

1 POINT

Question 76

Unit 1 initial conditions:

- Reactor power = 100%

Current conditions:

- Tcold = 532 °F slowly decreasing
- CETCs = 477 °F slowly decreasing
- RCS pressure = 535 psig decreasing
- Pzr Level = 0 inches
- 1A SG Pressure = 750 psig slowly decreasing
- 1B SG Pressure = 680 psig slowly decreasing
- 1RIA-49 in HIGH alarm

Based on the above, which ONE of the following is the procedure path to mitigate this event?

SEE ATTACHMENT

- A. Loss of Subcooling Margin tab to LOCA Cooldown tab
- B. Loss of Subcooling Margin tab to Forced Cooldown tab
- C. Excessive Heat Transfer tab to Loss of Subcooling Margin tab
- D. Excessive Heat Transfer tab to Forced Cooldown tab

Question 76

T1/G1 - okm

011EA2.13, Large Break LOCA

Ability to determine or interpret the following as they apply to a large break

LOCA: Difference between overcooling and LOCA indications

(3.7/3.7)

K/A MATCH ANALYSIS

Requires the student to interpret the indications and determine that a LBLOCA has occurred; then a determination of EOP procedure routing is required.

SRO-ONLY ANALYSIS

Requires assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. (43.5)

ANSWER CHOICE ANALYSIS

Answer: A

- A. CORRECT: Conditions above indicate a LBLOCA event has occurred; procedure hierarchy dictates routing from the LOSCM tab to the LOCA CD tab**
- B. Incorrect: Plausible in that the first part is correct and RCPs will have been secured; however RCPs will not be able to be restarted. These conditions would make entrance into the FCD tab plausible but wrong since SCM will not likely be able to be restored.
- C. Incorrect: Plausible in that a large MSLB (EHT) event will cause excessive overcooling that could cause the RCS to saturate due inventory contraction. First part is incorrect. When in the EHT tab if the plant is saturated then the EHT tab transfers to the LOSCM tab. Therefore the second part is plausible.
- D. Incorrect: Plausible in that a large MSLB (EHT) event will cause excessive overcooling that could cause the RCS to saturate due inventory contraction. First part is incorrect. FCD is plausible if the student thinks that at least one SG will be available to transfer heat and that RCPs cannot be restored to service.

Technical Reference(s): **EAP LOSCM**

Proposed references to be provided to applicants during examination: **EOP Encl. 5.18**

Learning Objective: **EAP LOSCM, R5**

Question Source: **New**

Question History: Last NRC Exam _____

Question Cognitive Level: **Memory or Fundamental Knowledge
Comprehension or Analysis**

1 POINT

Question 77

Unit 1 initial conditions:

Time = 0900

- Reactor power = 100%
- 1SA2/C2 HP INJECTION PUMP DISCH HEADER PRESSURE LOW actuated
- HPI Pump discharge pressure = 2300 psig stable
- Pressurizer level = 209 inches decreasing
- LDST Level = 84 inches decreasing
- Seal Injection flow = 32 gpm stable
- RC Makeup Flow = 140 gpm increasing

Current conditions:

Time = 0905

- 1SA2/C3 RC PRESSURIZER LEVEL HI/LO actuated
- Pressurizer level = 200 inches decreasing
- LDST Level = 65 inches decreasing
- Seal Injection flow = 32 gpm stable
- RC Makeup Flow = 160 gpm stable

Based on the above conditions, which ONE of the following describes the current plant condition, which AP to enter and what actions will be required to mitigate this condition?

