1) __(1)__ would result in an increase in CC Cooler outlet temperature.

2) CC Cooler Outlet temperature can be monitored from the Unit 1 Control Room using the __(2)__.

Which ONE of the following completes the statements above?

A. 1. Throttling open 1HP-7 (Letdown Control)
   2. OAC indication ONLY

B. 1. Throttling open 1HP-7 (Letdown Control)
   2. OAC AND temperature gage in Control Room

C. 1. Placing 1HP-14 (LDST Bypass) in "BLEED"
   2. OAC indication ONLY

D. 1. Placing 1HP-14 (LDST Bypass) in "BLEED"
   2. OAC AND temperature gage in Control Room

General Discussion

Answer A Discussion

Correct. Throttling HP-7 open will increase letdown flow. CC cools the letdown coolers therefore increased letdown flow will result in an increase in CC cooler outlet temperatures. The only CC temperature indications available in the control room are those on the OAC.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible since it would be correct if asking about other CC parameters, (CC flow, CRD pump pressure, CC tank level, etc.) however CC Cooler outlet temp is only available on the OAC computer.

Answer C Discussion

Incorrect. First part is plausible since CC is cooling letdown and anything that affects letdown flow would impact CC cooler outlet temp. Placing 1HP-14 to bleed does not change the actual amount of letdown flow (only the flowpath) therefore it would not impact CC temperatures. The misconception that diverting letdown to a BHUT would result in an increase in letdown flow OR the misconception of where the letdown coolers were actually located in the letdown flowpath could result in making this choice. Second part is correct.

Answer D Discussion

Incorrect. First part is plausible since CC is cooling letdown and anything that affects letdown flow would impact CC cooler outlet temp. Placing 1HP-14 to bleed does not change the actual amount of letdown flow (only the flowpath) therefore it would not impact CC temperatures. The misconception that diverting letdown to a BHUT would result in an increase in letdown flow OR the misconception of where the letdown coolers were actually located in the letdown flowpath could result in making this choice. Second part is plausible since it would be correct if asking about other CC parameters, (CC flow, CRD pump pressure, CC tank level, etc.).

Basis for meeting the KA

Requires ability to predict the impact of HPI system operations on CC temperatures and the ability to monitor CC temperatures during the HPI system operations to ensure the design temperatures of the CC coolers are not exceeded.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj. PNS-CC R8 PNS-CC

Student References Provided

KA	KA_desc
SYS008 A1.02	Ability to predict and/or monitor changes in parameters to prevent exceeding design limits) associated with operating the CCWS controls including : (CFR: 41.5 / 45.5)□CCW temperature ....

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 35

35

D

KA	KA_desc
SYS008	Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5)□Control of minimum level in the CCWS surge tank ....
A4.07	

1) A __(1)__ will result in the CC surge tank level DECREASING.

2) The level that is maintained on the CC Surge Tank Level gage on 1AB3 in accordance with AP/20 (Loss of Component Cooling) is __(2)__ inches.

Which ONE of the following completes the statements above?

A. 1. Letdown cooler leak
 2. 12-18

B. 1. Letdown cooler leak
 2. 18-30

C. 1. CRD Cooling Coil leak
 2. 12-18

D. 1. CRD Cooling Coil leak
 2. 18-30

General Discussion

Answer A Discussion

Incorrect. First part is plausible since CC is the cooling medium for the Letdown coolers however Letdown line pressure at the location of the letdown coolers is still RCS pressure therefore is greater than CC pressure. A Letdown cooler leak would result in an increasing CC surge tank level since RCS would go into the CC system. Second part is plausible since 12 inches is the low level alarm setpoint and 18 inches is the low end of the normal operating band.

Answer B Discussion

Incorrect. First part is plausible since CC is the cooling medium for the Letdown coolers however Letdown line pressure at the location of the letdown coolers is still RCS pressure therefore is greater than CC pressure. A Letdown cooler leak would result in an increasing CC surge tank level since RCS would go into the CC system. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible since 12 inches is the low level alarm setpoint and 18 inches is the low end of the normal operating band.

Answer D Discussion

Correct. CC is supplied to the CRD cooling coils. Since the coils are not actually inside the RCS pressure barrier, a leak in cooling coil would result in a loss of CC and therefore a decrease in the CC surge tank. AP/20 gives guidance to maintain CC surge tank level between 18" and 30".

Basis for meeting the KA

Requires ability to monitor CC surge tank level and a knowledge of minimum level requirements as directed by AP/20. Knowledge of the minimum level requirements are an integral part of the ability to monitor for proper control of minimum level. Additionally, knowledge of conditions that result in a decrease in CC surge tank level also support demonstrating the ability to manually operate or monitor for minimum level since makeup to the CC surge tank is a manual function and is initiated by monitoring for the minimum level in the Control Room.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

Obj. EAP-APG R9
1SA-9/D1
OP/1104/08 Encl 4.25
AP/20

Student References Provided

KA	KA_desc
SYS008 A4.07	Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5)□Control of minimum level in the CCWS surge tank ....

401-9 Comments:

Remarks/Status

B

2009B ONS SRO NRC Examination QUESTION 36

36

KA	KA_desc
SYS010	Ability to monitor automatic operation of the PZR PCS, including: (CFR: 41.7 / 45.5)□PZR pressure ....
A3.02	

Given the following Unit 2 conditions:

Initial conditions:

- Reactor power = 100%
- 2A MSLB occurs inside containment

Current conditions:

- RB Pressure peaked at 2.6 psig and is slowly decreasing
- Pressurizer Level decreased to 32" and is now 82" increasing
- RCS pressure decreased to 1540 psig and is now 1920 psig slowly increasing

1) Pressurizer heater banks 2 thru 4 are __(1)__.

2) ES digital channels __(2)__ have actuated.

Which ONE of the following completes the statements above?

A. 1. Off
2. 1 and 2 ONLY

B. 1. On
2. 1 and 2 ONLY

C. 1. Off
2. 1 thru 6

D. 1. On
2. 1 thru 6

General Discussion

Answer A Discussion

Incorrect. First part is plausible since it would be correct if Pzr level were < 80". Second part is correct.

Answer B Discussion

Correct. Since Pzr level is above 80 inches the heaters are all operable and since the lowest heater setpoint is Bank 4 at 2130 and RCS pressure is below that, all 3 banks would be energized. ES 1 & 2 will have actuated on low RCS pressure but channels 1-6 do not actuate until RB pressure reaches 3 psig.

Answer C Discussion

Incorrect First part is plausible since it would be correct if Pzr level were < 80". Second part is plausible since it would be correct if RB pressure were > 3 psig.

Answer D Discussion

Incorrect First part is plausible correct. Second part is plausible since it would be correct if RB pressure were > 3 psig.

Basis for meeting the KA

Requires demonstrating ability to monitor automatic Pzr pressure control. This is done by monitoring operation of Pzr heaters based on indications of RCS pressure (ONS has no specific Pzr pressure indications). Demonstrating knowledge of Pzr Heater setpoint and interlocks is required and indicates an ability to monitor for automatic operation of the Pzr PCS.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	MODIFIED	PNS140505

Development References
Obj. PNS-PZR R5 PNS-PZR Rule 5

Student References Provided

KA	KA_desc
SYS010	Ability to monitor automatic operation of the PZR PCS, including: (CFR: 41.7 / 45.5)□PZR pressure ....
A3.02	

401-9 Comments:

Remarks/Status

C

2009B ONS SRO NRC Examination QUESTION 37

37

KA	KA_desc
SYS012 K5.02	Knowledge of the operational implications of the following concepts as the apply to the RPS: (CFR: 41.5 / 45.7)□Power density ....

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%

Current conditions:

- 1B1 Reactor coolant pump trips

Which ONE of the following describes the RPS trip that will prevent exceeding the DNBR safety limit?

A. High flux

B. Flux/Pump

C. Flux/Flow/Imbalance

D. High RCS Temperature

2009B ONS SRO NRC Examination QUESTION 37

37

C

General Discussion

Answer A Discussion

Incorrect, Plausible since the High Flux trip is credited in the Core safety limits although it is provided to prevent damage to the fuel and fuel clad it will not be actuated in this case.

Answer B Discussion

Incorrect, this trip looks at the number of RCPs operating verses reactor power instead of RCS flow. If ≥ 2 RCPs are lost above 2% power the reactor will trip.

Answer C Discussion

Correct, the trip setpoint with 3 RCP operating is ~ 80% power. After the pump trips and flow decreases the reactor will trip. This trip prevents DNBR from decreasing below the safety limit value.

Answer D Discussion

Incorrect, Plausible since RCS temperature is one of the components that has a direct impact on DNBR and therefore proximity to the safety limit. Additionally plausible since the decrease in RC flow would likely result in an increase in RCS temperature. TS value for High temp trip is </= 618. Acutal setpoint is 617.

Basis for meeting the KA

Requires knowledge of the operational implications of the relationship between power density and RCS flow.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	2007 NRC retest Q38

Development References
Obj IC-RPS R3, R4

Student References Provided

KA	KA_desc
SYS012 K5.02	Knowledge of the operational implications of the following concepts as the apply to the RPS: (CFR: 41.5 / 45.7)□Power density ....

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS013	Knowledge of the physical connections and/or cause effect relationships between the ESFAS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)□CCWS ....
K1.08	

Given the following Unit 1 conditions:

- Reactor power = 100%
- 1A CC pump operating

Which ONE of the following contains conditions, either of which will result in a trip of the 1A CC pump independently of the other?

A. 1. CC Surge Tank level = 10 inches decreasing
   2. ES 1 thru 6 actuation

B. 1. CC Surge Tank level = 10 inches decreasing
   2. 1XN de-energized

C. 1. Primary IA compressor trips
   2. Closure of 1CC-7

D. 1. ES 1 thru 6 actuation
   2. Closure of 1CC-7

General Discussion

Either CC-7 or CC-8 closing will result in an automatic trip of all operating CC pumps. CC-7&8 are on ES 5&6. If ES 1-6 actuate then the CC valves close which would cause the 1A CC pump would trip.

Answer A Discussion

Incorrect. First part is plausible since this level is below the low level alarm setpoint of 12 inches. It is common for pumps to have an automatic trip on a low tank level when the tank is providing suction to the pump to prevent pump damage. Second part is correct.

Answer B Discussion

Incorrect. First part is plausible since this level is below the low level alarm setpoint of 12 inches. It is common for pumps to have an automatic trip on a low tank level when the tank is providing suction to the pump to prevent pump damage. Second part is plausible since this is the power supply for the 1B CC pump.

Answer C Discussion

Incorrect. First part is plausible since CC-8 is a pneumatic valve that is supplied by IA and the valve fails closed on loss of air supply. If the valve fails closed then the pumps automatically trip. Incorrect because CC-8 air supply is backed up by AIA so a loss of the Primary IA compressor will not result in loss of air supply to CC-8. Second part is correct.

Answer D Discussion

Correct. .Either CC-7 or CC-8 closing will result in an automatic trip of all operating CC pumps. CC-7&8 are on ES 5&6. If ES 1-6 actuate then the CC valves close which would cause the 1A CC pump would trip. Additionally, if 1CC-7 closed independently of ES the CC pump would still trip.

Basis for meeting the KA

Requires knowledge of the effect on the CC system of an automatic ESFAS actuation.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj PNS-CC R13, 15 PNS-CC

Student References Provided

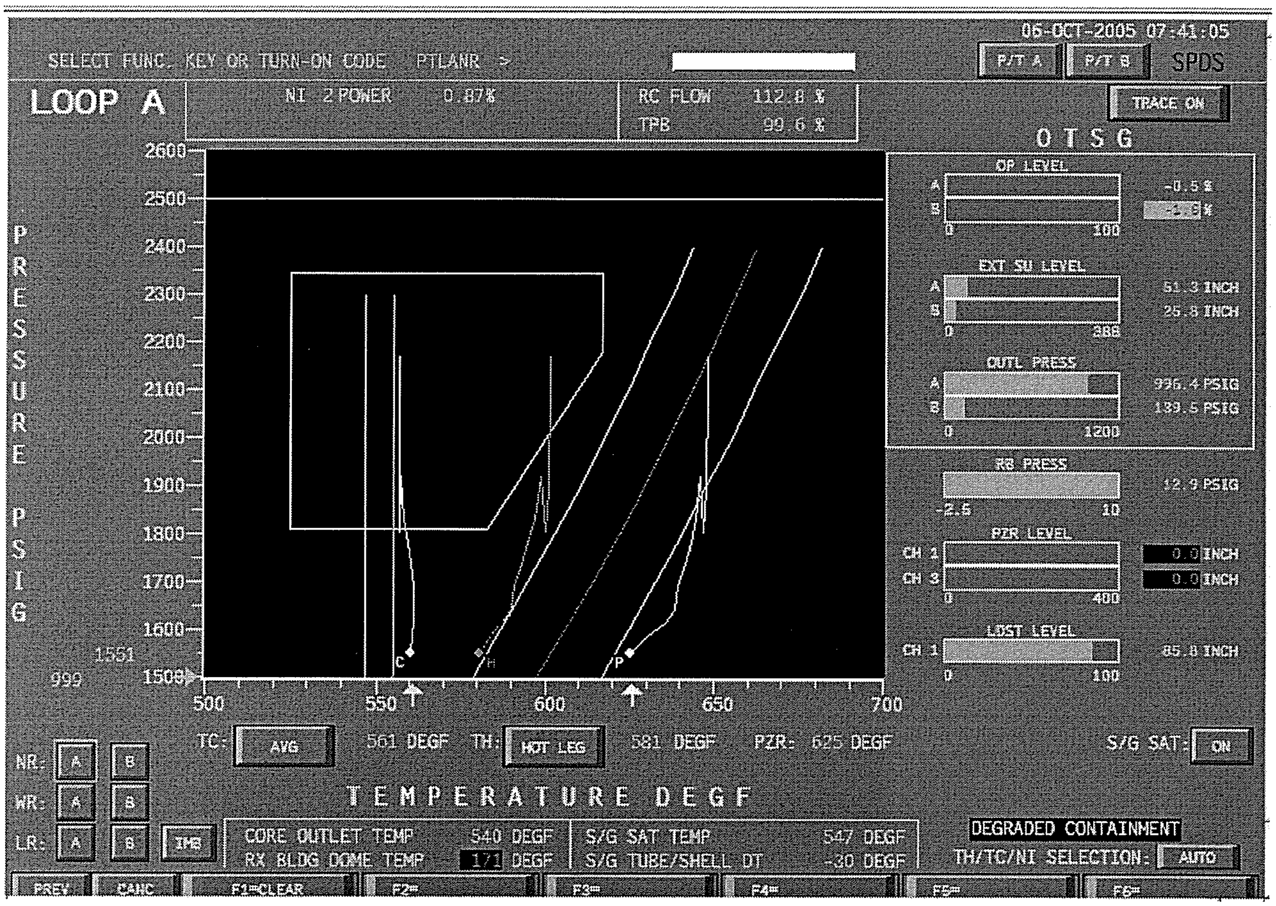
KA	KA_desc
SYS013 K1.08	Knowledge of the physical connections and/or cause effect relationships between the ESFAS and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)□CCWS ....

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS022	Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)□Containment readings of temperature, pressure, and humidity system .....
A4.05	

Given the following Unit 1 conditions:



- Main Steam Line Break occurs from 100% power
- Plant responds as indicated above:

Which ONE of the following states the MINIMUM Pressurizer level (inches) that is <u>required</u> by Rule 5 (Main Steam Line Break) once Pressurizer level returns on scale?

A. > 80

B. > 100

C. > 180

D. > 220

2009B ONS SRO NRC Examination QUESTION 39

39

C

General Discussion

Answer A Discussion

Incorrect. Plausible since 80 inches is the Pzr level setpoint for the automatic cutoff of the Pzr heaters and it would be logical to ensure level is high enough to ensure Pzr heater operation.

Answer B Discussion

Incorrect. Plausible since this would be the correct choice if RB pressure were not > 3 psig.

Answer C Discussion

Correct. Rule 5 directs maintaining Pzr level > 180 inches when ACC conditions exist. ACC exist when RB pressure is > 3 psig. This can be determined by monitoring RB pressure on the OAC screen shot in the question or by recognizing the "DEGRADED CONTAINMENT" in the lower right hand corner of the screen shot which actuates at 3 psig RB pressure.

Answer D Discussion

Incorrect. Plausible since 220 inches is the normal pressurizer level setpoint. Once the overcooling is stopped and Pzr level returns on scale it would be plausible to return to the normal operating level since the most likely direction from here is an RCS cooldown and normal cooldowns are initiated from 220" Pzr level to support volume change during cooldown..

Basis for meeting the KA

Requires ability to monitor RB pressure on indications available in the Control Room to determine if CCS system has been actuated and therefore ACC conditions exist for purpose of determining appropriate Pzr level.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj. SAEL 021R R2 Rule 5 attachement

Student References Provided

KA	KA_desc
SYS022 A4.05	Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)□Containment readings of temperature, pressure, and humidity system .....

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS026 A2.04	Ability to (a) predict the impacts of the following malfunctions or operations on the CSS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)□Failure of spray pump ....

Given the following Unit 1 conditions:

Initial conditions:
- Reactor power = 100%

Current conditions:
- Large Break LOCA occurs
- 1A RBS pump did NOT start

1) The RB Spray system __(1)__ perform its safety function.

2) EOP Enclosure 5.1 (ES Actuation) directs the RO to __(2)__.

Which ONE of the following completes the statements above?

A. 1. can
   2. immediately start the 1A RBS pump

B. 1. can
   2. notify the SRO to evaluate starting the 1A RBS pump

C. 1. can NOT
   2. immediately start the 1A RBS pump

D. 1. can NOT
   2. notify the SRO to evaluate starting the 1A RBS pump

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible since Encl. 5.1 directs the RO to start other ES components (ex. LPI Pumps) which did not start on ES actuation even if sufficient pumps are running to perform the system safety function.

Answer B Discussion

Correct. Either train of RBS is sufficient to perform both of the Safety Functions credited to RBS (Iodine removal AND in conjunction with RBC maintain containment temp and pressure within design limits), If one of the RBS pumps has not started there is an RNO in enclosure 5.1 to notify the SRO to evaluate the need to attempt to start the pump (step 43).

Answer C Discussion

Incorrect. First part is plausible since there are numerous systems in the plant design that do NOT have redundant trains in support of performing safety functions (ex. HPI, Core Flood Tanks). Second part is plausible since Encl. 5.1 directs the RO to start other ES components (ex. LPI Pumps) which did not start on ES actuation even if sufficient pumps are running to perform the system safety function.

Answer D Discussion

Incorrect. First part is plausible since there are numerous systems in the plant design that do NOT have redundant trains in support of performing safety functions (ex. HPI, Core Flood Tanks). Second part is correct.

Basis for meeting the KA

Requires ability to predict the impact of a RBS pump failure on the ability of the RBS system to perform its safety functions AND requires knowledge of procedure actions to mitigate a failure of RBS pumps.

Elaborate on why it matches KA.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj. PNS-BS R16 PNS-RBC EOP Encl. 5.1

Student References Provided

KA	KA_desc
SYS026 A2.04	Ability to (a) predict the impacts of the following malfunctions or operations on the CSS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)□Failure of spray pump ....

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS026 2.4.46	SYS026 GENERIC□Ability to verify that the alarms are consistent with the plant conditions. (CFR: 41.10 / 43.5 / 45.3 / 45.12)

Given the following Unit 1 conditions:

1SA-1

	1	2	3	4	5	6	7	8	9	10	11	12
A	RP CHANNEL A TRIP	RP CHANNEL A LOW PRESS TRIP	RP CHANNEL A FLUX/MB/FLOW TRIP	RP CHANNEL A HIGH TEMP TRIP	RP CHANNEL A PRESS/TEMP TRIP	RP CHANNEL A HIGH PRESS TRIP	RP CHANNEL A RCP / FLUX TRIP	RP CHANNEL A HIGH FLUX TRIP	RP CHANNEL A R.B. HIGH PRESS TRIP	ES CHANNEL 1 TRIP	ES CHANNEL 5 TRIP	ICS LOSS OF ACS POWER FUSE BLOWN
B	RP CHANNEL B TRIP	RP CHANNEL B LOW PRESS TRIP	RP CHANNEL B FLUX/MB/FLOW TRIP	RP CHANNEL B HIGH TEMP TRIP	RP CHANNEL B PRESS/TEMP TRIP	RP CHANNEL B HIGH PRESS TRIP	RP CHANNEL B RCP / FLUX TRIP	RP CHANNEL B HIGH FLUX TRIP	RP CHANNEL B R.B. HIGH PRESS TRIP	ES CHANNEL 2 TRIP	ES CHANNEL 6 TRIP	ICS AUTO/HAND POWER FUSE BLOWN
C	RP CHANNEL C TRIP	RP CHANNEL C LOW PRESS TRIP	RP CHANNEL C FLUX/MB/FLOW TRIP	RP CHANNEL C HIGH TEMP TRIP	RP CHANNEL C PRESS/TEMP TRIP	RP CHANNEL C HIGH PRESS TRIP	RP CHANNEL C RCP / FLUX TRIP	RP CHANNEL C HIGH FLUX TRIP	RP CHANNEL C R.B. HIGH PRESS TRIP	ES CHANNEL 3 TRIP	ES CHANNEL 7 TRIP	LP INJECTION PUMP "A" DIFF. PRESS LOW
D	RP CHANNEL D TRIP	RP CHANNEL D LOW PRESS TRIP	RP CHANNEL D FLUX/MB/FLOW TRIP	RP CHANNEL D HIGH TEMP TRIP	RP CHANNEL D PRESS/TEMP TRIP	RP CHANNEL D HIGH PRESS TRIP	RP CHANNEL D RCP / FLUX TRIP	RP CHANNEL D HIGH FLUX TRIP	RP CHANNEL D R.B. HIGH PRESS TRIP	ES CHANNEL 4 TRIP	ES CHANNEL 8 TRIP	LP INJECTION PUMP "B" DIFF. PRESS LOW
E	CRD SEQUENCE FAULT	CRD TRIP BKR A TRIP	CRD TRIP BKR B TRIP	CRD TRIP BKR C TRIP	CRD TRIP BKR D TRIP	CRD ELECTRONIC TRIP E	CRD ELECTRONIC TRIP F	RC PUMP 1A1 OIL TANK LEVEL HIGH	RC PUMP 1A2 OIL TANK LEVEL HIGH	RC PUMP 1B1 OIL TANK LEVEL HIGH	RC PUMP 1B2 OIL TANK LEVEL HIGH	LP INJECTION PUMP "C" DIFF. PRESS LOW

Initial conditions:

- Reactor power = 45% stable

Current conditions:

- Reactor power = <1% WR decreasing
- Core SCM = 0°F stable
- RCS pressure = 140 psig decreasing
- Reactor Building pressure = 16.4 psig increasing
- 1SA-1 alarms as indicated above

Which ONE of the following describes actions required by the EOP?