- A. HPI Normal Injection header break / enter AP/14 (Loss of Normal HPI Makeup and/or RCP Seal Injection) close 1HP-5, 1HP-120 and 1HP-31
- B. HPI Normal Injection header break / enter AP/14 (Loss of Normal HPI Makeup and/or RCP Seal Injection) start the standby HPI pump and close 1HP-115
- C. Letdown Line leak / enter AP/32 (Loss of Letdown) close 1HP-120 and place standby HPI pump switch to OFF
- D. Letdown Line leak / enter AP/32 (Loss of Letdown) and close 1HP-5, 1HP-6, and 1HP-7

Question 77

T1/G1 -jmb

022AA2.01, Loss of Reactor Coolant Makeup

Ability to determine and interpret the following as they apply to the Loss of Reactor Coolant Makeup: Whether charging line leak exists

(3.2/3.8)

K/A MATCH ANALYSIS

Requires the student to diagnose a charging line break and select the correct abnormal procedure with appropriate mitigating action.

SRO-ONLY ANALYSIS

Requires assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. (43.5)

ANSWER CHOICE ANALYSIS

Answer: B

- A. Incorrect: Event diagnosis is correct. Procedure entered is also correct but action taken is the guidance contained if the HPI pump is lost. In this case since HPI pumps are running and Seal Injection is being supplied; the action is inappropriate.
- B. Correct: Conditions given have pressurizer level decreasing. This would not occur on a letdown line leak. AP-14 provides specific direction to start the standby HPI pump and close 1HP-115 to split the normal injection line from the seal injection line.**
- C. Incorrect: Plausible in that LDST level is decreasing indicating a leak. The action directed is consistent with inventory control action contained in AP/2 and EOP Encl. 5.5
- D. Incorrect: Diagnosis and procedure selection are incorrect as noted above. Action is consistent with an attempt to isolate all letdown flow paths.

Technical Reference(s): **AP-14 Rev 16, AP-2 Rev 11**

Proposed references to be provided to applicants during examination: **None**

Learning Objective: **EAP-APG, R9**

Question Source: **New**

Question History: Last NRC Exam _____

Question Cognitive Level: **Memory or Fundamental Knowledge
Comprehension or Analysis**

1 POINT

Question 78

Unit 1 initial conditions:

- Reactor power = 100%

Current conditions:

- Pressurizer level = 72 inches increasing
- Pressurizer heaters energized
- RCS Pressure = 1910 psig

Based on the conditions above, which ONE of the following describes whether Pressurizer heaters should be energized and the TS bases for the availability of a minimum capacity of pressurizer heaters?

A. Pressurizer Heaters should be energized

Ensure the ability to control system pressure and maintain subcooling with an extended loss of offsite power

B. Pressurizer Heaters should be energized

To prevent solid plant operations and subsequent pressure transients that could damage RCS piping

C. Pressurizer Heaters should NOT be energized

Ensure the ability to control system pressure and maintain subcooling with an extended loss of offsite power

D. Pressurizer Heaters should NOT be energized

To prevent solid plant operations and subsequent pressure transients that could damage RCS piping

Question 78

T1/G1 - jmb

027AA2.10, Pressurizer Pressure Control System Malfunction

Ability to determine and interpret the following as they apply to the Pressurizer Pressure Control Malfunctions: PZR heater energized/de-energized condition
(3.3/3.6)

K/A MATCH ANALYSIS

Requires the ability to determine if the appropriate PZR heaters are energized with PZR level below the interlock at reduced RCS pressure.

SRO-ONLY ANALYSIS

Requires knowledge Facility operating limitations in the technical specifications bases.
(43.2)

ANSWER CHOICE ANALYSIS

Answer: C

- A. Incorrect: Heater status is incorrect. Plausible as this is the condition the heaters would be in if PZR level were > 80 inches. The Tech Spec bases is correct.
- B. Incorrect: Heater status is incorrect as noted above. Bases is incorrect. Plausible in that solid PZR operations implies the loss of the PZR vapor space and the loss of the vapor space is the bases for the maximum water level in the pressurizer.
- C. **Correct: The pressure given would result in energizing all the pressurizer heaters however with PZR level < 80 inches all heater will be off. The bases of the heater capacity as stated in TS 3.4.9: " A minimum required available capacity of 400 kW ensures that the RCS pressure can be maintained. Unless adequate heater capacity is available, reactor coolant subcooling cannot be maintained indefinitely. Inability to control the system pressure and maintain subcooling under conditions of natural circulation flow in the primary system could lead to loss of single phase natural circulation and decreased capability to remove core decay heat."**
- D. Incorrect: Heater status is correct. Bases is incorrect as noted above in B.