A. Secure running LPI pumps ONLY (Encl. 5.1 ES Actuation)

B. Manually actuate ES Digital Channels 7 & 8 ONLY (Encl. 5.1 ES Actuation)

C. Secure running LPI pumps and Feed to LOSCM setpoint with Emergency Feedwater (Encl. 5.1 ES Actuation and Rule 2 Loss of SCM)

D. Manually actuate ES Digital Channels 7 & 8 and Feed to LOSCM setpoint with Emergency Feedwater (Encl. 5.1 ES Actuation and Rule 2 Loss of SCM)

General Discussion

Answer A Discussion

Incorrect. Plausible since it would be correct if RCS pressure were > 200 psig so that the pumps would be running against shutoff head.

Answer B Discussion

Correct. With RB pressure > 10 psig, ES 7 & 8 should have actuated. When performing Encl. 5.1 you will be directed to manually actuate ES 7&8 if they have not already actuated.

Answer C Discussion

Incorrect.. First part is plausible since it would be correct if RCS pressure were > 200 psig so that the pumps would be running against shutoff head. Second part is plausible since it would be correct if RCS pressure were above 200 psig (and therefore no LPI flow). In this case, RCS pressure is low enough to have sufficient LPI flow which means that Rule 2 and the LOSCM tab will not direct feeding to LOSCM stpt.

Answer D Discussion

Incorrect. First part is correct. Second part is plausible since it would be correct if RCS pressure were above 200 psig (and therefore no LPI flow). In this case, RCS pressure is low enough to have sufficient LPI flow which means that Rule 2 and the LOSCM tab will not direct feeding to LOSCM stpt.

Basis for meeting the KA

Requires verifying alarms actuated on 1SA-1 are appropriate for plant conditions. ES-7&8 should be actuated with RB pressure > 10 psig.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj IC-ES R14 IC-ES EOP Encl. 5.1

Student References Provided

KA	KA_desc
SYS026 2.4.46	SYS026 GENERIC□Ability to verify that the alarms are consistent with the plant conditions. (CFR: 41.10 / 43.5 / 45.3 / 45.12)

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 42

42

B

KA	KA_desc
SYS039	Knowledge of the operational implications of the following concepts as the apply to the MRSS: (CFR: 441.5 / 45.7)□Bases for RCS cooldown limits ....
K5.05	

Which ONE of the following describes the reason that the allowed RCS cooldown rate is more restrictive when performing a natural circulation cooldown?

A. Minimize the possibility of flashing in the RCS Hot Legs

B. Minimize the possibility of drawing a steam bubble in the reactor vessel head area

C. Ensure thermal stresses on reactor vessel inner wall remain within design limits

D. Ensure thermal stresses on the Auxiliary Pressurizer spray line remain within design limits

General Discussion

Answer A Discussion

Incorrect. Plausible since flashing in the RCS hot legs is a concern during portions of RCS cooldown (specifically during pressurizer cooldown) and with no RCS forced circulation it would be plausible to believe that a slower cooldown rate would be required to allow metal in the hot legs to be cooled as temperature is decreased.

Answer B Discussion

Correct. Since there is no forced flow in the RV head area during a NC cooldown, head temperatures lag behind the RCS and normal cooldown rates could result in bubble formation in the RV head. For this reason the normal cooldown rate is decreased by half based on direction from the FCD tab of the EOP.

Answer C Discussion

Incorrect. Plausible since this is the bases for the normal cooldown rates that would apply if there were any RCP's operating.

Answer D Discussion

Incorrect. Plausible since during a Natural Circ cooldown, normal pressurizer spray is not available and use of Aux spray is considered. When using Aux spray the delta T between the nozzle and spray fluid temp can result in exceeding design limits. This concern is addressed by limiting the delta T between the fluid and nozzle to 410 degrees and not by lowering the allowable cooldown rate.

Basis for meeting the KA

Requires knowledge of operational requirements of MRSS system when controlling cooldown rates since the rates are controlled by adjusting the Turbine Bypass valves during NC cooldown. Also requires knowledge of the bases behind cooldown rate limits during a NC cooldown.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj. EAP-FCD T3 R4 CH-RM EAP-FCD

Student References Provided

KA	KA_desc
SYS039 K5.05	Knowledge of the operational implications of the following concepts as the apply to the MRSS: (CFR: 441.5 / 45.7)□Bases for RCS cooldown limits ....

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS059	Knowledge of MFW design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7)□Automatic feedwater isolation of MFW ....
K4.19	

Given the following Unit 1 conditions:

Initial Conditions:

- Reactor power = 100%
- Two AFIS pressure transmitters on 1A SG fail high

Current Conditions:

- 1A Main Steam Line break occurs
- 1A SG pressure = 480 psig rapidly DECREASING

1) The status of AFIS is __(1)__.

2) Rule 5 (Main Steam Line Break) will give direction to __(2)__.

Which ONE of the following completes the statements above?

A. 1. actuated
   2. open 1AS-40 while closing 1MS-47

B. 1. actuated
   2. select OFF for 1A MD EFDW Pump

C. 1. NOT actuated
   2. open 1AS-40 while closing 1MS-47

D. 1. NOT actuated
   2. select OFF for 1A MD EFDW Pump

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible since it would be correct if the MSLB were in the B SG. With the leak in the A SG, Rule 5 will not direct transfer of CSAE steam supply.

Answer B Discussion

Correct:□ AFIS uses 4 transmitters. Any two of the 4 decreasing to 550 psig will result in an AFIS actuation therefore AFIS will still automaticall initiate as long as there are two PTs available. Rule 5 will direct placing the switch for the 1A MD EFDWP in OFF.

Answer C Discussion

Incorrect:□ AFIS will auto initiate. Plausible if AFIS Logic is assumed to be disabled with 2 switches failed which is the case for numerous instrument strings (2/3 logic to mitigate a single failure). Second part is plausible since it would be correct if the MSLB were in the B SG. With the leak in the A SG, Rule 5 will not direct transfer of CSAE steam supply.

Answer D Discussion

Incorrect:□ AFIS will auto initiate. Plausible if AFIS Logic is assumed to be disabled with 2 switches failed which is the case for numerous instrument strings (2/3 logic to mitigate a single failure). Second part is correct. Additionally, second part is plausible if you believe that AFIS has not actuated since the MDEFWP is placed in OFF anytime there is a MSLB on its associated SG. This means that even if pressure does not decrease to the AFIS setpoint you would still place the MDEFWP in OFF.

Basis for meeting the KA

Requires knowledge of design features of the Main Feedwater system as it relates to AFIS.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	2007 Audit makeup Q9

Development References
Obj. CF-FDW R43 CF-FDW Rule 5

Student References Provided

KA	KA_desc
SYS059	Knowledge of MFW design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7)□Automatic feedwater isolation of MFW ....
K4.19	

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS061	Knowledge of bus power supplies to the following: (CFR: 41.7)□AFW electric drive pumps ....
K2.02	

1) The power supply to the 3B MDEFWP is __(1)__.

2) The 3B MDEFWP motor is cooled by __(2)__.

Which ONE of the following completes the statements above?

A. 1. 3TD
   2. LPSW

B. 1. 3TD
   2. Air

C. 1. 3TE
   2. LPSW

D. 1. 3TE
   2. Air

2009B ONS SRO NRC Examination QUESTION 44

44

C

General Discussion

Answer A Discussion

Incorrect. First part is plausible since it would be correct if the MDEFWP power supplies followed the standard convention (like many other sets of pumps do) however the 3B pump is powered from 3TE. Second part is correct.

Answer B Discussion

Incorrect. First part is plausible since it would be correct if the MDEFWP power supplies followed the standard convention (like many other sets of pumps do) however the 3B pump is powered from 3TE. Second part is plausible due to numerous motors that do not have a cooling water supply and are air cooled (ex. CCW pumps, HW pumps, RCW pumps).

Answer C Discussion

Correct. The 3B MDEFWP is powered from 3TE and its motor is cooled by LPSW.

Answer D Discussion

Incorrect. First part is correct. Second part is plausible due to numerous motors that do not have a cooling water supply and are air cooled (ex. RCW pump motors).

Basis for meeting the KA

Requires knowledge of the power supply to the MDEFWP's.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj. CF-EF R6, R5 CF-EF

Student References Provided

KA	KA_desc
SYS061 K2.02	Knowledge of bus power supplies to the following: (CFR: 41.7)□AFW electric drive pumps ....

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS061	Knowledge of the operational implications of the following concepts as the apply to the AFW: (CFR: 41.5 / 45.7)□Decay heat sources and magnitude ....
K5.02	

Given the following Unit 1 conditions:

Initial conditions:

- 450 EFPD
- Reactor trip from 45%
- HPI Forced Cooling in progress

Current conditions:

- TDEFWP available
- Enclosure 5.40 (Recovery From HPI Forced Cooling) in progress

Which ONE of the following would result in a DECREASE in the amount of feedwater flow indicated by Enclosure 5.13 (Total Feedwater Flow Required to Match NSSS Heat) when determining the INITIAL feed rate required to remove decay heat?

A. Recovery delayed 1 hour due to proximity to 3 psig RB pressure

B. Event occurred at 25 EFPD instead of 450 EFPD

C. Initial trip was from 25% power instead of 45%

D. Three RCP's operating prior to initiating HPI FC

2009B ONS SRO NRC Examination QUESTION 45

45

A

General Discussion

Answer A Discussion

Correct. Although all answers impact the heat required to be removed, Encl. 5.13 is a worst case estimate on EFDW required and only looks at time after the trip and number of RCP's running to determine the amount of EFDW required. Since the delay in recovery would increase the time since Rx trip it would decrease the required amount of EFDW.

Answer B Discussion

Incorrect. Plausible since the event occuring earlier in core life would decrease the amount of decay heat that is required to be removed however it would have no impact on the calculated EFDW flow from Encl. 5.13.

Answer C Discussion

Incorrect. Plausible since the event occurring from a different power level would change the amount of decay heat that is required to be removed however it would have no impact on the calculated EFDW flow from Encl. 5.13. From 25% there would be less decay heat and therefore less actual flow required to match decay heat however it would not impact the flow calculated from Encl. 5.13.

Answer D Discussion

Incorrect. Plausible since the number of RCP's running does impact the amount of EFDW flow established based on the Encl. 5.13 however when Rule 4 initiates HPI FC, it directs the operator to reduce number of running RCP's to one therefore the number of pumps running prior to HPI FC would not impact the EFDW flow derived from Encl. 5.13.

Basis for meeting the KA

Requires knowledge of the impact on time vs decay heat as well as the impact on variable sources of heat on calculating the initial EFDW flow rate established to recover from HPI FC.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj. EAP-HPICD R26 EOP Encl. 5.13

Student References Provided

KA	KA_desc
SYS061 K5.02	Knowledge of the operational implications of the following concepts as the apply to the AFW: (CFR: 41.5 / 45.7)□Decay heat sources and magnitude ....

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS062 K2.01	Knowledge of bus power supplies to the following : (CFR: 41.7)□Major system loads ....

Given the following Unit 2 conditions:

- Reactor power = 100%
- 2TD de-energizes

Which ONE of the following remains available?

A. C LPSW Pump

B. 2C HPI Pump

C. 2B LPI Pump

D. 2C RBCU

General Discussion

Answer A Discussion

Correct. C LPSW pump is powered from 2TC.

Answer B Discussion

Incorrect. Plausible since the 2C HPIP is a 4160V pump and does not follow the "in line" convention of A,B,C, TC TD TE since it is powered from 2TD.

Answer C Discussion

Incorrect. Plausible since the 2B LPIP is powered from the 4160V switchgear and there are several 4160V components that do not follow the standard "in line" convention of A,B,C, TC TD TE. It is incorrect because the pump is powered from 2TD.

Answer D Discussion

Incorrect. 2C RBCU is powered from 2XS2 which gets it normal supply frm 2X9 which is powered from 2TD therefore the RBCU would not be available .

Basis for meeting the KA

Requires knowledge of AC bus loads powered from 4160V bus 2TD

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
obj. IC-ES R20 IC-ES Attach 1

Student References Provided

KA	KA_desc
SYS062	Knowledge of bus power supplies to the following : (CFR: 41.7)□Major system loads ....
K2.01	

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS063	Knowledge of bus power supplies to the following: (CFR: 41.7)□Major DC loads ....
K2.01	

Which ONE of the following are loads that are BOTH powered by the Power Batteries?

A. Mulsifyer systems and TDEFWP Auxiliary Oil Pump

B. PCB-9 Control Power and CCW-8 (CCW Emergency Discharge to the tailrace)

C. Main FWPT Auxiliary Oil Pump and PCB-9 Control Power

D. TDEFWP Auxiliary Oil Pump and CCW-8

General Discussion

Answer A Discussion

Incorrect. First part is plausible since this is a DC load power by batteries however it is powered by the Control batteries by way of DIA panelboard. Second part is correct.

Answer B Discussion

Incorrect. First part is plausible since this is a DC load powered by batteries however it is powered by the switchyard batteries. Second part is correct.

Answer C Discussion

Incorrect, First part is plausible since TDEFDWP Aux oil pump is a DC load powered from the power batteries however the Main FWPT AOP is an AC pump. Second part is plausible since this is a DC load powered by batteries however it is powered by the switchyard batteries

Answer D Discussion

Correct. TDEFWP Aux Oil Pump and CCW-8 are DC loads powered from the Power Batteries.

Basis for meeting the KA

Requires knowledge of major DC loads and their power supplies.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	NRC 2007 Q42

Development References
Obj EL-DCD R7

Student References Provided

KA	KA_desc
SYS063	Knowledge of bus power supplies to the following: (CFR: 41.7)□Major DC loads ....
K2.01	

401-9 Comments:

Remarks/Status
.

2009B ONS SRO NRC Examination QUESTION 48

48

A

KA	KA_desc
SYS064	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ED/G system controls including: (CFR: 41.5 / 45.5)□Operating voltages, currents, and temperatures ....
A1.03	

Given the following conditions:

- ACB-3 closed
- Switchyard isolation has occurred

1) A __(1)__ will PREVENT KHU-1 from Emergency starting.

2) The LOWER KHU-2 output voltage that will allow ACB-2 to close is __(2)__.

Which ONE of the following completes the statements above?

A. 1. STARTUP INHIBIT
2. 12.6KV

B. 1. NORMAL LOCKOUT
2. 12.6KV

C. 1 STARTUP INHIBIT
2. 12.3KV

D. 1. NORMAL LOCKOUT
2. 12.3KV

General Discussion

Answer A Discussion

Correct. A startup inhibit blocks the startup of the associated unit from any source. The Out of Tolerance circuit for a KHU is applicable during an emergency start and requires gen output voltage be 13.8KV plus or minus 10% or it will not allow ACB 1 or 2 to close. 12.6kv is within the Tolerance

Answer B Discussion

Incorrect. First part is plausible since it is a lockout condition for the KHU and will prevent the KHU from starting for all but an emergency start of the KHU. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible since it is >40% of output voltage. At 40% of rated speed the KHU can accept full load under emergency start conditions therefore it is plausible to mis-apply the 40% to this situation.

Answer D Discussion

Incorrect. First part is plausible since it is a lockout condition for the KHU and will prevent the KHU from starting for all but an emergency start of the KHU. Second part is plausible since it is >40% of output voltage. At 40% of rated speed the KHU can accept full load under emergency start conditions therefore it is plausible to mis-apply the 40% to this situation.

Basis for meeting the KA

Requires ability to monitor KHU Generator Output Voltage during an emergency start to ensure it is within design limits and therefore will be able to provide power to the Emergency overhead power path.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj. EL-KHG R11 R18 R21 EL-KHU

Student References Provided

KA	KA_desc
SYS064 A1.03	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ED/G system controls including: (CFR: 41.5 / 45.5)□Operating voltages, currents, and temperatures ....

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS064	Knowledge of the effect of a loss or malfunction of the following will have on the ED/G system: (CFR: 41.7 / 45.7)□Fuel oil storage tanks ....
K6.08	

Given the following conditions:

- All three Oconee units are in Mode 1
- Keowee Hydro Unit 2 is generating to the grid
- ALL KHU 2 Forebay level sensors are NOT operable

Which ONE of the following describes the action(s) required in accordance with SLC's?

A. Manually input Forebay level into the digital governor AND suspend commercial operation of the KHU's

B. Manually input Forebay level into the digital governor ONLY

C. Suspend commercial operation of the KHU's ONLY

D. Declare BOTH KHU's NOT Operable

2009B ONS SRO NRC Examination QUESTION 49

49

A

General Discussion

Answer A Discussion

Correct. Since KHU-2 is generating then SLC 16.8.4 applies and it requires immediately suspending commercial generation and manually inputting lake level.

Answer B Discussion

Incorrect. Plausible since manually inputting Forebay Level is one of the required actions in SLC 16.8.4 Condition B however it is not the only action required.

Answer C Discussion

Incorrect. Plausible since suspending commercial generation is one of the required actions in SLC 16.8.4 Condition B however it is not the only action required.

Answer D Discussion

Incorrect. Plausible since SLC 16.8.4 directs actions required of both KHU's (suspend commercial operations) and with Forebay level NOT operable it would be plausible to deduce that KHU available head could not be determined and therefore have the misconception that declaring both KHU inoperable would be appropriate.

Basis for meeting the KA

Discussed new KA with chief examiner. He determined that the question could be about lake level because it is the "fuel" for the hydro units. Lake level applies to forebay level for the KHU's and this question requires knowledge of the effect that a malfunction of Forebay level would have on an operating KHU.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj. EL-KHU R23 SLC 16.8.2 SLC 16.8.4

Student References Provided

KA	KA_desc
SYS064 K6.08	Knowledge of the effect of a loss or malfunction of the following will have on the ED/G system: (CFR: 41.7 / 45.7)□Fuel oil storage tanks ....

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 50

50

D

KA	KA_desc
SYS073 A2.02	Ability to (a) predict the impacts of the following malfunctions or operations on the PRM system; and (b) based on those predictions, use procedures to cor- rect, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)□Detector failure ....

Given the following Unit 1 conditions:

Initial conditions:
- Reactor power = 100%
- 1A GWD tank release in progress
- 1RIA-38 OOS

Current conditions:
- Loss of power to RM-80 skid of 1RIA-37
- 1SA8/B9 RM PROCESS MONITOR RADIATION HIGH in alarm
- 1SA8/B10 RM PROCESS MONITOR FAULT in alarm

1) 1GWD-4 (A GWD TANK DISCHARGE) will __(1)__.

2) The GWD tank release may __(2)__ in accordance with OP/1-2/A/1104/018 (GWD System).

Which ONE of the following completes the statements above?

A. 1. remain open
   2. continue as long as 1RIA-37 is re-energized within one hour

B. 1. automatically close
   2. be re-initiated as long as 1RIA-37 is re-energized within one hour

C. 1. remain open
   2. continue as long as two independent samples agree prior to restarting the release

D. 1. automatically close
   2. be re-initiated as long as two independent samples agree prior to restarting the release

General Discussion

Answer A Discussion

Incorrect, 1GWD4 will close. Remaining open is plausible because the HIGH setpoint was not actually reached since the alarms were due to loss of power. Second part is plausible because a release is allowed to continue for Planned outages of instrumentation < 1 Hr.

Answer B Discussion

Incorrect, First part is correct. Second part is plausible because a release would be allowed to continue if it were a Planned outage of < 1 Hr therefore it is plausible to believe it could be re-initiated however this only applies to short controlled outages of < 1hr.

Answer C Discussion

Incorrect: 1GWD4 will close. Remaining open is plausible because the HIGH setpoint was not actually reached since the alarms were due to loss of power. . Second part is plausible because actions in SLC 16.11.3 Condition I for inoperable RIA-37/38 require analyzing 2 independent samples prior to initiating subsequent releases.

Answer D Discussion

Correct, if a loss of power to the RM80 skid for an RIA occurs, any interlocks for that RIA will occur as if a HIGH ALARM had occurred therefore 1GWD-4 would automatically close. OP/1-2/A-1104/018 Encl 4.9 would require terminating the release and then a subsequent release without either RIA operable would require two independent samples prior to release.

Basis for meeting the KA

Requires knowledge of impact of a loss of the RIA detector and the procedure actions required due to the failure.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	2007 NRC Q51

Development References	Student References Provided
Obj. RAD-RIA R2, R3, & R15 RAD-RIA 1104/18	

KA	KA_desc
SYS073 A2.02	Ability to (a) predict the impacts of the following malfunctions or operations on the PRM system; and (b) based on those predictions, use procedures to cor- rect, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)□Detector failure ....

401-9 Comments:	Remarks/Status

KA	KA_desc
SYS076 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: (CFR: 41.5 / 43.5 / 45/3 / 45/13)□Loss of SWS ....

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- A and B LPSW pumps operating

Current conditions:

- LPSW line break in Turbine Building Basement
- LPSW Pressure = 65 psig decreasing

The LPSW header pressure setpoint at which LPSW to the RBCU's will automatically isolate is __(1)__ psig AND Unit 1&2 LPSW system AND Unit 3 LPSW system will be cross-tied __(2)__ in accordance with AP/24 (Loss of LPSW).

Which ONE of the following completes the statement above?

A. 1. 18
   2. ANYTIME normal system pressure can NOT be restored

B. 1. 18
   2. ONLY if NO Unit 1 and 2 LPSW pumps are available

C. 1. 25
   2. ANYTIME normal system pressure can NOT be restored

D. 1. 25
   2. ONLY if NO Unit 1 and 2 LPSW pumps are available

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible since cross-tying LPSW systems is a mitigation strategy used in AP/24 therefore it would be plausible to have the misconception that cross-tying is used to restore normal system pressure whenever other actions have not been successful.

Answer B Discussion

Correct. LPSW to the RBCU's will auto isolate at 18 psig LPSW header pressure. Guidance in AP/24 does not direct cross-tying LPSW systems unless no LPSW pumps are available.

Answer C Discussion

Incorrect: First part is plausible since it is the setpoint at which LPSW to RBCU's will automatically restore LPSW however the value is still well below normal LPSW operating pressure and is therefore plausible as an auto isolate value. Second part is plausible since cross-tying LPSW systems is a mitigation strategy used in AP/24 therefore it would be plausible to have the misconception that cross-tying is used to restore normal system pressure whenever other actions have not been successful.

Answer D Discussion

Incorrect: First part is plausible since it is the setpoint at which LPSW to RBCU's will automatically restore LPSW however the value is still well below normal LPSW operating pressure and is therefore plausible as an auto isolate value. Second part is correct.

Basis for meeting the KA

Requires ability to predict the impact of a loss of LPSW would have on the LPSW system as well as procedure directed actions to mitigate the event. Specifically requires ability to predict when a Loss of LPSW will result in auto isolation of LPSW to RBCU's.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj. EAP-APG R9 Obj SSS-LPW R6 AP/24 SSS-LPW

Student References Provided

KA	KA_desc
SYS076 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: (CFR: 41.5 / 43.5 / 45/3 / 45/13)□Loss of SWS ....

401-9 Comments:

Remarks/Status

D

2009B ONS SRO NRC Examination QUESTION 52 52

KA	KA_desc
SYS078	Knowledge of the effect that a loss or malfunction of the IAS will have on the following: (CFR: 41.7 / 45.6)□Systems having pneumatic valves and controls ....
K3.02	

Given the following Unit 2 conditions:

Initial conditions:

- Reactor power = 100%
- 2FDW-35 and 44 (Startup FDW Control Valves) are 100% open
- 2FDW-32 and 41 (Main FDW Control Valves) are 60% open

Current conditions:

- IA pressure = 60 psig slowly decreasing

1) 2FDW-35 and 2FDW-44 have failed __(1)__.

2) 2FDW-32 and 2FDW-41 __(2)__.

Which ONE of the following completes the statements above?

A. 1. closed
   2. are controlling Main FDW flow.

B. 1. closed
   2. have failed closed

C. 1. open
   2. have failed open

D. 1. "as is"
   2. have failed "as is"

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52

D

General Discussion

Answer A Discussion

Incorrect. Plausible since this could be correct if the main FDW valves were supplied by AIA. Some valves of a system can be backed up by AIA therefore some could be failed and some continuing to control. As an example, 1HP-5, 6, & 7 are supplied by AIA while 1HP-8, 9, and 11 are not therefore some valves could be failed while others are still controlling. This answer would be correct if the main FDW control valves had a supply from AIA and were therefore unaffected by the failure. Additional plausibility comes from the fact that there are some FDW valves that have an AIA supply (FDW-315 & 316).

Answer B Discussion

Incorrect. Plausible since many crucial system valves fail closed on loss of IA.

Answer C Discussion

Incorrect. Plausible since there are many crucial system valves that fail open on loss of IA.

Answer D Discussion

Correct. Both sets of valves fail "as is" at 65 psig IA pressure.

Basis for meeting the KA

Requires knowledge of the affect that a loss of IA will have on the Main FDW system.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj. EAP-APG R9 AP/22

Student References Provided

KA	KA_desc
SYS078 K3.02	Knowledge of the effect that a loss or malfunction of the IAS will have on the following: (CFR: 41.7 / 45.6)□Systems having pneumatic valves and controls ....

401-9 Comments:

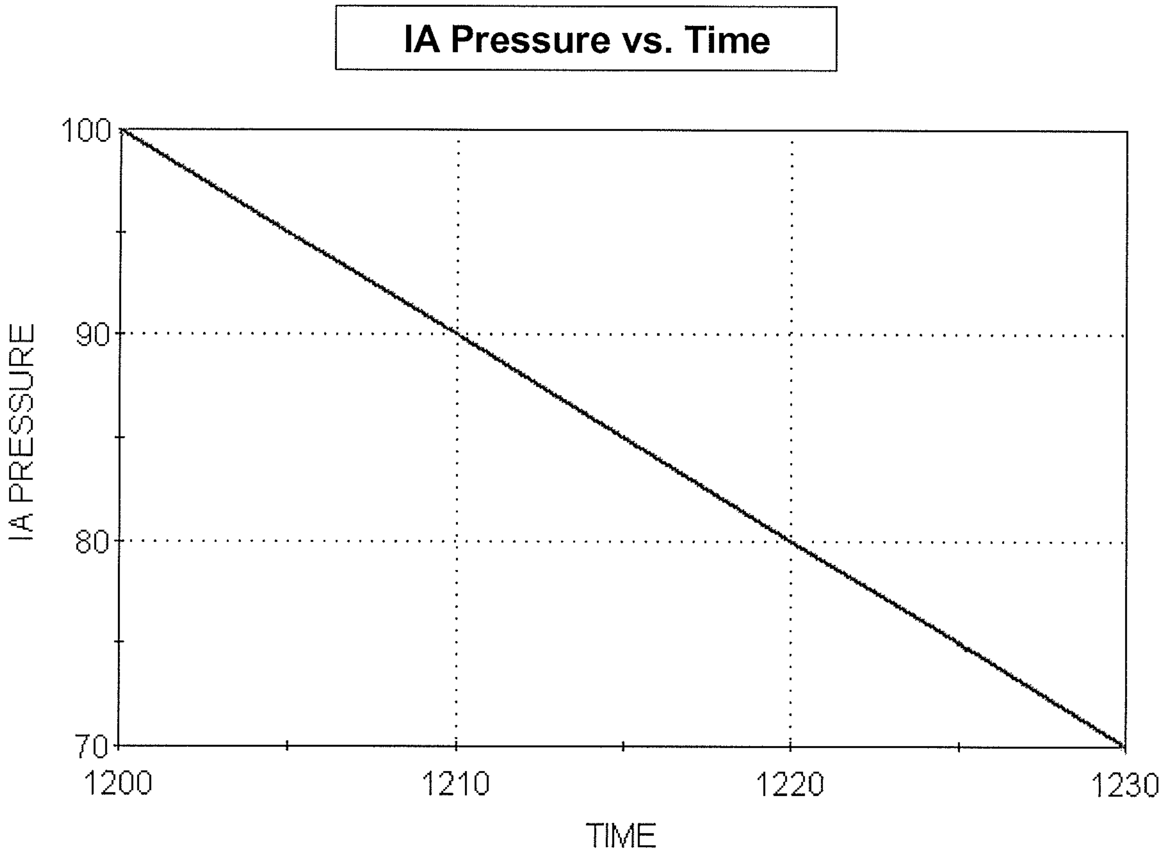
Remarks/Status

2009B ONS SRO NRC Examination QUESTION 53

53 A

KA	KA_desc
SYS078	Knowledge of IAS design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7)□Cross-over to other air systems ....
K4.02	

Given the following conditions:



Which ONE of the following describes the EARLIEST time at which SA-141 (SA to IA Controller) will automatically open?

A. 1215

B. 1212

C. 1210

D. 1207

2009B ONS SRO NRC Examination QUESTION 53

53

A

General Discussion

Answer A Discussion

CORRECT: SA to IA Controller (SA-141) valve senses the IA system pressure and opens at 85 psig to allow service air into the IA system.

Answer B Discussion

Incorrect: Plausible sine 88 psig is the pressure at which the AIA compressors will start

Answer C Discussion

Incorrect: Plausible since 90 psig is the pressure at which the Diesel Air Compressors will start

Answer D Discussion

Incorrect: Plausible since 93 psig is the pressure at which the Backup IA compressors will start.

Basis for meeting the KA

Requires knowledge of automatic cross-connect between Service air and Instrument air systems.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	2009A Question 64

Development References
Obj. SSS-IA R52, R27 AP/22

Student References Provided

KA	KA_desc
SYS078 K4.02	Knowledge of IAS design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7)□Cross-over to other air systems ....

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 54

54

D

KA	KA_desc
SYS103 A3.01	Ability to monitor automatic operation of the containment system, including: (CFR: 41.7 / 45.5)□Containment isolation

Which ONE of the following will receive a signal to close if ES Digital Channel 2 was inadvertently actuated on Unit 1?

A. 1LPSW-21

B. 1LPSW-6

C. 1GWD-12

D. 1LWD-2

General Discussion

Answer A Discussion

Incorrect. Plausible since LPSW-21 is a containment isloation valve on ES-5 and 6 therefore it would be correct for an ES-5 or 6 actuation.

Answer B Discussion

Incorrect. Plausible since LPSW-6 is a containment isloation valve on ES-5 therefore it would be correct for an ES-5 actuation.

Answer C Discussion

Incorrect. Plausible since GWD-1 is a containment isloation valve on ES-1 therefore it would be correct for an ES-1actuation.

Answer D Discussion

Correct. 1LWD-2 is a containment isolation valve on ES-2 and would close.

Basis for meeting the KA

Requires ability to determine which containment isolation valve would receive a close signal on a Containment Isolation signal generated from ES-2.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj. IC-ES R18 IC-ES ppt

Student References Provided

KA	KA_desc
SYS103 A3.01	Ability to monitor automatic operation of the containment system, including: (CFR: 41.7 / 45.5)□Containment isolation ....

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS103	Knowledge of the physical connections and/or cause-effect relationships between the containment system and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)□Personnel access hatch and emergency access hatch ....
K1.05	

Given the following Unit 3 conditions:

- Reactor power = 100%
- Personnel Hatch Interlock Mechanism NOT OPERABLE

Which ONE of the following describes the MINIMUM actions required in accordance with Tech Spec 3.6.2 (Containment Air Locks)?

A. Declare Containment NOT Operable immediately

B. Declare BOTH doors in the air lock NOT Operable immediately

C. Verify ALL OPERABLE doors in the air lock are closed within one hour

D. Verify at least ONE OPERABLE door in the air lock is closed within one hour

General Discussion

Chief Examiner OK'ed concept of inoperable door interlock to meet KA

Answer A Discussion

Incorrect. Plausible since the air locks are part of containment and an air lock that has both doors open could result in enough Containment leakage to result in having to declare Containment inoperable. Immediately is a plausible completion time for declaring equipment not operable

Answer B Discussion

Incorrect. Plausible since keeping at least one door closed (the function of the interlock) is required to support containment operability and since the interlock is not working it would be plausible to deduce that the doors can not perform their intended function and declare them inoperable. However, there is a specific condition in TS 3.6.2 to address the interlock being inoperable. Immediately is a plausible completion time for declaring equipment not operable

Answer C Discussion

Incorrect. Plausible since the TS does required verifying a single operable door in the air lock closed. Additionally, declaring both inoperable and taking actions accordingly could be the result of the misconception that closing only one door creates single failure issues (although they do not apply here).

Answer D Discussion

Correct. TS 3.6.2 Condition B requires Verifying an OPERABLE door in the affected air lock is closed within 1 hour.

Basis for meeting the KA

Knowledge of the 1 hour or less actions required for an inoperable interlock in support of the effect that an open pathway through the air lock can have on containment are required. This concept for this questions KA match was discussed with chief examiner.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj. ADM-TSS R4 TS 3.6.2

Student References Provided

KA	KA_desc
SYS103 K1.05	Knowledge of the physical connections and/or cause-effect relationships between the containment system and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)□Personnel access hatch and emergency access hatch ....

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 56

56

D

KA	KA_desc
SYS001	Knowledge of CRDS design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7)□Rod motion inhibit
K4.23	

Which ONE of the following conditions would result in a Control Rod Out Inhibit?

A. Reactor power = 52% and Group 6 Rod 5 becomes misaligned by > 9 inches

B. Reactor power = 52% and Control Rod Group 1 loses its Group Out Limit

C. Count rate = 675 cps increasing and ALL Safety rods NOT withdrawn to their Group Out Limit and Safety Rods Out Bypass NOT enabled

D. Count rate = 675 cps increasing and Wide Range NI-1 startup rate = 2.1 dpm

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D

General Discussion

Answer A Discussion

Incorrect. Plausible since this would be correct if asking about a reg rod with an Asymmetric Fault or if Power were >60%.

Answer B Discussion

Incorrect. Plausible since this condition is part of the Asymmetric Rod Runback circuitry and would be correct if power were >60%.

Answer C Discussion

Incorrect. Plausible since these conditions would result in an Auto inhibit but not an Out inhibit.

Answer D Discussion

Correct. Any of the four Wide Range NI's exceeding a 2 DPM SUR will result in an Out Inhibit of ALL Control Rods.

Basis for meeting the KA

Requires knowledge of the design of the interlock that will inhibit rod motion.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	IC044

Development References
Obj. IC-CRI R32 IC-CRI

Student References Provided

KA	KA_desc
SYS001 K4.23	Knowledge of CRDS design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7)□Rod motion inhibit ....

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS014 A2.06	Ability to (a) predict the impacts of the following malfunctions or operations on the RPIS; and (b) based on those on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations : (CFR: 41.5 / 43.5 / 45.3 / 45.13)□Loss of LVDT ....

Given the following Unit 1 conditions:

- Reactor power = 100%
- ALL Absolute Position Indications (API) for Group 6 Rod 3 fail to "0"

1) A CRD Asymmetric Fault __(1)__ be generated.

2) The action that would be required in accordance with Tech Specs if all API and RPI indications for Group 6 Rod 3 become unavailable is to __(2)__.

Which ONE of the following completes the statements above?

A. 1. will
2. immediately declare Group 6 Rod 3 NOT operable

B. 1. will
2. begin RCS boration within 15 minutes

C. 1. will NOT
2. immediately declare Group 6 Rod 3 NOT operable

D. 1. will NOT
2. begin RCS boration within 15 minutes

General Discussion

Answer A Discussion

Correct. API is used to generate Asymmetric Faults when any rod is 9" out of alignment. Since Group 6 would be 100% withdrawn at 100% power, a 0" indication for a group 6 rod would result in an Asymmetric Fault. If RPI is also lost to the same rod then TS 3.1.7 requires immediately declaring the rod inoperable.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible since it would be correct if SDM verified to be less than required.

Answer C Discussion

Incorrect. First part is plausible since it would be correct regarding an Asymmetric Runback. Second part is correct. Second part is plausible with this answer since there are no operable rod position indications regardless of the status of the CRD logic for an Asymmetric fault and therefore declaring the rod inoperable is both plausible and correct.

Answer D Discussion

Incorrect. First part is plausible since it would be correct regarding an Asymmetric Runback. Second part is plausible since it would be correct if SDM verified to be less than required. The SDM verification is not impacted by the status of the CRD Asymmetric Fault logic so the second part is plausible even with the first part being incorrect.

Basis for meeting the KA

Requires ability to predict the impact of a failure of API rod position indications on the CRD system (ONS uses reed switches instead of LVDT inputs) and then based on CRI position failures, use procedures (Tech Specs) to mitigate the impact.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj. IC-RCI R29 ADM-TSS R4 TS 3.1.7 IC-RCI

Student References Provided

KA	KA_desc
SYS014 A2.06	Ability to (a) predict the impacts of the following malfunctions or operations on the RPIS; and (b) based on those on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations : (CFR: 41.5 / 43.5 / 45.3 / 45.13)□Loss of LVDT ....

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS015	Knowledge of bus power supplies to the following : (CFR: 41.7)□NIS channels, components, and interconnections ....
K2.01	

1) The power supply to 1NI-6 Power Range detector is __(1)__.

2) The RPS channel will __(2)__ if that power supply is deenergized.

Which ONE of the following completes the statements above?

A. 1. 1KVIB
   2. trip

B. 1. 1KVIB
   2. NOT trip

C. 1. 1KVIC
   2. trip

D. 1. 1KVIC
   2. NOT trip

General Discussion

Answer A Discussion

Correct. NI-6 is located in the B RPS cabinet and receives its power from KVIB. The 120V provided by KVIB is converted to 15VDC for use with the NI detector. Loss of the vital power source to a particular RPS channel will result in that entire channel de-energizing, with all indicating lights off, and the channel tripped.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible since loss of power to an untripped ES digital channel results in the channel failing in the untripped state. Additional plausibility comes from the fact that KVIB also supplies the even ES digital channels.

Answer C Discussion

Incorrect. First part is plausible since KVIC would be a correct choice for the Source Range NI-2 (since the source range do not follow the linear pattern of ABCD-1234) or NI-7. Second part is correct.

Answer D Discussion

Incorrect. First part is plausible since KVIC would be a correct choice for the Source Range NI-2 since the source range do not follow the linear pattern of ABCD-1234 or NI-7. Second part is plausible since loss of power to an untripped ES digital channel results in the channel failing in the untripped state. Additional plausibility comes from the fact that KVIB also supplies the even ES digital channels.

Basis for meeting the KA

Requires knowledge of the bus power supply to channel B RPS channel and Power Range NI-6.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj. IC-RPS R18, R20 Obj. IC-NI R28 IC-RPS IC-NI

Student References Provided

KA	KA_desc
SYS015	Knowledge of bus power supplies to the following : (CFR: 41.7)□NIS channels, components, and interconnections ....
K2.01	

401-9 Comments:

Remarks/Status
.

2009B ONS SRO NRC Examination QUESTION 59

59

D

KA	KA_desc
SYS017	Knowledge of ITM system design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7)□Input to subcooling monitors ....
K4.01	

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%

Current conditions:

- SBLOCA occurs
- IMAs & Symptom check complete

Which ONE of the following states the Core Exit Thermocouples (CETCs) that are being used by the Core Subcooling Monitors in ICCM?

A. ALL 47 CETCs

B. ONLY 24 qualified CETCs

C. ONLY 12 highest qualified CETCs for that train

D. ONLY 5 highest qualified CETCs for that train

General Discussion

Answer A Discussion

Incorrect:□ Plausible because this would be correct if asking about the OAC core SCM inputs instead of the ICCM.

Answer B Discussion

Incorrect: Only uses the five highest qualified for that train. Plausible because the program looks at all 24 qualified SCM monitors (12 for each train).

Answer C Discussion

Incorrect: Only uses the average of the five highest for that train. Plausible because the program looks at the 12 qualified CETCs for the individual train and picks highest 5.

Answer D Discussion

Correct: Uses the average of the five highest qualified CETCs for that train

Basis for meeting the KA

Requires knowledge of CETC input to Core SCMs.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	2006/7 Audit for retest Q58

Development References
Obj. IC RCI R42 IC-RCI

Student References Provided

KA	KA_desc
SYS017 K4.01	Knowledge of ITM system design feature(s) and/or interlock(s) which provide for the following: (CFR: 41.7)□Input to subcooling monitors ....

401-9 Comments:

Remarks/Status

D

2009B ONS SRO NRC Examination QUESTION 60

60

KA	KA_desc
SYS029	Ability to monitor automatic operation of the Containment Purge System including: (CFR: 41.7 / 45.5)□CPS isolation ....
A3.01	

Which ONE of the following will result in automatic closure of RB Purge isolation valves 3PR-1,2,3,4,5,AND 6?

A. 3RIA-45 HIGH alarm

B. 3RIA-46 ALERT alarm

C. Manual actuation of ES channels 5 and 6

D. Low RCS pressure actuation of ES channels 1 and 2

2009B ONS SRO NRC Examination QUESTION 60

60

D

General Discussion

Answer A Discussion

Incorrect. Plausible since 3RIA-45 High alarm will close 3PR-2 thru 5 however it will NOT close 3PR-1&6.

Answer B Discussion

Incorrect. Plausible since 3RIA-46 High alarm will close 3PR-2 thru 5 however it will NOT close 3PR-1&6.

Answer C Discussion

Incorrect. Plausible since ES 5&6 do contain essential RB Isolation valves for various systems and components however the Purge valves are all on ES 1&2.

Answer D Discussion

Correct. 3PR 1 & 6 are on ES channel 1 and 3PR-2 thru 5 are on ES channel 2 therefore any ES 1&2 actuation will result in closing 3PR-1 thru 6.

Basis for meeting the KA

Requires knowledge of what will cause automatic operation of the Containment Purge system valves. Knowing which valves should operate on a signal from ES 1&2 is an integral part of the ability to monitor automatic operation especially since different valves operate based on what the initiating signal is (ex. RIA's only close PR 2-5).

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj. PNS RBP R7 PNS-RBP

Student References Provided

KA	KA_desc
SYS029 A3.01	Ability to monitor automatic operation of the Containment Purge System including: (CFR: 41.7 / 45.5)□CPS isolation ....

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 61

61

C

KA	KA_desc
SYS033 K1.02	Knowledge of the physical connections and/or cause-effect relationships between the Spent Fuel Pool Cooling System and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)□RHRS ....

Given the following Unit 1 conditions:

Initial Conditions:

- Reactor in MODE 6
- Fuel Transfer Canal is full
- LPI in Normal Decay Heat Removal
- 1B Spent Fuel Cooling Pump operating and aligned to Refueling Cooling Mode in accordance with OP/1/A/1102/015 (Filling and Draining FTC)

Current conditions:

- 1SF-1 and 1SF-2 are inadvertently closed

Which ONE of the following describes the:

1) response of the Fuel Transfer Canal level?

2) position of 1SF-1 and 1SF-2 once the unit returns to MODE 1?

A. 1. Remain constant
   2. Open

B. 1. Remain constant
   2. Remain closed

C. 1. Decrease
   2. Open

D. 1. Decrease
   2. Remain closed

General Discussion

Answer A Discussion

Incorrect. First part is plausible since it would be correct if the B SF Cooling pump were in its normal alignment. It its normal alignment it takes a suction on the SFP and returns water to the SFP. LPI in its normal alignment will take a suction on the DHR drop line and return water to the core through the Core Flood Nozzles. Since LPI is in its normal DHR alignment and this answer would be correct if the B SF pump were in its normal alignment, this is a plausible choice. Second part is correct.

Answer B Discussion

Incorrect. First part is plausible since it would be correct if the B SF Cooling pump were in its normal alignment. It its normal alignment it takes a suction on the SFP and returns water to the SFP. LPI in its normal alignment will take a suction on the DHR drop line and return water to the core through the Core Flood Nozzles. Since LPI is in its normal DHR alignment and this answer would be correct if the B SF pump were in its normal alignment, this is a plausible choice. Second part is plausible since it is the logical choice for the position of SF-1 and 2. Since these are the valves that cross-connect the SFP and the Fuel Transfer Canal, it would be reasonable to assume them to be closed anytime the Fuel Transfer Canal is not full. SF-1 and 2 are closed for the process of draining or filling the Fuel Transfer Canal however once the FTC is empty, blank flanges are placed on the Fuel Transfer Canal end of the Transfer Tubes and SF-1 & 2 are opened to provide a suction source for the SSF-RCMUP and a return for SSF-letdown,

Answer C Discussion

Correct. With LPI in its Normal mode alignment, it takes a suction from the Decay heat drop line tied to the RCS and returns water to the Rx Vessel via the Core Flood nozzles. The B SF cooling pump, when in the Refueling Cooling Mode alignment, also takes a suction on the LPI Decay Heat Drop Line but returns water to the Spent Fuel Pool. If SF-1 and 2 are closed with SF Cooling in the Refueling Cooling Mode alignment, the SF pump will pump water from the transfer canal to the Spent Fuel pool resulting in Fuel Transfer Canal level decreasing. Once the FTC is empty, blank flanges are placed on the Fuel Transfer Canal end of the Transfer Tubes so that SF-1&2 can be opened to support operability of the SSF RCMUP since the transfer tubes provide a suction source for the SSF-RCMUP and a return for SSF-letdown,

Answer D Discussion

Incorrect. First part is correct. Second part is plausible since it is the logical choice for the position of SF-1 and 2. Since these are the valves that cross-connect the SFP and the Fuel Transfer Canal, it would be reasonable to assume them to be closed anytime the Fuel Transfer Canal is not full. SF-1 and 2 are closed for the process of draining or filling the Fuel Transfer Canal however once the FTC is empty, blank flanges are placed on the Fuel Transfer Canal end of the Transfer Tubes and SF-1 & 2 are opened to provide a suction source for the SSF-RCMUP and a return for SSF-letdown,

Basis for meeting the KA

First part of this question requires knowledge of the cause and effect relationship between LPI DHR and SF Cooling when SF cooling is aligned in the Refueling Cooling Mode. To get this answer correct the candidate must understand the relationship of LPI suction and discharge paths when in normal DHR to the Spent Fuel Cooling systems suction and discharge paths when aligned in the Refueling Cooling Mode alignment.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References

Obj FH-SFC R2,
Obj FH-FHS R7
FH-SFC
OP/1102/015 Encl 4.21
FH-FHS
op/1104/04 (LPI)

Student References Provided

KA	KA_desc
SYS033 K1.02	Knowledge of the physical connections and/or cause-effect relationships between the Spent Fuel Pool Cooling System and the following systems: (CFR: 41.2 to 41.9 / 45.7 to 45.8)□RHRS ....