Technical Reference(s): **PNS-PZR Rev 16a, TS 3.4.9 Bases**

Proposed references to be provided to applicants during examination: **None**

Learning Objective: **PNS-PZR Obj. R5, R7 & R19, ADM-TSS Obj R5**

Question Source: **New**

Question History: Last NRC Exam _____

Question Cognitive Level: **Memory or Fundamental Knowledge
Comprehension or Analysis**

1 POINT

Question 79

Unit 3 plant conditions:

- Reactor power = 100%
- CC CRD Return Flow = 153 gpm stable
- CC Return Flow = 570 gpm stable
- Letdown Temperature = 132°F stable
- 3SA-9/C-1 (CC Component Cooling Return Flow Low) actuated

Based on the above conditions, which ONE of the following describes the expected Statalarm, the action required in the alarm response, and which Abnormal Procedure is required to be entered first to mitigate the condition?

3SA-2/C-1 (HP Letdown Temperature High)

3SA-9/B-1 (CC CRD Return Flow Low)

- A. 3SA-2/C-1 / Decrease letdown flow using 3HP-7 (LETDOWN CONTROL)
AP/32 (Loss of Letdown)
- B. 3SA-2/C-1 / Verify CC Surge Tank level > 15 inches and start the standby CC pump
AP/20 (Loss of Component Cooling)
- C. 3SA-9/B-1 / Decrease letdown flow using 3HP-7 (LETDOWN CONTROL)
AP/32 (Loss of Letdown)
- D. 3SA-9/B-1 / Verify CC Surge Tank level > 15 inches and start the standby CC pump
AP/20 (Loss of Component Cooling)

Question 79

T1/G1 - jmb

026EG2.4.50, Loss of Component Cooling Water

Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.

(4.2/4.0)

K/A MATCH ANALYSIS

Requires the ability to determine alarm status based upon plant conditions and determine the appropriate controls directed to be operated in the alarm response.

SRO-ONLY ANALYSIS

Requires assessment of facility conditions and selection of appropriate procedures during an abnormal situation. (43.5)

ANSWER CHOICE ANALYSIS

Answer: B

- A. Incorrect: Statalarm status is correct. Action is correct as it is directed by 3SA-2/C1 prior to entering AP/20. AP/32 is not entered directly based on the conditions given however it will eventually be entered as AP/20 will direct isolation of letdown and entry into AP/32.
- B. Correct: 3SA-2/C-1 setpoint is 130°F and 3SA-9/C-1 setpoint is 575 gpm. Action to verify CC surge tank level > 15 inches and start standby CC pump are directed in 3SA-9/B-1. AP/20 is directed to be entered by statalarm procedure.**
- C. Incorrect: Statalarm status is incorrect. Setpoint for SA-9/C-1 has been reached however CRD Return flow is above the setpoint for SA-9/B-1 of 138 gpm. Action directed is correct for SA-2/C-1. Procedure selection is incorrect as noted above.
- D. Incorrect: Statalarm status is incorrect. Setpoint for SA-9/C-1 has been reached however CRD Return flow is above the setpoint for SA-9/B-1 of 138 gpm. Action directed is correct. Abnormal procedure selection is also correct.

Technical Reference(s): **OP/3/A/6103/002 Rev. 27 (3SA-2/C-1), OP/3/A/6103/009 Rev.26 (3SA-9/B-1 & 3SA-9/C-1), AP/20 Rev. 09**

Proposed references to be provided to applicants during examination: **None**

Learning Objective: **PNS-CC Obj R17 & R20**

Question Source: **New**

Question History: Last NRC Exam _____

Question Cognitive Level: **Memory or Fundamental Knowledge
Comprehension or Analysis**

1 POINT

Question 80

Unit 1 initial conditions:

- Startup from refueling outage in progress
- Reactor power = 2% stable
- 1A Main FDW Pump in service

Current conditions:

- Switchyard isolate
- 1A Main FDW Pump tripped
- EOP IMAs and Symptom Checks complete

Which ONE of the following describes how EFW will be controlled based on the above conditions and which design bases scenario requires the highest initial post-trip EFW flow?