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C

401-9 Comments:	Remarks/Status
	.

2009B ONS SRO NRC Examination QUESTION 62

62

D

KA	KA_desc
SYS034	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the Fuel Handling System controls including: (CFR: 41.5 / 45.5)□Water level in the refueling canal ....
A1.02	

Given the following Unit 2 conditions:

Initial conditions:

- Reactor in MODE 6
- Fuel Transfer Canal slightly above 21.34' mark on canal wall
- RB Hatch closed
- RB Purge is operating
- 2SF-1 AND 2SF-2 are open

Current conditions:

- RB Purge fan trips

Which ONE of the following predicts the response of actual Fuel Transfer Canal level over the next ten (10) minutes?

A. Initially increases then returns to previous level

B. Increases then remains constant

C. Initially decreases then returns to previous level

D. Decreases then remains constant

General Discussion

Answer A Discussion

Incorrect. First part is plausible since it would be correct if discussing SFP level. Returning to initial level is plausible since it would be indicative of inadequate venting during level changes.

Answer B Discussion

Incorrect. Plausible because it would be correct if discussing Spent Fuel Pool level instead of FTC level.

Answer C Discussion

Incorrect. Fuel Transfer Canal level will decrease until equalized with SFP level then remain constant. Returning to initial level is plausible since it would be indicative of inadequate venting during level changes.

Answer D Discussion

Correct. When the Reactor Building Purge (RBP) System is in operation, the RB is maintained at slightly less than atmospheric pressure, resulting in the FTC level being higher than the SFP level, due to the differential pressure.
When the RBP System is secured the RB pressure equalizes with the outside atmosphere. The pressure increase causes the pool levels to equalize, resulting in a decrease in FTC level and an increase in the SFP level.

Basis for meeting the KA

Requires ability to predict the impact of changing RB pressure on Fuel Transfer Canal level to ensure design level is not exceeded. Since 21.34' is the design minimum level for a full FTC, predicting the change in level when the RB Purge is secured and ensuring indicated level would not result in violating the 21.34' requirement when the purge trips is preventing exceeding design limits.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj. FH-SFC R13 FH-SFC

Student References Provided

KA	KA_desc
SYS034 A1.02	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the Fuel Handling System controls including: (CFR: 41.5 / 45.5)□Water level in the refueling canal ....

401-9 Comments:

Remarks/Status

C

2009B ONS SRO NRC Examination QUESTION 63 63

KA	KA_desc
SYS041	Knowledge of the effect of a loss or malfunction on the following will have on the SDS: (CFR: 41.7 / 45.7)□Controller and positioners, including ICS, S/G, CRDS ....
K6.03	

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%

Current conditions:

- Reactor trip
- "Trip Confirm" signal NOT generated by the Diamond

1) The status of the Turbine Load Status Flag is __(1)__.

2) The TBVs will control at __(2)__.

Which ONE of the following completes the statements above?

A. 1. TRUE
2. setpoint

B. 1. TRUE
2. setpoint + 125 psig

C. 1. FALSE
2. setpoint

D. 1. FALSE
2. setpoint + 125 psig

General Discussion

Answer A Discussion

Incorrect, first part incorrect. The turbine LOAD status flag is always false below 10% CTPD. Second part is correct.

Answer B Discussion

Incorrect, first part incorrect. The turbine LOAD status flag is always false below 10% CTPD. Second part is incorrect. It would be correct if the "trip confirm" signal had been generated.

Answer C Discussion

Correct, the turbine LOAD status flag is always false below 10% CTPD. Turbine Header Pressure control after a reactor trip at setpoint +125 psig when the Diamond control system receives a "trip confirm" signal from control rod drive breakers opening. Since the "Trip Confirm" signal was not generated the TBVs will control at setpoint.

Answer D Discussion

Incorrect, first part correct. The turbine LOAD status flag is always false below 10% CTPD. Second part is incorrect. It would be correct if the "trip confirm" signal had been generated.

Basis for meeting the KA

Requires knowledge of the effect of a failure of the Trip Confirmed signal to be generated once the CRD breakers are open on operation of the ICS system (specifically control of the Turbine Bypass Valves).

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	2004 NRC Exam Q59

Development References
Obj, STG-ICS, R10 STG-ICS Chapter 3

Student References Provided

KA	KA_desc
SYS041 K6.03	Knowledge of the effect of a loss or malfunction on the following will have on the SDS: (CFR: 41.7 / 45.7)□Controller and positioners, including ICS, S/G, CRDS ....

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 64 64 **A**

KA	KA_desc
SYS056	SYS056 GENERIC□Ability to locate and operate components, including local controls. (CFR: 41.7 / 45.7)
2.1.30	

Given the following Unit 1 conditions:

- Reactor power = 100%

1) The Hotwell Pump suction valve breakers are __(1)__.

2) The suction valve control switches are located in the __(2)__.

Which ONE of the following completes the statements above?

A. 1. open
 2. Turbine Building Basement adjacent to Hotwell Pump sump

B. 1. open
 2. Control Room on 1VB3

C. 1. closed
 2. Turbine Building Basement adjacent to Hotwell Pump sump

D. 1. closed
 2. Control Room on 1VB3

2009B ONS SRO NRC Examination QUESTION 64

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A

General Discussion

Answer A Discussion

Correct. Based on OE, the HWP suction valve breakers are open while the unit is operating since closing the valve can cause a unit trip. The controls for the suction valves are located on a column adjacent to the hotwell sump.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible since that is the location for the Feedwater pump suction valve controls (even though the FDWP's are not controlled from there) and numerous other Condensate system valves (TDEFWP suctions, etc.).

Answer C Discussion

Incorrect. First part is plausible since most pumps do NOT have the breakers open for the suction valves and pumps other than the HWP's do have breakers open for suction valves (LPSW Pumps). Second part is correct.

Answer D Discussion

Incorrect. First part is plausible since most pumps do NOT have the breakers open for the suction valves and pumps other than the HWP's do have breakers open for suction valves (LPSW Pumps). Second part is plausible since that is the location for the Feedwater pump suction valve controls (even though the FDWP's are not controlled from there) and numerous other Condensate system valves (TDEFWP suctions, etc.).

Basis for meeting the KA

Requires the ability to locate the controls for the HWP suction valves (operated locally in the plant) and the ability to operate the valves if needed (by knowing that the breakers for the valves must be closed to operate them),

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj. CF-C R6 CF-C

Student References Provided

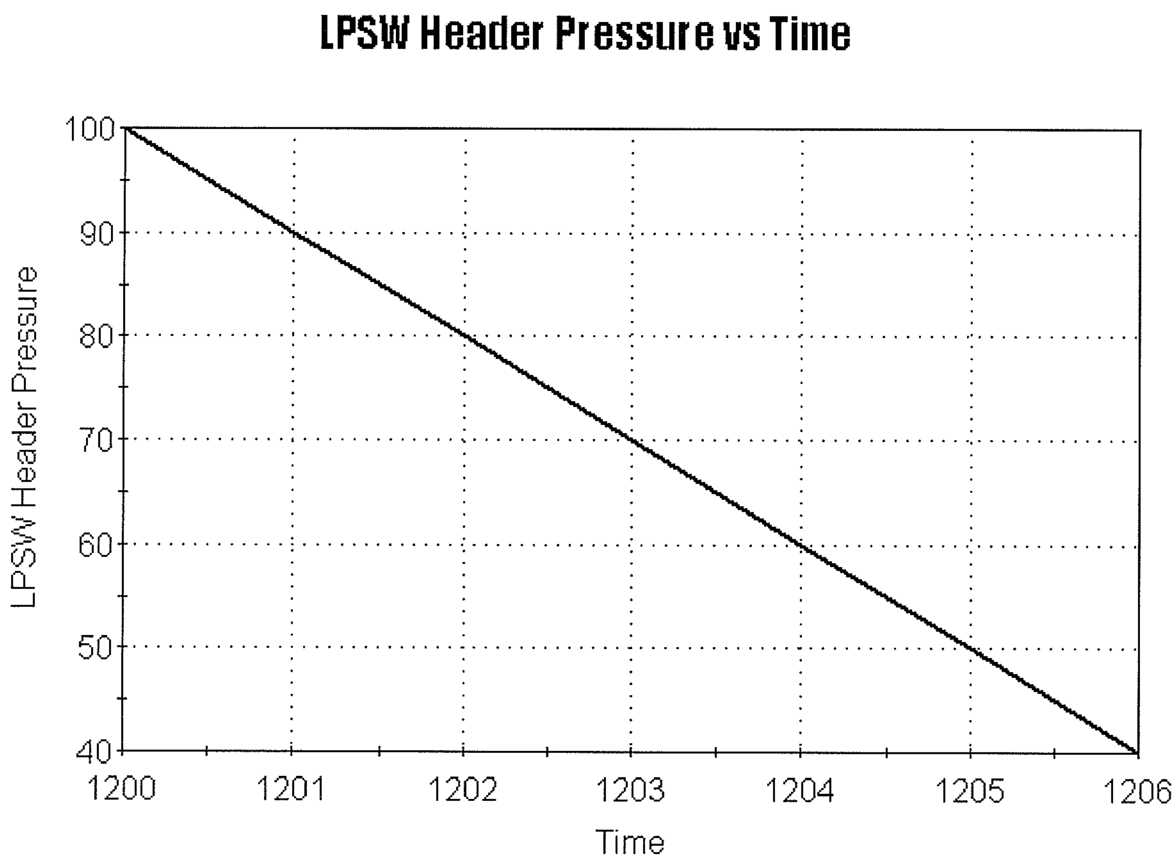
KA	KA_desc
SYS056	SYS056 GENERIC□Ability to locate and operate components, including local controls. (CFR: 41.7 / 45.7)
2.1.30	

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS075	Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)□Emergency/essential SWS pumps ....
A4.01	

Given the following Unit 3 conditions:



- 3A LPSW pump operating
- 3B LPSW pump in AUTO
- Unit 3 LPSW system transient occurs as described in graph above

Which ONE of the following states the earliest time that LPSW header pressure will START the timer for the Standby LPSW pump auto start circuit?

A. 1201

B. 1203

C. 1204

D. 1205

General Discussion

Answer A Discussion

Incorrect. Plausible since the HPSW header pressure low alarm actuates at 95 psig.

Answer B Discussion

Correct. At 70 psig a 10 second timer is initiated once the timer has timed out if pressure is still less than 70 psig then the standby pump will initiate..

Answer C Discussion

Incorrect. Plausible since 10 seconds after header pressure reaches 70 psig, the S/B LPSWP would start. The pump would start at 1203:10 therefore 1204 would be the earliest choice available that both pumps would be running.

Answer D Discussion

Incorrect. Plausible since 50 psig is the setpoint for the LPSW pump low discharge pressure light in the control room to illuminate.

Basis for meeting the KA

Requires ability to monitor the auto start of the standby LPSW Pump.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj. SSS-LPW R23 SSS-LPW

Student References Provided

KA	KA_desc
SYS075 A4.01	Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)□Emergency/essential SWS pumps ....

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 66

66

C

KA	KA_desc
GEN2.1	Conduct of Operations□Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trips, mode changes, etc. (CFR: 41.10 / 43.5 / 45.12)
2.1.14	

Which ONE of the following lists of items will always require a plant page (except for unanticipated automatic starts and emergency situations) in accordance with OMP 1-02 (Rules of Practice)?

A. ALL 4911 calls
Closing PCB-18

B. ALL AP entries
Starting and stopping 1B1 RCP

C. Starting a 4160V Motor
Closing PCB-18

D. Starting and stopping 1B1 RCP
Starting a 4160V Motor

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66

C

General Discussion

Answer A Discussion

Incorrect. While some 4911 calls would require a plant page (ex. MERT activation does require a plant page) there is no specific requirement that all 4911 calls have an associated plant page.

Answer B Discussion

Incorrect. Many AP entries do require a plant page however all AP's do not require it. The AP will direct making the plant page if it is required.

Answer C Discussion

Correct. All PCB operations require a plant page. Both opening and closing PCB's require a previous plant page per OMP 1-02.

Answer D Discussion

Incorrect. Starting RCP's requires a plant page but securing the RCP's do not.

Basis for meeting the KA

Requires knowledge of specific criteria that require plant wide pages.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
ADM-OMP

Student References Provided

KA	KA_desc
GEN2.1 2.1.14	Conduct of Operations□Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trips, mode changes, etc. (CFR: 41.10 / 43.5 / 45.12)

401-9 Comments:

Remarks/Status

KA	KA_desc
GEN2.1	Conduct of Operations□Knowledge of industrial safety procedures (such as rotating equipment, electrical, high temperature, high pressure, caustic, chlorine, oxygen and hydrogen). (CFR: 41.10 / 45.12)
2.1.26	

Which ONE of the following describes what should be used in the case of a large Hydrogen leak in accordance with OP/1/A/1106/017 (Hydrogen System) to maintain Hydrogen concentration below the lower flammability limit?

A. CO_2

B. Water

C. Halon

D. Foam fire retardant

2009B ONS SRO NRC Examination QUESTION 67

67

B

General Discussion

Answer A Discussion

Incorrect. Plausible since CO2 is a common agent used in fire prevention/extinguishing and the addition of CO2 would decrease the concentration of Hydrogen.

Answer B Discussion

Correct. L&P 2.4 of 1106/017 says that in case of large Hydrogen leaks, water flow should be admitted to the leak to disperse the gas.

Answer C Discussion

Incorrect. Plausible since Halon is a commonly used fire suppression agent and if used it would dilute the concentration of H2 in air. Addtionally, Halon is an extinguishing agent that is used on site (simulator areas, document control, etc.)

Answer D Discussion

Incorrect. Plausible since foam fire retardant is used to prevent fires during flammable liquid spills.

Basis for meeting the KA

Requires knowledge of industrial safety procedure directed by procedure to mitigate effects of a large Hydrogen leak.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	SSS011503

Development References
Obj. SSS-AGS R15 SSS-AGS OP/1/A/1106/017 (Hydrogen System)

Student References Provided

KA	KA_desc
GEN2.1 2.1.26	Conduct of Operations□Knowledge of industrial safety procedures (such as rotating equipment, electrical, high temperature, high pressure, caustic, chlorine, oxygen and hydrogen). (CFR: 41.10 / 45.12)

401-9 Comments:

Remarks/Status

KA	KA_desc
GEN2.1	Conduct of Operations□Ability to coordinate personnel activities outside the control room. (CFR: 41.10 / 45.5 / 45.12 / 45.13)
2.1.8	

Given the following conditions:

Initial conditions:
- Time = 1200
- Unit 1 reactor power = 100%
- Unit 3 reactor power = 100%
- Site Area Emergency declared on Unit 2

Current conditions:
- Time = 1400
- TSC/OSC remain activated
- Unit 3 requires an NEO to place Unit 3 BWST in recirc

Which ONE of the following describes who will communicate with the NEO in accordance with OMP 1-07 (Operations Emergency Response Organization) to have them place the Unit 3 BWST in recirc?

A. OSM liaison

B. OSC Ops liaison

C. Unit 3 CRSRO

D. Unit 3 RO

2009B ONS SRO NRC Examination QUESTION 68

68

B

General Discussion

Answer A Discussion

Incorrect. Plausible since this is also a "liaison" position that is addressed in OMP 1-07 and as a currently or formerly licensed individual is someone who could be in the position of directing NEO's under other circumstances.

Answer B Discussion

Correct. Per OSM 1-07, all NEO's would report to the OSC and the OSM Operations Liaison directs these NEO's in performance of tasks.

Answer C Discussion

Incorrect. Plausible since Unit 3 is not the unit with a SAE and the CRSRO would normally be directing NEO's under other circumstances.

Answer D Discussion

Incorrect. Plausible since Unit 3 is not the unit with a SAE and the U3 RO could normally be directing NEO's under other circumstances.

Basis for meeting the KA

Requires knowledge of the process for directing needed activities outside the units Control Room when the OSC is operational.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj. EAP-SEP R5 EAP-SEP OMP 1-7

Student References Provided

KA	KA_desc
GEN2.1 2.1.8	Conduct of Operations□Ability to coordinate personnel activities outside the control room. (CFR: 41.10 / 45.5 / 45.12 / 45.13)

401-9 Comments:

Remarks/Status

KA	KA_desc
GEN2.2	Equipment Control□Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels. (CFR: 41.6 / 41.7 / 45.2)
2.2.2	

Given the following Unit 1 conditions:

- Reactor power = 100%
- Group 8 movement is required for imbalance control

Which ONE of the following:

1) describes the MINIMUM actions required prior to using the joystick to move Group 8 rods?

2) states if Group 7 rods will respond to neutron error while group 8 is selected?

A. 1. Place Diamond panel Group Select switch to Group 8 ONLY
   2. Yes

B. 1. Place Diamond panel Group Select switch to Group 8 ONLY
   2. No

C. 1. Select SEQUENCE OVERRIDE <u>and</u> Place Diamond panel Group Select switch to Group 8
   2. Yes

D. 1. Select SEQUENCE OVERRIDE <u>and</u> Place Diamond panel Group Select switch to Group 8
   2. No

General Discussion

Answer A Discussion

Correct. The only action required is selecting Group 8 on the Group Select switch and then the joystick will manually control the position of Group 8 while Group 7 remains able to respond to neuron error commands for movement.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible since it is correct when the Diamond is placed in Manual and/or sequence override.

Answer C Discussion

Incorrect. First part is plausible since it would be correct if moving any group other then Group 8 while at 100%. Second part is correct.

Answer D Discussion

Incorrect. First part is plausible since it would be correct if moving any group other then Group 8 while at 100%. Second part is plausible since it is correct when the Diamond is placed in Manual and/or sequence override.

Basis for meeting the KA

The question requires demonstrating the ability to manipulate Group 8 Control Rods and the knowledge of how the CRD system will respond to error signals while group 8 is being manipulated.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj. IC-CRI R24 IC-CRI

Student References Provided

KA	KA_desc
GEN2.2 2.2.2	Equipment Control□Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels. (CFR: 41.6 / 41.7 / 45.2)

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 70 70 **C**

KA	KA_desc
GEN2.2	Equipment Control□Knowledge of less than or equal to one hour Technical Specification action statements for systems. (CFR: 41.7 / 41.10 / 43.2 / 45.13)
2.2.39	

Given the following Unit 1 conditions:

Initial conditions:
- Reactor power = 100%

Current conditions:
- Keowee Emergency Start channels 1 and 2 inoperable

1) The MAXIMUM Completion Time allowed by Tech Specs to declare both KHU's NOT OPERABLE is __(1)__.

2) The resulting Tech Spec Required Action(s) is/are to __(2)__.

Which ONE of the following completes the statements above?

A.
1. Immediately
2. energize at least ONE Standby Bus from a Lee Combustion Turbine via an isolated path within 1 hour

B.
1. One hour
2. energize at least ONE Standby Bus from a Lee Combustion Turbine via an isolated path within 1 hour

C.
1. Immediately
2. energize BOTH Standby Buses from a Lee Combustion Turbine via an isolated path within 1 hour

D.
1. One hour
2. energize BOTH Standby Buses from a Lee Combustion Turbine via an isolated path within 1 hour

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General Discussion

Answer A Discussion

Incorrect, First part is correct however BOTH SBB's are required to be energized. Plausible since Condition D for KHU Underground inoperable requires only one Standby Bus be energized.

Answer B Discussion

Incorrect, First part is incorrect but plausible since 1 hour is a common completion time for significant inoperability's. Additionally, allowing 1 hr to declare components inoperable is allowed in other TS's (Ex. 3.3.7) which adds to plausibility of the 1 hour completion time for declaring KHU's not operable. Second part is incorrect since BOTH SBB's are required to be energized. Plausible since Condition D for KHU Underground inoperable requires only one Standby Bus be energized.

Answer C Discussion

Correct, both Keowee units are required to be declared inoperable immediately per TS 3.3.21 Condition C. TS 3.8.1 Condition I requires energizing BOTH standby buses within 1 hr with both KHU's inoperable.

Answer D Discussion

Incorrect, First part is incorrect but plausible since 1 hour is a common completion time for significant inoperability's. Additionally, allowing 1 hr to declare components inoperable is allowed in other TS's (Ex. 3.3.7) which adds to plausibility of the 1 hour completion time for declaring KHU's not operable. Second part is correct.

Basis for meeting the KA

Requires knowledge of 1 hr or less actions required by TS 3.3.21 and 3.8.1.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	BANK	ADM160401 - From program exam 5

Development References
Obj. ADM-TSS R4 TS 3.3.21 TS 3.8.1

Student References Provided

KA	KA_desc
GEN2.2	Equipment Control□Knowledge of less than or equal to one hour Technical Specification action statements for systems. (CFR: 41.7 / 41.10 / 43.2 / 45.13)
2.2.39	

401-9 Comments:

Remarks/Status

KA	KA_desc
GEN2.2	Equipment Control□Ability to recognize system parameters that are entry-level conditions for Technical Specifications. (CFR: 41.7 / 41.10 / 43.2 / 43.3 / 45.3)
2.2.42	

Given the following Unit 1 conditions:

- Reactor power = 100%

Which ONE of the following describes a condition that would require entry into a Tech Spec ACTIONS table?

A. UST level = 7.6 feet

B. BWST level = 45.3 feet

C. 1C RPS NR Th fails high

D. 230KV Dacus Black and White lines isolated

2009B ONS SRO NRC Examination QUESTION 71

71

B

General Discussion

Answer A Discussion

Incorrect: Plausible since there is a minimum required TS level for UST to support EFDW operability. TS 3.7.6 requires that both the UST and Hotwell be operable and that the UST contain > 30,000 gallons. . PT/600/01 (Periodic Instrument Surveillance) verifies this volume by requiring UST level be > 6 feet.

Answer B Discussion

Correct: Tech Specs requires the BWST to be operable and contain 350,000 gallons of Borated water. PT/600/01 (Periodic Instrument Surveillance) verifies this volume by requiring >47 feet in BWST.

Answer C Discussion

Incorrect: Tech Spec 3.3.1 requires 3 operable channels for each function and Thot feeds multiple functions. Since TS requires 3 operable channels per function and there are actually 4 channels of each function, any inoperability's that are contained in a single RPS channel will not result in TS Actions table entry.

Answer D Discussion

Incorrect: Plausible since either Dacus black or white are part of what can be credited in TS 3.8.1 for one of the two offsite sources on separate towers however since there are still more than enough offsite sources available that meet the separate tower criteria, these being out of service would not require entry into the TS ACTION table for TS 3.8.1.

Basis for meeting the KA

Requires analyzing several conditions and parameters and determining if they result in TS entry conditions being met.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	MODIFIED	2009A NRC Exam Question 70

Development References

Obj. ADM-TSS R8
2009A NRC Exam Question 70
PT/600/01
TS 3.3.1
TS 3.8.1

Student References Provided

KA	KA_desc
GEN2.2 2.2.42	Equipment Control□Ability to recognize system parameters that are entry-level conditions for Technical Specifications. (CFR: 41.7 / 41.10 / 43.2 / 43.3 / 45.3)

401-9 Comments:

Remarks/Status

KA	KA_desc
GEN2.3	Radiation Control□Ability to control radiation releases. (CFR: 41.11 / 43.4 / 45.10)
2.3.11	

Which ONE of the following describes the actions taken and why, in accordance with the SGTR tab, to limit the activity released to the atmosphere?

A. The Condensate Steam Air Ejectors are lined up to the Main Steam system to prevent cross contamination.

B. The TD EFDW pump is placed in "Pull To Lock" to prevent feeding the affected SG with contaminated water.

C. The Auxiliary Steam systems for all three units are split to prevent cross contamination.

D. Core SCM is minimized to reduce the primary to secondary leak rate.

2009B ONS SRO NRC Examination QUESTION 72

72

D

General Discussion

Answer A Discussion

Incorrect since the SJAEs are lined up to the AS system. Plausible because the supply to the SJAEs are switched per the SGTR tab however they are switched from MS to AS.

Answer B Discussion

Incorrect: Plausible since placing the TD EFDWP to PTL is an action directed during the SGTR tab to limit release of activity however the reason given in the answer (prevent feeding with contaminated water) is not correct. The actual reason is to prevent a release to the environment that occurs via the steam exhasut of the TDEFWP going direclty to the environment .

Answer C Discussion

Incorrect:□ The AS system at ONS is not split for a SGTR. Instead, ONS ensures it is being fed from a non-affected unit. Plausible because the action of splitting all the units would prevent cross contamination.

Answer D Discussion

Correct: In the SGTR tab of the EOP directions are given to minimize core SCM during the cooldown. These actions are taken to reduce the delta P across the leaking SG tube and therefore decrease the primary to secondary leak rate.

Basis for meeting the KA

Question requires the ability to determine when certain EOP actions are used to control release of radioactive contamination to the atmosphere and why those actions are used.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	2007 NRC exam Q72

Development References

Obj. EAP-SGTR R6
2007 NRC exam Q72
SGTR tab of EOP
EOP Reference Document
EOP-SGTR

Student References Provided

KA	KA_desc
GEN2.3 2.3.11	Radiation Control□Ability to control radiation releases. (CFR: 41.11 / 43.4 / 45.10)

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 73

73

A

KA	KA_desc
GEN2.3	Radiation Control□Knowledge of radiation exposure limits under normal or emergency conditions. (CFR: 41.12 / 43.4 / 45.10)
2.3.4	

Which ONE of the following describes:

1) a condition where Emergency Dose Limits (EDLs) would be in effect?

2) the MAXIMUM whole body EDL (Rem) if performing EOP actions that are NOT to save a life or protect valuable property?

A. 1. 50 gpm Primary to Secondary leak
2. 5

B. 1. 50 gpm Primary to Secondary leak
2. 10

C. 1. 50 gpm RCS hot leg weld leak
2. 5

D. 1. 50 gpm RCS hot leg weld leak
2. 10

General Discussion

Check exam 13.

Answer A Discussion

Correct. EDL's apply during EOP entry for SGTR and SBLOCA. The threshold for SGTR entry into the EOP is 25 gpm therefore a 50 gpm SGTR would require Emergency Dose Limits be in effect. When EDL's are in effect, 5 Rem is the maximum dose unless saving a life or valuable property.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible since it would be correct if actions were to save valuable property during an event where EDL's were in effect.

Answer C Discussion

Incorrect. First part is plausible since RCS leak rate is a determiner for EDL's being in effect however an RCS leak rate < HPI normal makeup capability (160 gpm) is not considered a SBLOCA therefore EDL's would not be in effect. Second part is correct.

Answer D Discussion

Incorrect. First part is plausible since RCS leak rate is a determiner for EDL's being in effect however an RCS leak rate < HPI normal makeup capability (160 gpm) is not considered a SBLOCA therefore EDL's would not be in effect. Second part is plausible since it would be correct if actions were to save valuable property during an event where EDL's were in effect.

Basis for meeting the KA

Requires knowledge of emergency worker exposure limits and when they apply.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Memory	NEW	

Development References
Obj. EAP-TCA R6 EAP-TCA

Student References Provided

KA	KA_desc
GEN2.3 2.3.4	Radiation Control□Knowledge of radiation exposure limits under normal or emergency conditions. (CFR: 41.12 / 43.4 / 45.10)

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 74

74

D

KA	KA_desc
GEN2.4 2.4.23	Emergency Procedures / Plan□Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations. (CFR: 41.10 / 43.5 / 45.13)

Which ONE of the following describes:

1) an acceptable reason for the Procedure Director to interrupt an operator who is performing Rule 2?

2) the bases behind limiting the interruptions of operators who are performing Rules?

A. 1. Perform a Crew Brief
2. Minimize Operator errors

B. 1. Inform the operator that ACC Conditions exist
2. Minimize Operator errors

C. 1. Perform a Crew Brief
2. Ensures completion of Time Critical Actions

D. 1. Inform the operator that ACC Conditions exist
2. Ensures completion of Time Critical Actions

2009B ONS SRO NRC Examination QUESTION 74

74

D

General Discussion

Answer A Discussion

Incorrect. First part is plausible since it is generally true that keeping the crew aware of any changes in plant conditions would be an expectation of the crew AND crew updates are still allowed but not crew briefs. Second part is plausible since there is a high level of focus on preventing Operator errors and reducing interruptions is one of the ways to prevent errors.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible since there is a high level of focus on preventing Operator errors and reducing interruptions is one of the ways to prevent errors.

Answer C Discussion

Incorrect. First part is plausible since crew updates are allowed during a RULE. Additionally, it is generally true that keeping the crew aware of any changes in plant conditions is critical to crew performance which adds to plausibility. Second part is correct.

Answer D Discussion

Correct, EOP Rules and certain enclosures perform the events immediate mitigating actions and contain Time Critical Actions. Interrupting the performance of a Rule is limited to a finite list of reasons and announcing ACC Conditions is one of the acceptable interruptions.

Basis for meeting the KA

Requires knowledge of the prioritization of emergency procedure implementation during emergency operations as it applies to running Rules.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	NEW	

Development References
Obj EAP-EOP R23 EAP-EOP

Student References Provided

KA	KA_desc
GEN2.4	Emergency Procedures / Plan□Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations. (CFR: 41.10 / 43.5 / 45.13)
2.4.23	

401-9 Comments:

Remarks/Status

KA	KA_desc
GEN2.4	Emergency Procedures / Plan□Knowledge of the emergency plan. (CFR: 41.10 / 43.5 / 45.11)
2.4.29	

The following are Log entries from the Emergency Coordinator (EC/OSM) Log following an event at Oconee Unit 2.

1112 – EC/OSM declared a General Emergency based on 2RIA-57 readings.

1117 - EC/OSM provided the following offsite protective recommendations to the Offsite Communicator:

- Evacuation of Pickens A0, A1, B1, C1, and Oconee A0, D1, E1, F1
- Shelter of Pickens A2, B2, C2, and Oconee D2, E2, F2.

1120 - EC/OSM signed message form to provide offsite recommendations.

1122 - Station Manager in the control room began turnover to TSC.

1125- Present time of day.

Which ONE of the following describes the MAXIMUM number of minutes the Offsite Communicator has to initiate the notifications to State and Counties from the present time?

A. 2

B. 7

C. 10

D. 15

2009B ONS SRO NRC Examination QUESTION 75

75

A

General Discussion

Answer A Discussion

Correct, Initial Emergency Notifications and classification upgrades must be provided to Oconee County, Pickens County, and SC State within 15 minutes of event declaration or upgrade. The time starts when the EC/OSM declared a GE.

Answer B Discussion

Incorrect, time started when EC/OSM declared a GE This would be correct under the misconception that the time used should be the time offsite protective recommendations were given.

Answer C Discussion

Incorrect, time started when EC/OSM declared a GE. This would be correct under the misconception that the time used should be the time EC/OSM signed the message form.

Answer D Discussion

Incorrect, time started when EC/OSM declared a GE. This would be correct under the misconception that the time used should be the total time allowed to make offsite notifications.

Basis for meeting the KA

Requires specific knowledge of the time allowed to make offsite notifications when Emergency Plan has been implemented.

Basis for Hi Cog

Basis for SRO only

Job Level	Cognitive Level	QuestionType	Question Source
RO	Comprehension	BANK	2004 ONS NRC Exam Question 75

Development References
Obj. EAP-SEP R14 2004 ONS NRC Exam Question 75 EAP-SEP

Student References Provided

KA	KA_desc
GEN2.4	Emergency Procedures / Plan□Knowledge of the emergency plan. (CFR: 41.10 / 43.5 / 45.11)
2.4.29	

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 76 76 **A**

KA	KA_desc
APE008	APE008 GENERIC□Knowledge of the emergency action level thresholds and classifications. (CFR: 41.10 / 43.5 / 45.11)
2.4.41	

Given the following Unit 3 conditions:

Time = 1200
- Unit shutdown in progress due to SGTL = 12.5 gpm in 3A SG
- Reactor power = 95% decreasing
- 3RC-68 fails Open

Time = 1201
- Reactor power = 90% decreasing
- MANUAL Reactor Trip initiated

Time = 1203
- ALL SCM's = 0°F

Time = 1204
- ES 1&2 actuate

Time = 1212
- ALL SCM's = 23°F increasing
- Pressurizer level = 400" stable
- 3RIA-57 = 22 R/hr slowly increasing

1) The current Emergency Plan Classification level is __(1)__.

2) An escalation of the classification would be required if __(2)__.

Which ONE of the following completes the statements above?

REFERENCE PROVIDED

A. 1. Alert
   2. 3A SG has one MSRV stuck open after the trip

B. 1. Alert
   2. 3RIA-57 = 84 R/hr at 1220 hrs

C. 1. Site Area Emergency
   2. 3A SG has one MSRV stuck open after the trip

D. 1. Site Area Emergency
   2. 3RIA-57 = 84 R/hr at 1220 hrs

General Discussion

Answer A Discussion

Correct. RP/1000/01 Encl. 4.1 assigns 5 points to a loss of SCM under the RCS Barriers category if due to RCS leak and defines an ALERT as 4-6 points. Containment category would add 3 points if a 10 gpm tube leak exist in a SG with direct opening to environment. That would result in 8 points and SAE is 7-10 points.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible since it would be correct if time after trip had exceeded 30 minutes.

Answer C Discussion

Incorrect. First part is incorrect but plausible since:

1. A common mistake is to add together points in a secion of Encl. 4.1. If the points for LOSCM and RIA readings (under RCS Barriers) are added, classification as SAE is the result.
2. Encl. 4.3 uses RIA 57/58 readings to directly classify an event (by way of Encl. 4.8) and the lowest classification based on the RIA readings is a SAE.
3. Since this event also has a LOSCM, if youincorrectly applied the RIA radings to the Fuel Clad Barriers in Encl. 4.1 and got 5 points from that you would then have to add the 5 points from RCS barriers due to LOSCM which would result in 10 points and a SAE.

Second part is correct and is plausible with first part since IF 10 points were correct, this would add additional points and upgrade to a General Emergency.

Answer D Discussion

Incorrect. First part is incorrect but plausible since:

1. A common mistake is to add together points in a secion of Encl. 4.1. If the points for LOSCM and RIA readings (under RCS Barriers) are added, classification as SAE is the result.
2. Encl. 4.3 uses RIA 57/58 readings to directly classify an event (by way of Encl. 4.8) and the lowest classification based on the RIA readings is a SAE.
3. Since this event also has a LOSCM, if youincorrectly applied the RIA radings to the Fuel Clad Barriers in Encl. 4.1 and got 5 points from that you would then have to add the 5 points from RCS barriers due to LOSCM which would result in 10 points and a SAE.
.
Second part is plausible since it would be correct if time after trip had exceeded 30 minutes.

Basis for meeting the KA

Requires knowledge of how to utilize RP/1000/001 to determine EAL thresholds and therefore arrive at proper classification based on a Pzr steam space leak (with a SGTL).

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

This first part of this question requires assessing plant conditions and applying those conditions to various enclosures in RP/1000/001 to determine the correct Emergency Action Level (which is an SRO only function) and therefore selecting the correct section of the procedure with which to proceed.

The second part of this question also requires analyzing various plant conditions and assessing their impact on what would be the correct section of a procedure with which to proceed.

System knowledge alone cannot be used to answer this question.
Immediate operator actions alone cannot be used to answer this question.
APO and EOP entry conditions alone cannot be used to answer this question.
The major mitigation strategy alone of any procedure cannot be used to answer this question.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

2009B ONS SRO NRC Examination QUESTION 76

76

A

Development References	Student References Provided
Obj. EAP-SEP R12 RP/1000/001	RP/1000/001

KA	KA_desc
APE008	APE008 GENERIC□Knowledge of the emergency action level thresholds and classifications. (CFR: 41.10 / 43.5 / 45.11)
2.4.41	

401-9 Comments:	Remarks/Status

2009B ONS SRO NRC Examination QUESTION 77

77 C

KA	KA_desc
SYS015	SYS015 GENERIC□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. (CFR: 41.5 / 43.5 / 45.12)
2.2.44	

Given the following Unit 1 conditions:

- Power Range NI's = 90% stable
- Core Thermal Power = 90% stable
- Group 7 = 95% withdrawn
- Power maneuvering plan directs adding 200 gal. 1B BHUT to insert Group 7 to 90% withdrawn

1) After Control Rods respond to the water addition, NI's will become __(1)__.

2) The RPS trips associated with Power Range NI's help prevent exceeding the __(2)__ limit.

Which ONE of the following completes the statements above?

A. 1. Conservative
2. minimum DNBR

B. 1. Conservative
2. maximum ejected rod worth

C. 1. NON Conservative
2. minimum DNBR

D. 1. NON Conservative
2. maximum ejected rod worth

2009B ONS SRO NRC Examination QUESTION 77

77

C

General Discussion

Answer A Discussion

Incorrect, First part is plausible because it would be correct if control rods were being withdrawn. Second part is correct.

Answer B Discussion

Incorrect, First part is plausible because it would be correct if control rods were being withdrawn. Second part is plausible since it is motion of the control rods that is responsible for changing the NI conservatism. If control rods are inserted too far (into the restricted region of the rod positions curves in the COLR) then the maximum ejected rod worth could be exceeded therefore it is plausible to conclude that if NI's become too non-conservative (or conservative) that the maximum ejected rod worth cannot be assured. That conclusion makes it plausible to connect the RPS trips associated with NI's to the maximum ejected rod worth.

Answer C Discussion

Correct. With Power Range NI's and Core Thermal Power equal in the IC's, NI calibration is perfect. If Group 7 is inserted it causes an increase in rod shadowing which results in NI's becoming more non-conservative. The bases of the Reactor Core Safety Limits explains that the RPS trips being operable are (in part) responsible for maintaining DNBR at an acceptable value.

Answer D Discussion

Incorrect, First part is correct. Second part is plausible since it is motion of the control rods that is responsible for changing the NI conservatism. If control rods are inserted too far (into the restricted region of the rod positions curves in the COLR) then the maximum ejected rod worth could be exceeded therefore it is plausible to conclude that if NI's become too non-conservative (or conservative) that the maximum ejected rod worth cannot be assured. That conclusion makes it plausible to connect the RPS trips associated with NI's to the maximum ejected rod worth.

Basis for meeting the KA

Requires interpreting the control room indications of NI's and Core Thermal Power to verify the status of NI's and requires an understanding of how NI calibration (effected by control rod motion initiated by the operator) can impact the ability to ensure critical safety parameters is maintained.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

This question requires detailed knowledge of TS bases information regarding how the Reactor Core Safety Limits are maintained within acceptable parameters, The question requires knowledge of what systems are credited in the safety analysis to ensure the DNBR is acceptable.

The knowledge needed is not systems knowledge.
The knowledge needed is not 1 hr or less TS information
The knowledge needed is not "above the line" TS information

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References

Obj. IC-NI R25
Obj ADM-TSS R5
IC-NI
TS Safety Limit bases

Student References Provided

KA	KA_desc
SYS015 2.2.44	SYS015 GENERIC□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. (CFR: 41.5 / 43.5 / 45.12)

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 78

78

A

KA	KA_desc
APE025	Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System: (CFR: 43.5 / 45.13)□Location and isolability of leaks ....
AA2.04	

Given the following Unit 1 conditions:

Initial conditions:

- Reactor in MODE 6
- Fuel Transfer Canal full
- SF-1 and SF-2 are open

Current conditions:

- Fuel Transfer Canal level slowly decreasing
- RBNS level increasing

Which one of the following describes the action(s) that would be performed FIRST, in accordance with AP/26 (Loss of Decay Heat Removal), and why?

A. Secure ALL LPI Pumps to determine if leak is on discharge of LPI Pumps

B. Secure ALL LPI Pumps in preparation for closing 1SF-1 and 1SF-2

C. Secure SF Cooling pump used for Refueling Cooling Mode to determine if leak is on discharge of SF Cooling Pump

D. Secure SF Cooling pump used for Refueling Cooling Mode in preparation for closing 1SF-1 and 1SF-2

General Discussion

Answer A Discussion

Correct. Once you make your way to the correct section of AP/26 , it will direct securing all LPI pumps in an effort to determine the location and isolability of the leak. If securing the pumps do not change the leak rate then they will be restarted.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible since the current SFC alignment in the refueling mode provides for taking a suction off the fuel transfer canal via the decay heat drop line and discharging to the SFP. That alignment must be secured prior to closing SF-1 and 2 to prevent pumping FTC to SFP however it is the B SF pump being used in this alignment and not the LPI pumps.

Answer C Discussion

Incorrect. Plausible since the B SFC Pump is being used in the Refueling Mode alignment and securing the pump and monitoring leak rate could help determine if the source of the leak is on the discharge of SFC pump. Since the Fuel Transfer Canal is full, securing the pump is plausible. Additionally, this action is actually directed by AP/26 although it is a later action after transferring to the condition specific section of the AP. It is the LPI pumps that are initially secured.

Answer D Discussion

Incorrect. Plausible since the SFC pumps are secured later in AP/26 prior to closing SF-1 and 2 to prevent pumping FTC to SFP.

Basis for meeting the KA

Requires knowledge of actions taken in AP/26 based on a decreasing fuel transfer canal and the ability to interpret the results of those actions to determine location and isolability of Fuel Transfer Canal leak.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

This first part of this question requires detailed knowledge of specific procedure steps in AP/26. Knowledge of these steps are used to select which section of the procedure is to be performed. There are several sections of Subsequent Actions that could be performed based on the conditions requiring entry into the AP and using knowledge of the entry conditions and assessing the different sections of Subsequent actions is required to determine the appropriate steps to perform. Additionally, this question requires detailed knowledge of specific steps that need to be taken prior to transfer to section 4D. In this specific case, the LPI pumps are secured to assess the impact on the decreasing fuel transfer canal level. In this situation it is after these steps are performed that you make the transfer to section 4D which will direct stopping the SF Pump. This path through the AP means that to get to the appropriate actions you must assess plant conditions and determine a section of the procedure with which to proceed.

This question cannot be answered bases solely on systems knowledge since when in MODE 6 with fuel transfer canal full it would be normal to have LPI pumps running AND the B Spent Fuel Cooling pump aligned in the Refueling Cooling mode. Also, neither reason given for securing pumps would eliminate either answer based on system knowledge.
This question cannot be answered bases solely on knowledge of entry conditions.
None of the operator actions are Immediate Operator Actions of the AP.
The knowledge needed is more detail than just the major mitigation strategy of the AP.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References
Obj. EAP-APG R8 AP/26

Student References Provided

KA	KA_desc
APE025 AA2.04	Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System: (CFR: 43.5 / 45.13)□Location and isolability of leaks ....

2009B ONS SRO NRC Examination **QUESTION 78** 78 **A**

401-9 Comments:	Remarks/Status

2009B ONS SRO NRC Examination QUESTION 79

79

A

KA	KA_desc
APE076	Ability to determine and interpret the following as they apply to the High Reactor Coolant Activity: (CFR: 43.5 / 45.13)□Corrective actions required for high fission product activity in RCS....
AA2.02	

Given the following Unit 1 conditions:

- Reactor power = 100%
- RCS DEI = 0.35 uCi/gm stable
- AP/21 (High Activity in RCS) in progress

Which ONE of the following describes:

1) actions required by AP/21?

2) the procedure used by AP/21 to perform the power reduction when a shutdown is required?

A. 1. Maximize letdown ONLY
   2. OP/1/A/1102/004 (Operation at Power)

B. 1. Maximize letdown ONLY
   2. AP/29 (Rapid Unit Shutdown)

C. 1. Initiate a power reduction and maximize letdown
   2. OP/1/A/1102/004 (Operation at Power)

D. 1. Initiate a power reduction and maximize letdown
   2. AP/29 (Rapid Unit Shutdown)

2009B ONS SRO NRC Examination QUESTION 79

79

A

General Discussion

Answer A Discussion

Correct. According to AP/21,a power reduction is not directed until DEI reaches .5. Anytime AP/21 is entered, direction is given to maximize letdown which aids in demineralizer cleanup of the Iodine. If DEI reaches .5, then AP/21 directs reducing power at < 3% / hr using OP/1104/02 (Ops at Power).

Answer B Discussion

Incorrect. First part is correct. Second part is plausible since AP/29 is a procedure used to perform power reductions and its use is directed by other AP's when power reduction is required..

Answer C Discussion

Incorrect. First part is plausible since maximizing letdown is required and a power reduction is directed by AP/21 only it requires DEI to reach .5. Second part is correct.

Answer D Discussion

Incorrect. First part is plausible since maximizing letdown is required and a power reduction is directed by AP/21 only it requires DEI to reach .5. Second part is plausible since AP/29 is a procedure used to perform power reductions and its use is directed by other AP's when power reduction is required..

Basis for meeting the KA

Requires determining corrective actions required when high activity in the RCS is indicated. As an operator, these directions would come either from plant procedures (AP/21) or Tech Spec Required Actions. This question determines ability to comply with corrective actions required by AP/21 prior to reaching TS limit threshold.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

The first part of this question requires knowledge of the content of AP/21 which would be used to determine which section of the AP should be performed. Knowledge of the threshold value for power reduction is required to determine if the section of AP/21 directing a power reduction should be implemented. The second part of the question is SRO as it requires assessing plant conditions and selecting a procedure with which to proceed. Both OP/1104/02 and AP/29 are procedures used to reduce Rx power. This question requires selecting the appropriate procedure to perform the power reduction based on plant conditions..

This question cannot be answered based solely on systems knowledge. While systems knowledge is required to perform the step, simply knowing how to perform the step does not provide the information needed to know that the AP will direct the action on a Rx trip.

This question cannot be answered based on knowing Immediate Operator Actions.
This question cannot be answered based solely on knowing entry conditions of AP/EOP.
This question cannot be answered based solely on knowing major mitigation strategy of the AP.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	NEW	

Development References
Obj. EAP-APG R9 AP-21

Student References Provided

KA	KA_desc
APE076 AA2.02	Ability to determine and interpret the following as they apply to the High Reactor Coolant Activity: (CFR: 43.5 / 45.13)□Corrective actions required for high fission product activity in RCS....

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 80

80

C

KA	KA_desc
BWE10	Ability to determine and interpret the following as they apply to the (Post-Trip Stabilization)
EA2.1	(CFR: 43.5, 45.13)□Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Given the following Unit 1 conditions:

Initial Conditions:

- Reactor power = 100%
- 1RIA-60 = 20 gpm stable

Current conditions:

- 1TA AND 1TB lockout occurs

1) The __(1)__ tab will be used to stabilize the plant following the reactor trip.

2) The __(2)__ tab will direct the unit cooldown to LPI.

Which ONE of the following completes the statements above?

A. 1. Subsequent Actions
2. SGTR

B. 1. SGTR
2. SGTR

C. 1. Subsequent Actions
2. Forced Cooldown

D. 1. SGTR
2. Forced Cooldown

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible since it would be correct if the SGTL rate was > 25 gpm or increased to > 25 gpm from the current value. Second part is plausible since it would be reasonable to believe that anytime you are in the EOP with a SG tube leak that the SGTR tab would be used to cooldown and isolate the SG therefore it is plausible to believe that even after the Subsequent actions tab has been used as post trip stabilization, a transfer to the SGTR tab would be done to perform the cooldown to LPI.

Answer B Discussion

Incorrect. First part is plausible since it would be correct if the leak rate were > 25 gpm. Second part is plausible since it would be correct if the SGTL rate either increased to > 25 gpm or increased to > 25 gpm from the current value. Additionally, it would be plausible to believe that anytime you are in the EOP with a SG tube leak that the SGTR tab would be used to cooldown and isolate the SG.

Answer C Discussion

Correct. Since the SGTL is < 25 gpm the Subsequent Actions tab would be used to stabilize the plant post trip. Since there are no RCP's running due to the loss of 6900 switchgear TA and TB, the SA tab will direct you to the FCD tab to perform the Natural Circ cooldown. Although there is a step towards the end of the SA tab that would direct a transfer to the SGTR tab (other than a parallel actions page transfer), the threshold for the transfer is still 25 gpm.

Answer D Discussion

Incorrect. First part is plausible since it would be correct if the leak rate were > 25 gpm. Second part is correct.

Basis for meeting the KA

Requires ability to evaluate the current plant conditions and select the procedure that will be used to mitigate the event.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

The first part of this question is RO knowledge as it can be answered using entry conditions of the EOP. The second part of the is question requires assessing plant conditions and selecting the appropriate section of the EOP with which to continue. The selection can not be made based solely on knowledge of entry conditions as it requires detailed knowledge of procedure steps within the SA tab as they relate to criteria requiring a transfer to the FCD tab vs the SGTR tab.

This question cannot be answered based on system knowledge.
This question cannot be answered based on Immediate Operator Actions.
The SRO portion of this question cannot be answered based solely on entry conditions.
This question cannot be answered by knowing only the major mitigation strategy.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References

Obj. EAP-SA R16
Obj. EAP-SGTR T1
EAP-SGTR
EAP-SA

Student References Provided

KA	KA_desc
BWE10	Ability to determine and interpret the following as they apply to the (Post-Trip Stabilization)
EA2.1	(CFR: 43.5, 45.13)□Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 81

81

C

KA	KA_desc
EPE038	Ability to determine or interpret the following as they apply to a SGTR : (CFR 43.5 / 45.13)□Actions to be taken if S/G goes solid and water enters steam line ....
EA2.16	

Given the following Unit 1 conditions:

- Reactor in MODE 3
- Tcold = 429°F decreasing
- 1A SG isolated due to a Main Steam Line Break in the Turbine Building
- Steam Generator Tube Rupture in the 1B SG
- 1B SG being steamed for cooldown

Which ONE of the following describes action(s) required if the 1B SG level reaches the Main Steam line in accordance with the EOP?

A. Unisolate and feed the 1A SG

B. Initiate Encl. 5.22 (SG Blowdown) for 1B SG

C. Stop steaming the 1B SG and initiate HPI Forced Cooling

D. Maximize 1B SG steaming rate even if TS cooldown rates are exceeded

General Discussion

Answer A Discussion

Incorrect. Plausible since performing the cooldown by steaming the SG with the MSLB is a strategy used in the SGTR tab of the EOP. It is a section of the procedure that is performed if Management decides to steam the MSLB to minimize offsite dose. Also, the forced cooldown tab of the EOP does provide guidance to insolate a SG that has been isolated due to a MSLB to "trickle feed" it. This occurs if both SG's have been isolated and at least one can be fed without harming plant equipment or personnel. Guidance begins at step 18 of FCD tab.

Answer B Discussion

Incorrect. Plausible since Initiating Encl. 5.22 is a strategy used to slow down and/or reverse the trend of increasing SG level in a SG isolated due to a SGTR however it is initiated once "overfill condition" (285" OR) are exceeded and before reaching water in MS line level.

Answer C Discussion

Correct. If one SG is isolated due to a MSLB and the SG with a tube leak is being steamed for cooldown the EOP will direct that once the affected SG reaches the level of water in the MS line you will stop steaming the SG and run Rule 4 to initiate HPI Forced Cooling.

Answer D Discussion

Incorrect. Plausible since steaming the SG even if TS cooldown rates are exceeded is guidance provided by the EOP once the isolated SG is approaching overfill conditions.

Basis for meeting the KA

Requires the ability to determine actions that are directed by the EOP once an isolated SG reaches a water level where water could enter the Main Steam line

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

This question requires assessing plant conditions and determining a path which to proceed. All of the options provided are actions in different section of the SGTR tab therefore you must assess where the plant is and implement the section meant to mitigate the specific conditions provided in the stem.

This question cannot be answered based solely on systems knowledge.
This knowledge not based on knowing entry conditions.
This knowledge is not major mitigation strategy of the tab. This action would be beyond major mitigation strategy in that the tabs major focus is on isolating the SG, reducing SCM to decrease the leak rate and getting the RCS cooled down and depressurized to stop the leak.
This knowledge not based on knowing entry conditions.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	NEW	

Development References
Obj. EAP-SGTR R17 EOP SGTR tab

Student References Provided

KA	KA_desc
EPE038 EA2.16	Ability to determine or interpret the following as they apply to a SGTR : (CFR 43.5 / 45.13)□Actions to be taken if S/G goes solid and water enters steam line ....

401-9 Comments:

Remarks/Status

KA	KA_desc
APE058	Ability to determine and interpret the following as they apply to the Loss of DC Power: (CFR: 43.5 / 45.13)□125V dc bus voltage, low/critical low, alarm ....
AA2.02	

Given the following Unit 1 conditions:

Initial conditions:

- Reactor power = 100%
- 1SA6/B2 INVERTER 1DID SYSTEM TROUBLE actuated

Current conditions:

- NEO reports:
  - 1SA13/A8 INVERTER 1DID INPUT VOLTAGE LOW actuated
  - Inverter 1DID output voltage low

1) The MINIMUM action(s) required to restore the 1DID inverter to OPERABLE in accordance with Tech Spec 3.8.6 (Vital Inverters-Operating) is/are to restore DC input voltage __(1)__.

2) The status of 1KVID prior to any operator actions being performed is __(2)__.

Which ONE of the following completes the statements above?

A. 1. ONLY
   2. NOT energized

B. 1. AND re-connect to 1KVID
   2. NOT energized

C. 1. ONLY
   2. Energized

D. 1. AND re-connect to 1KVID
   2. Energized

General Discussion

Answer A Discussion

Incorrect. First part is plausible since restoring the DC input voltage would return the inverter to a functional status however it would not meet TS bases requirement for operability since it is not aligned to its panelboard. Second part is correct.

Answer B Discussion

Correct. The bases of TS 3.8.6 requires the inverter to be powering its associated panelboard to be Operable. The Vital inverter panelboards (KVIA, KVIB, KVIC, and KVID) do have an alternate source of power that can be aligned from Regulated power (KRA) however the swap requires manual alignement since there is no Auto swap to Regualted power for the vital power panelboards.

Answer C Discussion

Incorrect. First part is plausible since restoring the DC input voltage would return the inverter to a functional status however it would not meet TS bases requirement for operability since it is not aligned to its panelboard. Second part is plausible since the essential inverter [panelboards (KI, KU, and KX) do have an auto swap function to provide them power from regualted power automatically on loss of the inverter therefore this would be a correct choice if asking about one of the essential power panelboards.

Answer D Discussion

Incorrect, First part is correct. Second part is plausible since the essential inverter [panelboards (KI, KU, and KX) do have an auto swap function to provide them power from regualted power automatically on loss of the inverter therefore this would be a correct choice if asking about one of the essential power panelboards.

Basis for meeting the KA

Requires the ability to interpret alarms and indications and determine that a loss of DC input to the 1DID inverter has occurred then based on that assessment determine the impact of the loss of DC input to the DID inverter on the operability of Tech Spec required equipment.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

This question requires making operability determinations on TS related equipment. The first part of the question requires knowledge of operability requirements for the DID inverter found only in the Bases of TS 3.8.6 (that it be connected to its associated panelboard to be considered Operable) and can not be answered by system knowledge only. The second part is RO knowledge since it can be answered based on system knowledge.

This is not a 1 hr or less TS memory item.
The information needed is not "above the line" of any TS.
The information is not TS Safety Limits.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References
ADM-TSS R5 EL-VPC R2 TS 3.8.6 EL-VPC

Student References Provided

KA	KA_desc
APE058 AA2.02	Ability to determine and interpret the following as they apply to the Loss of DC Power: (CFR: 43.5 / 45.13)□125V dc bus voltage, low/critical low, alarm ....

401-9 Comments:

Remarks/Status

KA	KA_desc
BWE04	BWE04 GENERIC□Knowledge of how abnormal operating procedures are used in conjunction with EOPs. (CFR: 41.10 / 43.5 / 45.13)
2.4.8	

Given the following Unit 1 conditions:

Initial conditions:
- Time = 1200
- Reactor power = 100%
- TDEFWP inoperable
- Tornado results in Station Blackout

Current conditions:
- Time = 1215
- 4160V power restored

1) The Abnormal Procedure being used to align feed to the SG's between 1200 and 1215 is __(1)__.

2) The EOP tab the Procedure Director will direct once power has been restored will be __(2)__.

Which ONE of the following completes the statements above?

A. 1. AP/6 (Natural Disaster)
 2. Subsequent Actions

B. 1. AP/6 (Natural Disaster)
 2. Loss Of Heat Transfer

C. 1. AP/25 (Standby Shutdown Facility Emergency Operating Procedure)
 2. Subsequent Actions

D. 1. AP/25 (Standby Shutdown Facility Emergency Operating Procedure)
 2. Loss Of Heat Transfer

General Discussion

Answer A Discussion

Incorrect. First part is plausible since AP/6 would be in progress due to the Tornado activity. Plausibility of AP/6 being correct is aided by the fact that there are conditions where AP/6 will direct feeding from the Station ASW pump however it would not be used to feed the SG's unless the SSF were unavailable. Second part is correct. Once 4160V power is restored, the blackout tab directs returning to Subsequent Actions and since power being restored would result in the ability to start both MDEFWP's (although FDW-315/316 are in manual and closed), transfer to the LOHT tab would not be warranted.

Answer B Discussion

Incorrect. First part is plausible since AP/6 would be in progress due to the Tornado activity. Plausibility of AP/6 being correct is aided by the fact that there are conditions where AP/6 will direct feeding from the Station ASW pump however it would not be used to feed the SG's unless the SSF were unavailable. Second part is plausible since up until now there has been no feed to the SG's. When power is restored, both MDEFWP's will be available however since the Blackout tab will have placed their switches in OFF, there will still be no feed to the SG's. It would therefore be plausible to believe that since there would actually be a Loss of Heat Transfer at that time, mitigation actions would be directed from the LOHT tab.

Answer C Discussion

Correct. AP/25 would be in progress as directed by IMA's and efforts to align RCMUP & SSFASW would be in progress. Second part is correct. Once 4160V power is restored, the blackout tab directs returning to Subsequent Actions and since power being restored would return the ability to start both MDEFWP's (although FDW-315/316 are in manual and closed), transfer to the LOHT tab would not be warranted.

Answer D Discussion

Incorrect. First part is correct, Second part is plausible since up until now there has been no feed to the SG's. When power is restored, both MDEFWP's will be available however since the Blackout tab will have placed the MDEFWP switches in OFF, there will still be no feed to the SG's. It would therefore be plausible to believe that since there would actually be a Loss of Heat Transfer at that time, mitigation actions would be directed from the LOHT tab.

Basis for meeting the KA

Requires knowledge of how AP/6, AP/25, and the EOP are used in conjunction with each other during a time where inadequate heat transfer exists.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

The first part of this question requires evaluating two different AP's whose entry conditions are both met and determining which one of the two will provide guidance to feed the SG's. The second part of this question requires assessing plant conditions and determining a section of the EOP with which to proceed. Initial entry into the EOP would result in being in the blackout tab. This question requires evaluating current plant conditions which include no feed to either SG's and based on that assessment make the proper transfer out of the blackout tab once power has been restored to the 4160V swgr. It requires detailed knowledge of the steps within the blackout tab that direct a transfer back to the Subsequent Actions tab even though there is no feed available to the SG's which would normally require a transfer to the LOHT tab. To make the decision to stay in the SA tab once sent there from the blackout tab requires recognizing that once power is restored the MDEFWP's are still available but their switches have been placed in OFF during progression through the blackout tab.

This question cannot be answered based solely on systems knowledge.
This question cannot be answered bases solely on Immediate Manual Actions from any AP or the EOP.
While knowledge of AP entry conditions can determine which AP's are applicable, a more detailed knowledge of content is required since the entry conditions for both AP's are met. The second part of this question requires detailed knowledge of the content of the EOP that is well beyond entry conditions. Knowledge of EOP entry conditions could get you to the blackout tab but actions beyond that require detailed knowledge of content.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References
Obj. EAP-APG R8 EAP-BO R3

Student References Provided

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83

C

KA	KA_desc
BWE04	BWE04 GENERIC□Knowledge of how abnormal operating procedures are used in conjunction with EOPs. (CFR: 41.10 / 43.5 / 45.13)
2.4.8	

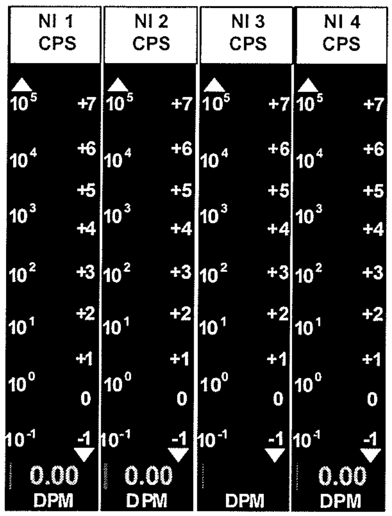
401-9 Comments:

Remarks/Status

KA	KA_desc
APE032	Ability to determine and interpret the following as they apply to the Loss of Source Range Nuclear Instrumentation: (CFR: 43.5 / 45.13)□Maximum allowable channel disagreement ....
AA2.07	

Given the following Unit 1 conditions:

SOURCE RANGE



- Time = 1200
- Reactor in MODE 5
- NI-3 is NOT operable
- NI readings as indicated above:

1) Source Range __(1)__ will be used to log the hourly Source Range NI reading for PT/1/A/0600/001 (Periodic Instrument Surveillance) Enclosure 13.4 (Mode 5).

2) The source range instrumentation should be used as the <u>primary</u> power indication in accordance with the basis of Tech Spec 3.3.9 (Source Range Neutron Flux) __(2)__.

Which ONE of the following completes the statements above?

REFERENCE PROVIDED

A. 1. NI-1
 2. ONLY when power levels are <4E-4% RTP on Wide Range

B. 1. NI-1
 2. when in MODES 2, 3, 4, and 5

C. 1. NI-2
 2. ONLY when power levels are <4E-4% RTP on Wide Range

D. 1. NI-2
 2. when in MODES 2, 3, 4, and 5

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84

A

General Discussion

Answer A Discussion

Correct. NI-2 does not agree within 1 decade of NI-1 & 4 and therefore does not meet the channel check surveillance for SR 3.3.9.1 found on page 6 of PT/600/01 Enclosure for MODE 5. With the surveillance not met, NI-2 would be inoperable and should not be used. The bases of TS 3.3.9 states that the source range instrumentation provides the primary power indication at low power levels <4E-4% RTP.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible since it is the Modes of Applicability for the Source Range instruments and is therefore when the SR is required to be Operable.

Answer C Discussion

Incorrect. First part is plausible since it is the highest reading NI and generally using the higher reading NI is considered conservative. Additionally, there are times when using the highest NI reading is not only conservative, but required to ensure compliance with procedure steps (ex. During a dropped rod). Second part is correct.

Answer D Discussion

Incorrect. First part is plausible since it is the highest reading NI and generally using the higher reading NI is considered conservative. There are specific times (ex. Dropped control rod) where using the highest reading NI is imperative to proper plant operation. Second part is plausible since it is the Modes of Applicability for the Source Range instruments and is therefore when the SR is required to be Operable.

Basis for meeting the KA

Requires interpreting Source Range indications and applying Channel Check criteria for allowable channel disagreement to determine which NI to use.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

The first part of this question is RO knowledge as it requires using information in a performance test that is normally performed by an RO. The second part of this question requires specific knowledge from the bases of TS 3.3.9 regarding when SR should be used as primary power indication The information is not system knowledge since the window that the Source Range is the primary indication is well inside the window of the Modes of Applicability and only a portion of the time the Source Range is providing on scale indication of power (count rate).

This question cannot be answered using 1 hr or less tech spec information.
This question cannot be answered by knowing "above the line" tech spec information
This question cannot be answered by knowing the Tech Spec Safety Limits.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References
Obj. ADM-TSS R5, R6 PT/600/01 Encl 13.4 TS 3.3.9 bases

Student References Provided
PT/600/01 Encl 13.4

KA	KA_desc
APE032 AA2.07	Ability to determine and interpret the following as they apply to the Loss of Source Range Nuclear Instrumentation: (CFR: 43.5 / 45.13)□Maximum allowable channel disagreement ....

401-9 Comments:

Remarks/Status

D

2009B ONS SRO NRC Examination QUESTION 85

85

KA	KA_desc
APE033	APE033 GENERIC□Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits. (CFR: 41.5 / 41.7 / 43.2)
2.2.25	

Given the following Unit 1 conditions:

- Reactor in MODE 3
- Startup in progress
- Safety Rod Groups 1 & 2 fully withdrawn
- Safety Rod Group 3 withdrawal in progress
- Wide Range NI-1 and NI-3 are disabled

1) The MINIMUM number of Wide Range NI's that are required by Tech Spec 3.3.10 (Wide Range Neutron Flux) __(1)__ OPERABLE.

2) The reason Wide Range Neutron Monitors are used to trigger operator actions in accordance with the basis of Tech Spec 3.3.10 is to __(2)__.

Which ONE of the following completes the statements above?

A. 1. are NOT
   2. prevent exceeding DNBR Safety Limits due to reactivity transients in MODES 3, 4, and 5

B. 1. are
   2. prevent exceeding DNBR Safety Limits due to reactivity transients in MODES 3, 4, and 5

C. 1. are NOT
   2. minimize the impact of a reactivity transient that could otherwise result in RPS actuation

D. 1. are
   2. minimize the impact of a reactivity transient that could otherwise result in RPS actuation

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D

General Discussion

Answer A Discussion

Incorrect. First part is plausible since there are 2 WR NI's not operable. Additionally, it would be correct if a 3rd WR NI became inoperable. Second part is plausible since the WR NI's are required to be operable in these Modes of operation and "Triggering operators" is part of the actual bases statement regarding the WR NI's.

Answer B Discussion

IIncorrect. First part is correct. Second part is plausible since the WR NI's are required to be operable in these Modes of operation and "Triggering operators" is part of the actual bases statement regarding the WR NI's.

Answer C Discussion

Incorrect. First part is plausible since there are 2 WR NI's not operable. Additionally, it would be correct if a 3rd WR NI became inoperable. Second part is correct.

Answer D Discussion

Correct. TS 3.3.10 requires that 2 Wide Range NI's be operable if capable of rod withdrawal. The bases of the spec says that WR NI's are the primary indication to trigger operator actions to anticipate RPS actuation in the event of reactivity transients starting from low power conditions.

Basis for meeting the KA

Requires knowledge of required actions during a loss of wide range NI's (ONS has replaced intermediate range with wide range). Also requires knowledge of the TS bases behind the LCO requirement of having 2 WR NI's required when in the MODE of Applicability.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

The first part of this question is RO knowledge as it can be answered by knowing above the line 1 hour or less requirements of TS 3.3.10. The second part of the question requires TS bases knowledge for the reason behind the LCO requirement of having 2 WR NI's Operable that is not specific to systems knowledge.

The SRO portion of this question cannot be answered knowing only 1 hr or less TS information.
This question cannot be answered by knowing "above the line" TS information.
This question cannot be answered by knowing TS Safety Limits.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	NEW	

Development References
Obj. ADM-TSS R4, R5 TS 3.3.10 and bases

Student References Provided

KA	KA_desc
APE033	APE033 GENERIC□Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits. (CFR: 41.5 / 41.7 / 43.2)
2.2.25	

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS003 A2.02	Ability to (a) predict the impacts of the following malfunctions or operations on the RCPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5/ 45.3 / 45/13)□Conditions which exist for an abnormal shutdown of an RCP in comparison to a normal shutdown of an RCP ....

Given the following Unit 1 conditions:

Initial conditions:

- Reactor in MODE 3
- 1A2 and 1B2 RCPs operating

Current conditions:

- All SCM's = 25°F stable
- Pressurizer level = 200 inches stable
- 1A2 RCP Motor
    - o Upper Guide Bearing temperature = 195°F slowly increasing
    - o Stator Temperature = 220°F slowly increasing
- 1B2 RCP Motor
    - o Upper Guide Bearing temperature = 185°F slowly increasing
    - o Stator Temperature = 255°F slowly increasing
- RCS leakage = 180 gpm stable

1) AP/16 (Abnormal Reactor Coolant Pump Operation) requires tripping the __(1)__ RCP.

2) The __(2)__ tab will provide the guidance for a plant cooldown if ALL RCP's are secured.

Which ONE of the following completes the statements above?

A. 1. 1A2
2. Forced Cooldown

B. 1. 1A2
2. LOCA Cooldown

C. 1. 1B2
2. Forced Cooldown

D. 1. 1B2
2. LOCA Cooldown

General Discussion

Answer A Discussion

Incorrect: First part is correct. Second part is plausible since it would be correct if the leak rate were < 160 gpm.

Answer B Discussion

CORRECT. The HI OAC alarm at 170 degrees for upper guide bearing temperature will direct referring to AP/16. The Immediate Trip Criteria (ITC) limit for the upper guide bearing temp is 190 degrees therefore the ITC has been exceeded. Per AP/16, if in MODE 3 you trip the affected RCP. If the 2nd RCP is lost and therefore no RCP's are operating you will meet the entry conditions for the EOP. The SA tab will assess if you have an RCS leak greater than normal makeup capacity (about 160 gpm) and if so direct you to the LOCA CD tab to perform the plant cooldown. This step will be reached prior to the transfer to Forced Cooldown when NC cooldown is desired.

Answer C Discussion

Incorrect: The temp limit for motor stator is 295 degrees. 255 degrees is plausible since there are several ITC trip setpoints with temps less than 255 degrees (examples are Radial Bearing temps (225) and thrust bearing temps (190). Second part is plausible since it would be correct if the leak rate were < 160 gpm.

Answer D Discussion

Incorrect: The temp limit for motor stator is 295 degrees. 255 degrees is plausible since there are several ITC trip setpoints with temps less than 255 degrees (examples are Radial Bearing temps (225) and thrust bearing temps (190). Second part is correct.

Basis for meeting the KA

Requires predicting the impact of the malfunctions on RCP operation and using AP/16 (Abnormal RCP Ops) to determine actions required to shutdown the RCP under the abnormal conditions.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

The first part of this question is RO knowledge and can be answered knowing the Immediate Trip Criteria for RCP's found in AP/16. The second part of this question requires assessing plant conditions (the need to secure RCP bases on ITC) and then prescribing a section of a procedure (which cooldown section) to be used to perform the RCS cooldown.

This question cannot be answered based solely on systems knowledge.
The SRO portion of this question cannot be answered based solely on knowing Immediate Operator Actions.
This question cannot be answered bases on entry conditions to an AP or EOP.
This question cannot be answered by knowing the major mitigation strategy of the EOP or AP.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	MODIFIED	Modified 2009A Q86

Development References	Student References Provided
Obj. EAP FCD R1 Obj. EAP-LCD R9 EOP SA tab AP/16	

KA	KA_desc
SYS003 A2.02	Ability to (a) predict the impacts of the following malfunctions or operations on the RCPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5/ 45.3 / 45/13)□Conditions which exist for an abnormal shutdown of an RCP in comparison to a normal shutdown of an RCP ....

401-9 Comments:	Remarks/Status

D

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KA	KA_desc
SYS006	SYS006 GENERIC□Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator. (CFR: 41.10 / 43.5 / 45.11)
2.4.30	

Given the following Unit 2 conditions:

- Reactor in MODE 3
- Startup in progress
- RCS temperature = 532°F stable
- RCS pressure = 2155 psig stable
- Safety Rods Groups 1-4 fully withdrawn

Which ONE of the following would allow a MAXIMUM of 4 hours to make an Emergency Notification System notification to the NRC in accordance with NSD 202 (Reportability)?

REFERENCE PROVIDED

A. Operating Main Feedwater Pump trips

B. BOTH EFDW trains declared NOT OPERABLE

C. 1HP-120 failure resulting in RCS pressure increasing to 2375 psig

D. Turbine Bypass Valve failure resulting in RCS pressure decreasing to 1545 psig

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D

General Discussion

Answer A Discussion

Incorrect. Plausible since loss of operating MFDW pumps could result in auto actuation of EFDW (depending on status of plant) and EFDW actuation is an ENS notification requirement however it is an 8 hour requirement and not 4 hour. Additionally, if the Rx is critical and both MFDWP's trip then an RPS trip would occur and that would be a 4 hour ENS requirement.

Answer B Discussion

Incorrect. Plausible since 4 hour notification is required once TS required shutdown is initiated however with both EFDW trains inoperable, TS 3.7.5 Condition E allows for not shutting down the unit until at least one trained is restored.

Answer C Discussion

Incorrect. Plausible since a valid RPS actuation would be a 4 hour notification if the reactor were critical.

Answer D Discussion

Correct. Since there would be a valid ECCS injection due to low RCS pressure (ES 1&2 will actuate at 1600 psig). NSD 202 requires a 4 hr notification.

Basis for meeting the KA

Requires knowledge of NRC notification requirements following a valid ECCS actuation.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

This question requires knowledge of NSD 202 administrative requirements for notifications. This knowledge is specifically linked to objective ADM-SD R4. This objective is designated as SRO only in the table at the front of the lesson plan and is a task performed by SRO's only and therefore qualifies as a Plant Specific Exemption from being tied to 10CFR55.43(b).

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References
Obj. ADM-SD R4 NSD 202 ADM-SD TS 3.7.5

Student References Provided
NSD 202

KA	KA_desc
SYS006 2.4.30	SYS006 GENERIC□Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator. (CFR: 41.10 / 43.5 / 45.11)

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS007 A2.06	Ability to (a) predict the impacts of the following malfunctions or operations on the P S; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)□Bubble formation in PZR ....

Given the following Unit 1 conditions:

- OP/1/A/1103/002, (Filling and Venting RCS) Enclosure 4.14 (Establishing Pzr Steam Bubble And RCS Final Vent) in progress
- Quench Tank level = 84 inches
- Quench Tank pressure = 0.5 psig
- The Pressurizer is vented to the Quench Tank for 30 minutes

1) The HIGHER of the Quench Tank pressures below that would indicate that Pzr Steam Bubble Formation is complete is __(1)__ psig.

2) Entry into MODE 4 if 1GWD-12 (QUENCH TANK VENT INSIDE RB) failed to close during system re-alignment following Pzr steam bubble formation is allowed __(2)__ in accordance with Tech Specs.

Which ONE of the following completes the statements above?

REFERENCE PROVIDED

A. 1. 0.6
2. ONLY once 1GWD-12 is restored to OPERABLE

B. 1. 0.6
2. if 1GWD-13 (QUENCH TANK VENT OUTSIDE RB) is closed and de-activated

C. 1. 2.5
2. ONLY once 1GWD-12 is restored to OPERABLE

D. 1. 2.5
2. if 1GWD-13 (QUENCH TANK VENT OUTSIDE RB) is closed and de-activated

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible since it would be correct for many other Tech Specs however LCO 3.0.4 allows mode changes if operation in the specific condition is allowed for an unlimited period of time. In this case, as long as 1GWD-13 is deactivated closed within 4 hours and then verified every 31 days thereafter per TS 3.6.3 Condition A, entry into MODE 4 would be allowed.

Answer B Discussion

Correct. Per OP/1103/002, Pzr steam bubble formation is complete (i.e., all the N2 gas is vented out of the Pzr) when a change (rise) in QT pressure of less than 0.2 psig occurs and QT level increases by 2 inches following a 30 minute vent. LCO 3.0.4 allows mode changes if operation in the specific condition is allowed for an unlimited period of time. In this case, as long as 1GWD-13 is deactivated closed within 4 hours and then verified every 31 days thereafter per TS 3.6.3 Condition A, entry into MODE 4 would be allowed.

Answer C Discussion

Incorrect. First part is plausible since 2 inches is the expected level increase during the 30 minute vent per OP/1103/002, Encl. 4.14 (Establishing Pzr Steam Bubble AND RCS Final Vent). If the candidate confused the 2 inches and applied the number to pressure (2 psig vs 2 inches) then they would make this choice. Second part is plausible since it would be correct for many other Tech Specs however LCO 3.0.4 allows mode changes if operation in the specific condition is allowed for an unlimited period of time. In this case, as long as 1GWD-13 is deactivated closed within 4 hours and then verified every 31 days thereafter per TS 3.6.3 Condition A, entry into MODE 4 would be allowed.

Answer D Discussion

Incorrect. First part is plausible since 2 inches is the expected level increase during the 30 minute vent per OP/1103/002, Encl. 4.14 (Establishing Pzr Steam Bubble AND RCS Final Vent). If the candidate confused the 2 inches and applied the number to pressure (2 psig vs 2 inches) then they would make this choice. Second part is correct.

Basis for meeting the KA

Requires ability to predict the impact of Pressurizer bubble formation on Quench Tank Level and ability to use procedures (Tech Spec) to mitigate the consequences of a malfunction during Pzr bubble formation.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

The first part of this question requires a detailed knowledge of the content of this procedure (specific criteria required to determine the steam bubble has been drawn) vs. the overall strategy of the procedure (establish a steam bubble in the pressurizer). The second part of this question requires ability to apply Required Actions of TS 3.6.3 as well as apply requirements of generic LCO 3.0.4 relating to Mode changes. It requires applying TS 3.6.3 Required Actions to determine the corrective actions required due to the inoperable CI valve and then requires applying LCO 3.0.4 which normally does not allow mode changes when an LCO is not met but in this case the Completion Time allows unlimited stay in the Condition once the RA is met and therefore Mode changes can continue.

This question cannot be answered based solely on systems knowledge.
This question cannot be answered based solely on knowing IMA's of any procedure.
This question cannot be answered based solely on knowing entry conditions of any AP/EOP.
This question cannot be answered based solely on knowing major strategy of the procedure.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	MODIFIED	NRC 2009A Q34

Development References
Obj PNS-PZR R17 Obj ADM-ITS R2 TS LCO 3.0.4 TS 3.6.3 OP/1/A/1103/002, (Filling and Venting RCS) Enclosure 4.14 (Establishing Pzr Steam Bubble And RCS Final Vent) NRC 2009A Q34

Student References Provided
TS 3.6.3

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B

KA	KA_desc
SYS007 A2.06	Ability to (a) predict the impacts of the following malfunctions or operations on the P S; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)□Bubble formation in PZR ....

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS064	SYS064 GENERIC□Knowledge of surveillance procedures. (CFR: 41.10 / 45.13)
2.2.12	

Given the following Unit 2 conditions:

Initial Conditions:
- Reactor power = 100%
- ACB-4 closed

Current conditions:
- KHU #1 Emergency Lockout occurs

1) PT/0/A/0620/009 (Keowee Hydro Operation) will require an __(1)__ start of KHU #2 as part of its operability verification.

2) Verifying __(2)__ SK breaker(s) can be closed meets the MINIMUM SK breaker requirements when verifying operability of the Underground powerpath.

Which ONE of the following completes the statements above?

A. 1. Automatic
2. EITHER

B. 1. Automatic
2. BOTH

C. 1. Emergency
2. EITHER

D. 1. Emergency
2. BOTH

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible since closing either SK breaker is all that is required to energize one of the Standby Busses. If either Standby Buss is energized from CT-4 (either SK breaker closed) then the energized Standby Buss can energize one or both of the Main Feeder Busses and provide emergency power therefore it would be plausible to believe that closing only one SK breaker would satisfy operability requirments of the Underground powerpath.

Answer B Discussion

Correct. TS 3.8.1 Condition C specifies that SR 3.8.1.3 be performed within 1 hour since the overhead KHU has become inoperable. The SR itself directs that the KHU "start automatically". PT/620/09 directs that either the KHU operator or the Oconee operator perform an "Auto" start of the KHU. Since both Standby Busses are required to be operable as part of the Underground powerpath (TS 3.8.1 bases), The PT directs closing both SK breakers to verify each can energize its associated Standby Buss.

Answer C Discussion

Incorrect. First part is plausible for several reasons. The TS Bases for SR 3.8.1.3 states that the surveillance can be performed by either an Emergency or an Automatic start of the KHU. There are several PT's performed that do require testing the emergency start function of the KHU's. Examples are SR 3.3.21.1 and SR 3.3.22.1. Also, the purpose of the Operability Verification is to ensure that the associated KHU will automatically start and synchronize with the grid. In that context it would be plausible to believe that an Emergency start of the KHU would be required to ensure it performed the required actions. Second part is plausible since closing either SK breaker is all that is required to energize one of the Standby Busses. If either Standby Buss is energized from CT-4 (either SK breaker closed) then the energized Standby Buss can energize one or both of the Main Feeder Busses and provide emergency power therefore it would be plausible to believe that closing only SK breaker would satisfy operability requirments of the Underground powerpath.

Answer D Discussion

Incorrect. First part is plausible for several reasons. The TS Bases for SR 3.8.1.3 states that the surveillance can be performed by either an Emergency or an Automatic start of the KHU. There are several PT's performed that do require testing the emergency start function of the KHU's. Examples are SR 3.3.21.1 and SR 3.3.22.1. Also, the purpose of the Operability Verification is to ensure that the associated KHU will automatically start and synchronize with the grid. In that context it would be plausible to believe that an Emergency start of the KHU would be required to ensure it performed the required actions. Second part is correct.

Basis for meeting the KA

Requires knowledge of actions directed by surveillance procedure PT/620/09 associated with the KHU's (since they perform the function of ED/G here at ONS) that is required to be performed in the event of a KHU inoperability.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

The first part of this question requires detailed knowledge of a normal procedure that is not just part of its overall purpose (verify operability of the associated KHU) nor the overall sequence of events. The overall sequence of events would dictate knowledge that the KHU must be started and verified able to align to its emergency power path alignment. Only detailed knowledge of the content of the procedure would result in knowing exactly how the KHU must be started to comply with PT/620/09, especially since TS bases allows either to be used to satisfy the surveillance. Additionally, since there are PT's that require Emergency Starts of the KHU's, knowledge of the content of PT/620/09 demonstrates the ability to determine the appropriate selection of procedure to perform the needed operability verification.

The second part of this question is also SRO knowledge as it requires either detailed knowledge the content of the PT being used or knowledge from the Bases of TS 3.8.1 regarding the requirements for the operability of the underground powerpath that go beyond system knowledge..

The SRO portion of this question cannot be answered Solely on 1 hr or less TS knowledge.
This question cannot be answered based on "above the line" TS information.
This question cannot be answered with TS Safety Limit information.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References
Obj. ADM-TSS R4 ADM-ITS R4, R5

Student References Provided

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B

PT/620/09
TS 3.8.1

KA	KA_desc
SYS064 2.2.12	SYS064 GENERIC□Knowledge of surveillance procedures. (CFR: 41.10 / 45.13)

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS073	SYS073 GENERIC□Ability to apply Technical Specifications for a system. (CFR: 41.10 / 43.2 / 43.5 / 45.3)
2.2.40	

Given the following Unit 1 conditions:

- Reactor in MODE 5
- RB Purge in progress
- ALL 1RIA-45 (Unit Vent Particulate Monitor) functions will be unavailable for approximately 45 minutes due to scheduled PM's

Which ONE of the following describes the impact on the ability to continue the RB Purge during the PM's in accordance with SLC 16.11.3 (Radioactive Effluent Monitoring Instrumentation)?

The RB Purge release ______

A. can continue with NO additional actions if RIA outage time does NOT exceed one hour.

B. can continue however it <u>requires</u> 2 independent samples be taken for the time the RIA is not available.

C. can NOT continue because the outage time will exceed the time allowed in accordance with SLC 16.11.3.

D. can NOT continue because 1RIA-45 will NOT be able to terminate RB Purge during the PM's.

General Discussion

Answer A Discussion

Correct. RIA-45 is covered by 2 different SLC Required Actions depending on the function determined inoperable. With ALL functions inoperable, both Condition I and Condition K would apply. Both Conditions have what are basically "immediate" corrective actions however both SLC's also contain NOTES in the Required Action portion of the Actions Table which allow for short controlled outages (not to exceed one hour) for things such as routine maintenance without having to perform the corrective actions therefore the RB Purge could continue.

Answer B Discussion

Incorrect. Plausible since this would be the correct actions if RIA-45 RB Purge auto termination were inoperable for reasons other than a short controlled outage as described in the NOTE for Condition I and the choice were made to continue with a RB purge.

Answer C Discussion

Incorrect. Plausible since the SLC referenced does provide a limited time for scheduled maintenance that allows the release to continue as long as the time is not exceeded. Incorrect because the time allowed is 1 hour..

Answer D Discussion

Incorrect. Plausible since this statement is true however the SLC does allow this condition to exist for up to 1 hour for scheduled maintenance.

Basis for meeting the KA

Requires ability to apply the SLC for Radioactive Effluent Monitoring Instrumentation (16.11.3) to a practical application of the Required Actions.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

This question requires the practical application of the required actions of SLC 16.8.3. While the RA's are 1 hour or less, there is a NOTE in the Actions table that must be applied which makes the RA's not applicable for short controlled outages of RIA-45. It is the application of this note (and therefore applying rules of usage) to the 1 hr or less completion times that makes this SRO only since it can not be answered based solely on knowledge of the 1 hr or less Completion Time requirements.

This question cannot be answered based on information "above the line".
This question cannot be answered based on knowing the TS Safety Limits.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	NEW	

Development References
Obj. ADM-TSS R2, R4 SLC 16.11.3

Student References Provided

KA	KA_desc
SYS073	SYS073 GENERIC□Ability to apply Technical Specifications for a system. (CFR: 41.10 / 43.2 / 43.5 / 45.3)
2.2.40	

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS034 A2.03	Ability to (a) predict the impacts of the following malfunctions or operations on the Fuel Handling System ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)□Mispositioned fuel element ....

Which ONE of the following states the MINIMUM level of approval required to place a fuel assembly into an alternate location other than the original one assigned by the Core Reload Sequence in accordance with MP/0/A/1500/009 (Defueling/Refueling Procedure)?

A. Refueling SRO Assistant

B. Reactor Building SRO

C. Refueling SRO

D. OSM

General Discussion

Answer A Discussion

Incorrect. Plausible since this position is involved in the step by step implementation of the refueling procedures and this position is the one required to administratively verify that the assembly is being inserted into the position required by the procedure.

Answer B Discussion

Incorrect. Plausible since this is an SRO position required to be inside the Rx Bldg during core alterations and it is a position required to be staffed by SLC 16.13.1 (Minimum Station Staffing Requirements). Additionally plausible since this position is responsible for the overall conduct of fuel handling operations in the Reactor Building.

Answer C Discussion

Correct. In accordance with the procedures use to control fuel handling activities:

During refueling, IF Any Fuel Assembly must be placed in a Core location other than the one assigned in PT/0/A/0750/018, Refueling Activities, then the alternate core location shall be evaluated by a Qualified Reactor Engineer and approved by the Refueling SRO.

Answer D Discussion

Incorrect. Plausible since in general the OSM is required to approve deviations from procedures. However, this specific case has more specific requirements in the procedure being used to perform the fuel movement.

Basis for meeting the KA

Per discussion with Chief Examiner on 8/26/10, this question can test procedural requirements that have been put in place to prevent putting a fuel assembly in the wrong place. This decision was based on discussions about ONS OE related to this issue. This question requires knowledge of a barrier that is in place to prevent placing a fuel assembly in a location other than the specified approved procedural location.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

This question requires knowledge of fuel handling procedures and knowledge of the requirements necessary to change/deviate from a plant procedure. Additionally, this requires knowledge of an activity that is defined as an SRO only activity in plant procedures.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	NEW	

Development References
Obj. FH-FHS R27 FH-FHS Refueling Procedure (MP)

Student References Provided

KA	KA_desc
SYS034 A2.03	Ability to (a) predict the impacts of the following malfunctions or operations on the Fuel Handling System ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5 / 43.5 / 45.3 / 45.13)□Mispositioned fuel element ....

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS068	SYS068 GENERIC□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. (CFR: 41.5 / 43.5 / 45.12)
2.2.44	

Given the following Unit 1 conditions:

- Reactor power = 100%

1) __(1)__ would result in actuation of 1SA-18/C5 RM TBS Interlock.

2) __(2)__ gpd is the LOWEST Steam Generator tube leak rate that would require initiating a power decrease in accordance with plant procedures.

Which ONE of the following would complete the statements above?

A. 1. Loss of power to 1RIA-54
2. 125

B. 1. Loss of power to 1RIA-54
2. 65

C. 1. 1RIA-54 reaching the ALERT setpoint
2. 125

D. 1. 1RIA-54 reaching the ALERT setpoint
2. 65

General Discussion

Answer A Discussion

Correct. If 1RIA-54 losses power it will actuate 1SA-18/C5 RM TBS Interlock statalarm and terminate any release from the TBS by tripping both Turbine Building Sump Pumps. AP/31 directs that if leak rate reaches 100 gpd, then initiate a power reduction.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible since it would be correct if both methods (RIA-59/60 and OAC point) were inoperable.

Answer C Discussion

Incorrect. First part is plausible since it would be correct it the RIA reached the HIGH setpoint. Additional plausibility since there are other RIA's which activate computer alarms from the ALERT setpoint and there are RIA's whose ALERT setpoint is the same as the HIGH setpoint (RIA-40). Specifically since RIA-40 is also affiliated with a SGTR it would be plausible to believe that RIA-54 ALERT and HIGH setpoint are the same which would lead to this choice being chosen. Second part is correct.

Answer D Discussion

Incorrect. First part is plausible since it would be correct it the RIA reached the HIGH setpoint. Additional plausibility since there are other RIA's which activate computer alarms from the ALERT setpoint and there are RIA's whose ALERT setpoint is the same as the HIGH setpoint (RIA-40). Specifically since RIA-40 is also affiliated with a SGTR it would be plausible to believe that RIA-54 ALERT and HIGH setpoint are the same which would lead to this choice being chosen. Second part is plausible since it would be correct if both methods (RIA-59/60 and OAC point) were inoperable.

Basis for meeting the KA

Requires the ability to interpret statalarm indications. The question requires the ability to determine what system condition would result in the alarm actuating. Additionally requires the ability to understand how directives from AP/31 affect plant conditions.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

The first part of this question is RO knowledge as it is answerable based on system knowledge of the RIA.
The second part of the question requires detailed knowledge of the content of AP/31 that is not just major mitigation strategy. The major strategy would require knowledge that there are thresholds of leakage rates that you can reach before reaching the leak rate that would require enter into the EOP that would require power reduction. It is detailed knowledge of the content to know what those specific leak rate threshold values are. Additionally, knowledge of the threshold values for shutdown demonstrate the ability to determine that Enclosure 5.1 (Unit Shutdown Requirements) becomes applicable and therefore demonstrates assessing plant conditions and determining a section of a procedure with which to proceed.

This SRO portion of the question cannot be answered based solely on systems knowledge.
This question cannot be answered based solely on IMA's.
This question cannot be answered based solely on entry conditions to AP/EOP.
This question cannot be answered based solely on overall sequence of events or major mitigation strategy.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	NEW	

Development References
Obj. RAD-RIA-R2 Obj. EAP-APG R9 Obj. EAP-SGTR R19 Rad-RIA 1SA-18 C-5 AP/31

Student References Provided

KA	KA_desc
SYS068 2.2.44	SYS068 GENERIC□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. (CFR: 41.5 / 43.5 / 45.12)

2009B ONS SRO NRC Examination QUESTION 92 92 **A**

401-9 Comments:

Remarks/Status

KA	KA_desc
SYS035	SYS035 GENERIC□Knowledge of EOP mitigation strategies. (CFR: 41.10 / 43.5 / 45.13)
2.4.6	

Given the following Unit 1 conditions:

Initial conditions:

- Steam line break in 1A Steam Generator has occurred from 100%
- Rule 5 (Main Steam Line Break) is complete
- EHT tab in progress

Current conditions:

- Steam line break occurs in 1B Steam Generator

1) The INITIAL EOP procedure path would be to re-perform Rule 5 and __(1)__.

2) The cooldown tab that will be directed by the Procedure Director assuming neither SG can be "Trickle Fed" would be the __(2)__ tab.

Which ONE of the following completes the statements above?

A. 1. Return to beginning of EHT tab
2. FCD

B. 1. Return to beginning of EHT tab
2. HPI CD

C. 1. Transfer to LOHT tab
2. FCD

D. 1. Transfer to LOHT tab
2. HPI CD

General Discussion

Answer A Discussion

Incorrect. First part is correct. Second part is plausible since it is the cooldown tab that would normally be used following a MSLB and performance of the EHT tab.

Answer B Discussion

CORRECT. Per the parallel actions page of the EHT tab, you would go back to the beginning of the EHT tab and start over. If neither SG can be fed then once actions are taken to isolate the SG, HPI forced cooling is initiated and a transfer to the HPI CD tab is made.

Answer C Discussion

Incorrect. First part is plausible since the LOHT tab is normally where you would be if you did not have heat transfer available in neither SG. Second part is plausible since it is the cooldown tab that would normally be used following a MSLB and performance of the EHT tab.

Answer D Discussion

Incorrect. First part is plausible since the LOHT tab is normally where you would be if you did not have heat transfer available in neither SG. Second part is correct.

Basis for meeting the KA

This question requires knowledge of EOP procedure path (mitigation strategies) required if both SG's are impacted by steam leaks.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

The first part of this question requires assessing plant conditions and determining a procedure with which to proceed. This information is not simply knowledge of major mitigation strategy. .

This question cannot be answered based solely on systems knowledge.
This question cannot be answered based solely on knowing IMA's of any procedure.
This question cannot be answered based solely on knowing entry conditions of any AP/EOP.
This question cannot be answered based solely on knowing major strategy of the procedure.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References	Student References Provided
Obj. EAP-EHT R13 EOP-EHT	

KA	KA_desc
SYS035	SYS035 GENERIC□Knowledge of EOP mitigation strategies. (CFR: 41.10 / 43.5 / 45.13)
2.4.6	

401-9 Comments:	Remarks/Status

KA	KA_desc
GEN2.1	Conduct of Operations□Knowledge of primary and secondary plant chemistry limits. (CFR: 41.10 / 43.5 / 45.12)
2.1.34	

Given the following Unit 1 plant conditions:

- Reactor power = 87% stable
- Chemistry results report DEI = 68 uCi/gm

1) The INITIAL Tech Spec Required Action is to __(1)__.

2) The bases behind the limit on DEI, in accordance with Tech Spec 3.4.11 (RCS Specific Activity), is to ensure __(2)__.

Which ONE of the following completes the statements above?

REFERENCE PROVIDED

A. 1. restore DEI to acceptable limits within 48 hours
   2. doses at the site boundary do not exceed 10CFR100 limits

B. 1. restore DEI to acceptable limits within 48 hours
   2. accessibility of components required to be operated in a post LOCA environment as part of Time Critical Actions

C. 1. be in MODE 3 with Tave < 500°F within 12 hours
   2. doses at the site boundary do not exceed 10CFR100 limits

D. 1. be in MODE 3 with Tave < 500°F within 12 hours
   2. accessibility of components required to be operated in a post LOCA environment as part of Time Critical Actions

General Discussion

Answer A Discussion

Incorrect. First part is plausible since it is a TS action (Condition A) for not meeting LCO however since DEI is in unacceptable range of table 3.4.11-1, Condition B applies and requires shutdown. Second part is correct.

Answer B Discussion

Incorrect. First part is plausible since it is a TS action (Condition A) for not meeting LCO however since DEI is in unacceptable range of table 3.4.11-1, Condition B applies and requires shutdown. Second part is plausible since DEI would have a direct impact on dose rates in the auxiliary building and therefore accessibility of components in a post loca environment. Additional plausibility from the fact that ONS has identified this specific issue (dose rates limiting access to components) and taken actions to ensure the accessibility of components by adding LDST drains back to the RBES.

Answer C Discussion

Correct. Since the activity and power level result in being in Condition B, the actions stated are required. The bases behind the DEI limit is to limit dose at the site boundary (2 hr thyroid limit) to within 10CFR100 limits.

Answer D Discussion

Incorrect. First part is correct. Second part is plausible since DEI would have a direct impact on dose rates in the auxiliary building and therefore accessibility of components in a post loca environment. Additional plausibility from the fact that ONS has identified this specific issue (dose rates limiting access to components) and taken actions to ensure the accessibility of components by adding LDST drains back to the RBES.

Basis for meeting the KA

Requires knowledge of Primary Chemistry limits, specifically RCS DEI limits and the bases for the limit.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

The first part of this question requires an application of Required Actions in accordance with rules of usage. The second part of this question requires knowledge from the Bases of TS 3.4.11 (RCS Specific Activity) about the bases for the TS limit on DEI.

This question cannot be answered Solely on 1 hr or less TS knowledge.
This question cannot be answered based on "above the line" TS information.
This question cannot be answered with TS Safety Limit information.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References
Obj. ADM-TSS R2, R5 SLC 16.6.12 Bases TS 3.4.11 and Bases

Student References Provided
TS 3.4.11

KA	KA_desc
GEN2.1 2.1.34	Conduct of Operations□Knowledge of primary and secondary plant chemistry limits. (CFR: 41.10 / 43.5 / 45.12)

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 95

95 A

KA	KA_desc
GEN2.1	Conduct of Operations□Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc. (CFR: 41.10 / 43.5 / 45.12)
2.1.5	

Given the following conditions:

- Unit 1 = 100% Power
- Unit 2 = Mode 5
- Unit 3 = 100% Power

1) The MINIMUM RO staffing requirements for the station in accordance with SLC 16.13.1 (Minimum Station Staffing Requirements) is __(1)__.

2) The SLC requirements __(2)__ include maintaining the ability to staff the SSF when required.

Which ONE of the following completes the statements above?

REFERENCE PROVIDED

A. 1. 5
   2. do

B. 1. 5
   2. do NOT

C. 1. 6
   2. do

D. 1. 6
   2. do NOT

General Discussion

Answer A Discussion

Correct. Per Table 16.13.1-1, 5 ROs are required when 2 units are in MODES 1-4 and the units are in two control rooms. The bases of the SLC goes on to explain that the table is a compilation of all of the staffing requirements and the second bullet on page 16.13.1-7 explains that the table does include SSF staffing requirements.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible since the SSF staffing requirements are separate from 10CFR50.54 requirements therefore it is plausible to believe that the table in the SLC does not contain these separate requirements.

Answer C Discussion

First part is plausible since it would be correct if all 3 units were in MODES 1-4. Second part is correct.

Answer D Discussion

Incorrect. First part is plausible since it would be correct if all 3 units were in MODES 1-4. Second part is plausible since the SSF staffing requirements are separate from 10CFR50.54 requirements therefore it is plausible to believe that the table in the SLC does not contain these separate requirements.

Basis for meeting the KA

Requires ability to use SLC 16.13.1 to determine RO staffing requirements

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

This question requires knowledge of the conditions and limitation in the facility license as it applies to shift staffing requirements. It also requires knowledge of the bases of SLC 16.13.1 as it relates to how SSF staff requirements apply to the SLC commitment.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	BANK	NRC 2007 Q94

Development References
Obj. ADM-TSS R1, R5 SLC 16.6.12

Student References Provided
SLC 16.13.1

KA	KA_desc
GEN2.1 2.1.5	Conduct of Operations□Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc. (CFR: 41.10 / 43.5 / 45.12)

401-9 Comments:

Remarks/Status

D

2009B ONS SRO NRC Examination QUESTION 96

96

KA	KA_desc
GEN2.2	Equipment Control□Ability to apply Technical Specifications for a system. (CFR: 41.10 / 43.2 / 43.5 / 45.3)
2.2.40	

Given the following Unit 2 conditions:

- Reactor in MODE 3
- Startup in progress
- 2B LPI Train flow instrument NOT operable

1) Declare __(1)__ NOT OPERABLE.

2) Entry into MODE 2 __(2)__ allowed in accordance with Tech Specs.

Which ONE of the following completes the statements above?

A. 1. 2B LPI Train ONLY
   2. is

B. 1. 2B LPI Train ONLY
   2. is NOT

C. 1. 2B LPI Train AND 2B RBS Train
   2. is

D. 1. 2B LPI Train AND 2B RBS Train
   2. is NOT

2009B ONS SRO NRC Examination QUESTION 96

96

D

General Discussion

Answer A Discussion

Incorrect. First part is plausible since it is only the LPI train flow that is not operable therefore it would be plausible to believe it only impacts operability of the associated LPI train. Second part is plausible since it would be correct if only the RBS train were inoperable since there is a note in TS 3.6.5 that says that LCO 3.0.4 does not apply to Unit 2.

Answer B Discussion

Incorrect. First part is plausible since it is only the LPI train flow that is not operable therefore it would be plausible to believe it only impacts operability of the associated LPI train. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible since it would be correct if only the RBS train were inoperable since there is a note in TS 3.6.5 that says that LCO 3.0.4 does not apply to Unit 2.

Answer D Discussion

Correct. TS 3.5.3 (LPI) bases explains that the LPI train flow instrument is required to be operable to support operability of both the associated LPI Train AND RBS train to preclude NPSH or Runout problems. Second part is correct since LCO 3.0.4 precludes MODE changes when the LCO is not met.

Basis for meeting the KA

Requires ability to determine LCO compliance based on equipment inoperability's and therefore demonstrates the ability to apply Tech Specs for a system.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

Requires knowledge from the Bases of TS 3.5.3 (LPI) and TS 3.6.5 (RB Cooling) regarding requirement of LPI Train flow instrumentation on train operability and is not system knowledge information. Additionally, the question requires application of generic LCO 3.0.4 restrictions on MODE changes.

This question cannot be answered Solely on 1 hr or less TS knowledge.
This question cannot be answered based on "above the line" TS information.
This question cannot be answered with TS Safety Limit information.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	MODIFIED	ADM160513

Development References
Obj. ADM-TSS R2, R5 TS 3.5.3 bases TS 3.6.5 bases

Student References Provided

KA	KA_desc
GEN2.2	Equipment Control□Ability to apply Technical Specifications for a system. (CFR: 41.10 / 43.2 / 43.5 / 45.3)
2.2.40	

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 97

97

C

KA	KA_desc
GEN2.3 2.3.12	Radiation Control□Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc. (CFR: 41.12 / 45.9 / 45.10)

Given the following Unit 3 conditions:

- Reactor in MODE 6
- Fuel movement is in progress
- Fuel Handling accident occurs
- 3RIA-49 (RB Gas) HIGH alarm actuates

1) AP/9 (Spent Fuel Damage) will direct starting Outside Air Booster Fans __(1)__.

2) The bases behind the MINIMUM Fuel Transfer Canal level, in accordance with Tech Spec 3.9.6 (Fuel Transfer Canal Water Level), is to __(2)__.

Which ONE of the following completes the statements above?

A.
1. 3A and 3B ONLY
2. reduce Iodine levels following a fuel handling accident to ensure offsite dose is maintained within allowable limits

B.
1. 3A and 3B ONLY
2. ensure the minimum requirements of the SSF RC Makeup Pump are met for 72 hours

C.
1. A, B, 3A, and 3B
2. reduce Iodine levels following a fuel handling accident to ensure offsite dose is maintained within allowable limits

D.
1. A, B, 3A, and 3B
2. ensure the minimum requirements of the SSF RC Makeup Pump are met for 72 hours

General Discussion

Answer A Discussion

Incorrect. Plausible since the accident has occurred on Unit 3 therefore it would be plausible to only start the Unit 3 Outside Air Booster Fans. Second part is correct.

Answer B Discussion

Incorrect. Plausible since the accident has occurred on Unit 3 therefore it would be plausible to only start the Unit 3 Outside Air Booster Fans. Second part is plausible since RC Makeup Pump operability is based on Spent Fuel Pool level however there is no Fuel Transfer Level requirement for RC Makeup Pump operability.

Answer C Discussion

Correct. AP/9 will direct starting all Outside Air Booster Fans in both control rooms. The bases of TS 3.9.6 explains that during movement of irradiated fuel assemblies, the minimum Fuel Transfer Canal level of 21.34' ensures sufficient Iodine is removed from gas released by a damaged fuel assembly to ensure offside dose requirements are met.

Answer D Discussion

Incorrect. First part is correct. Second part is plausible since RC Makeup Pump operability is based on Spent Fuel Pool level however there is no Fuel Transfer Level requirement for RC Makeup Pump operability.

Basis for meeting the KA

Requires knowledge of radiologically safety principles in that it requires knowledge of why TS requires a minimum level in the fuel transfer canal when movement of irradiated fuel is in progress.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

This question requires recognition of radiation hazards that may arise during abnormal situations. It requires an understanding of the impact of fuel handling accidents and how the consequences are impacted by maintaining a minimum required Fuel Transfer Level. Additionally, this information is TS Bases information as is therefore SRO level .

This question cannot be answered bases solely on knowledge of radiological safety principles.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	MODIFIED	2009A NRC Exam Q93

Development References
Obj. EAP-APG R9 Obj. ADM-TSSs R5 AP/9 TS 3.9.6 bases

Student References Provided

KA	KA_desc
GEN2.3 2.3.12	Radiation Control□Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc. (CFR: 41.12 / 45.9 / 45.10)

401-9 Comments:	Remarks/Status

2009B ONS SRO NRC Examination QUESTION 98 98 **A**

KA	KA_desc
GEN2.3	Radiation Control□Ability to approve release permits. (CFR: 41.13 / 43.4 / 45.10)
2.3.6	

Given the following conditions:

Initial conditions:
- Date = 6/1/10
- 1A GWD tank isolated

Current conditions:
- Date = 9/29/10
- NO GWR releases in progress
- 1A GWD tank needs to be released at 1/3 Station Limit

1) The MINIMUM level of approval required for the release is __(1)__.

2) The expected response of 1RIA-46 during the 1A GWD tank release will be to read __(2)__.

Which ONE of the following completes the statements above?

A. 1. ANY SRO
   2. "0"

B. 1. ONLY the OSM
   2. "0"

C. 1. ANY SRO
   2. "on scale" but below the 1RIA-46 HIGH setpoint

D. 1. ONLY the OSM
   2. "on scale" but below the 1RIA-46 HIGH setpoint

General Discussion

Answer A Discussion

Correct. Any SRO can approve the release since it is the only release that would be in progress and it will be a 1/3 station limit release. The swapover setpoint between RIA-45 and 46 is set such that it is higher than the HIGH alarm for RIA-45 therefore RIA-46 would be expected to be reading 0 as long as RIA-45 is below its HIGH setpoint which would be expected to be the case during the release.

Answer B Discussion

Incorrect. First part is plausible since the OSM must approve if two 1/3 Station Releases in progress that result in 2/3 station limit. Second part is correct.

Answer C Discussion

Incorrect. First part is correct. Second part is plausible since the readings could actually be within the ability to be read by RIA-46 and both RIA-45 and RIA-46 are monitoring the same effluent and are both gas detectors.

Answer D Discussion

Incorrect. First part is plausible since the OSM must approve if two 1/3 Station Releases in progress that result in 2/3 station limit. second part is plausible since the readings could actually be within the ability to be read by RIA-46 and both RIA-45 and RIA-46 are monitoring the same effluent and are both gas detectors.

Basis for meeting the KA

Requires ability to assess approval requirements for a 1/3 station limit radiological release.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

This question requires recognition of radiation hazards that may arise during normal and abnormal situations. It requires knowledge of the process for approval requirements for station releases which is performed by SRO's exclusively.

The question cannot be answered based solely on radiological safety principles.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	MODIFIED	2007 SRO Q98

Development References
Obj WE-GWD R6 Obj RAD-RIA R2 SLC 16.11.2 WE-GWD RAD-RIA

Student References Provided

KA	KA_desc
GEN2.3	Radiation Control□Ability to approve release permits. (CFR: 41.13 / 43.4 / 45.10)
2.3.6	

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 99

99

D

KA	KA_desc
GEN2.4	Emergency Procedures / Plan□Knowledge of general operating crew responsibilities during emergency operations. (CFR: 41.10 / 45.12)
2.4.12	

Which ONE of the following EAL's would result in the LOWEST level of Emergency Classification that will require on-shift NEO's to report to the OSC?

REFERENCE PROVIDED

A. Dose projection at Site Boundary = 120 mRem TEDE

B. RCS pressure spike exceeded RCS pressure safety limit, DEI= 312 uCi/ml, and H2 concentration in containment is 10.4%

C. Fire in the plant cafeteria that can NOT be extinguished for > 15 minutes

D. Valid Rx trip signal received without a SCRAM AND DSS has inserted Control Rods.

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99

D

General Discussion

Answer A Discussion

Incorrect. Plausible under the misconception that a Site Area Emergency is the lowest classification that requires activating the OSC OR if event if mis-classified as an ALERT.

Answer B Discussion

Incorrect. Plausible if event if mis-classified OR if under the misconception that either SAE (with misclassification) or GE are lowest level that require activating the OSC.

Answer C Discussion

Incorrect. Plausible if the event is mis-classified OR if under the misconception that an Unusual Event is the lowest classification that requires activating the OSC.

Answer D Discussion

Correct. Based on RP/1000/001 Encl. 4.4 page 1 of 2 the event is an Alert and an Alert is the lowest classification that requires activating the Emergency Response Centers.

Basis for meeting the KA

Requires ability to use the Emergency plan as well as knowledge of crew reporting responsibilities during emergency operations.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

Requires assessment of facility conditions and selection of appropriate procedures and enclosures with which to proceed. Each of the four choices result in a different EPLAN classification which is an SRO only function. Based on the classification, crew response must be determined. Also requires ability to use SRO only procedures when acting as emergency coordinator.

This question cannot be answered based solely on systems knowledge.
This question cannot be answered based solely on IMA's.
This question cannot be answered based solely on entry conditions to AP/EOP.
This question cannot be answered based solely on overall sequence of events or major mitigation strategy.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Comprehension	NEW	

Development References
Obj. EAP-SEP R3, R12 RP/1000/001 EAP-SEP

Student References Provided
RP/1000/001

KA	KA_desc
GEN2.4	Emergency Procedures / Plan□Knowledge of general operating crew responsibilities during emergency operations. (CFR: 41.10 / 45.12)
2.4.12	

401-9 Comments:

Remarks/Status

2009B ONS SRO NRC Examination QUESTION 100

100

D

KA	KA_desc
GEN2.4	Emergency Procedures / Plan□Knowledge of emergency plan protective action recommendations. (CFR: 41.10 / 41.12 / 43.5 / 45.11)
2.4.44	

Which ONE Of the following:

1) is the LOWEST Emergency Classification that will require protective action recommendations during the INITIAL notification?

2) states who is allowed to staff the NRC Communicator position in accordance with RP/1000/002 (Control Room Emergency Coordinator Procedure)?

A. 1. General Emergency due to 5 highest CETC's = 1346°F for > 15 minutes
   2. ANY licensed operator

B. 1. Site Area Emergency due to Keowee Dam Failure
   2. ANY licensed operator

C. 1. General Emergency due to 5 highest CETC's = 1346°F for > 15 minutes
   2. SRO ONLY

D. 1. Site Area Emergency due to Keowee Dam failure
   2. SRO ONLY

2009B ONS SRO NRC Examination QUESTION 100 100 D

General Discussion

Students will have RP/1000/001 as a reference from a previous question but it has no impact on this question. They can verify that the classifications in the answers are correct but that neither helps nor hurts with this question.

Answer A Discussion

Incorrect. First part is plausible since it would be correct if SAE were due to any other condition other than Dam Failure . Second part is plausible since it would be correct for the Offsite Communicator.

Answer B Discussion

Incorrect. First part is correct. Second part is plausible since it would be correct for the Offsite Communicator.

Answer C Discussion

Incorrect. First part is plausible since it would be correct if SAE were due to any other condition other than Dam Failure . Second part is correct. Per RP/1000/002 when the Emergency Coordinator appoints an NRC communicator (per Encl. 4.5) it is required to be an SRO.

Answer D Discussion

Correct. Per RP/1000/002 when SAE is declared due to actual or imminent Dam failure, PAG's are issued during initial notification to evacuate downstream of the affected area. Additionally, the Emergency Coordinator appoints an NRC communicator (per Encl. 4.5) it is required to be an SRO.

Basis for meeting the KA

Requires knowledge regarding initial notification Protective Action Recommendations requirements.

Basis for Hi Cog

Basis for SRO only

In accordance with Rev. 1 of "Clarification Guidance for SRO-only Questions":

Requires assessment of facility conditions and selection of appropriate procedures and enclosures with which to proceed. Requires knowledge of administrative procedures that specify implementation of Protective Action Recommendations. PAG approvals and appointing the NRC communicator are SRO only functions. Also requires ability to use SRO only procedures when acting as emergency coordinator.

This question cannot be answered based solely on systems knowledge.
This question cannot be answered based solely on IMA's.
This question cannot be answered based solely on entry conditions to AP/EOP.
This question cannot be answered based solely on overall sequence of events or major mitigation strategy.

Job Level	Cognitive Level	QuestionType	Question Source
SRO	Memory	NEW	

Development References	Student References Provided
Obj. EAP-SEP R12 RP/1000/002	

KA	KA_desc
GEN2.4 2.4.44	Emergency Procedures / Plan□Knowledge of emergency plan protective action recommendations. (CFR: 41.10 / 41.12 / 43.5 / 45.11)

401-9 Comments:	Remarks/Status