- A. Emergency feedwater will be allowed to control SG levels in AUTO
Loss of Main FDW and loss of offsite power
- B. Emergency feedwater will be allowed to control SG levels in AUTO
Loss of Main FDW with offsite power available
- C. Emergency feedwater will be throttled to prevent RCS overcooling
Loss of Main FDW and loss of offsite power
- D. Emergency feedwater will be throttled to prevent RCS overcooling
Loss of Main FDW with offsite power available

Question 80

T1/G1 - okm

054AG2.4.9, Loss of Main Feedwater

Knowledge of low power/shutdown implications in accident (e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies. (3.8/4.2)

K/A MATCH ANALYSIS

Requires the student to know the implications of a loss of Main Feedwater from a low power condition and the mitigation strategies involved

SRO-ONLY ANALYSIS

Requires student to know mitigation strategies beyond Entry Conditions/IMAs and TS bases

ANSWER CHOICE ANALYSIS

Answer: D

- A. Incorrect: Both parts are incorrect. First part is plausible in that normally auto operation of EFW is preferred. Second part is plausible in that the candidate could assume that a loss of offsite power would be more limiting.
- B. Incorrect: First part is incorrect. Plausible in that normally auto operation of EFW is preferred. Second part is correct.
- C. Incorrect: First part is correct. Second part is incorrect but plausible in that the candidate could assume that a loss of offsite power would be more limiting.
- D. Correct: Due to low core decay heat EFW is required to be throttled to prevent RCS overcooling. Per TS 3.7.5 Bases "The limiting event for the EFW System is the loss of main feedwater with offsite power available; ie with RCP heat.**

Technical Reference(s): **EP/1/A/1800/001 Rev 36a (EOP) RULE 3**

Proposed references to be provided to applicants during examination: **NONE**

Learning Objective: **EAP-LOHT R26; ADM-TSS R5**

Question Source: **NEW**

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis

1 POINT

Question 81

Unit 3 initial conditions:

- Reactor power = 100%

Current conditions:

- 3DIA supply breaker to CRD breaker shunt trip device in RPS channel "A" tripped OPEN

Based on current plant conditions, which ONE of the following describes the status of RPS channel "A" and the required administrative actions?

A. 1A RPS channel is NOT operable.

TS 3.3.1 (RPS Instrumentation) entry is required because the required number of RPS channels are NOT OPERABLE.

B. 1A RPS channel is operable.

TS 3.3.4 (Control Rod Drive Trip Devices) entry is required due to one required CRD diverse trip function INOPERABLE.

C. 1A RPS channel is NOT operable.

TS 3.3.1 (RPS Instrumentation) entry is NOT required because the required number of RPS channels are OPERABLE.

D. 1A RPS channel is operable.

TS 3.3.4 (Control Rod Drive Trip Devices) entry is NOT required because the number of required CRD diverse trip functions are OPERABLE.

Question 81

T1/G1 - gcw

058AG2.2.37, Loss of DC Power

Ability to determine operability and/or availability of safety related equipment.

(3.6/4.6)

K/A MATCH ANALYSIS

Requires ability to determine operability of RPS channel with a loss of DC power.

SRO-ONLY ANALYSIS

Question requires knowledge of TS operability for components affecting reactivity.

ANSWER CHOICE ANALYSIS

Answer: B

- A. Incorrect: both parts are incorrect.
- B. Correct: The RPS trip signal will still de-energize to trip the CRD breaker and the RPS channel is operable. TS 3.3.4 requires all 4 Control Rod Drive Trip Devices to be operable**
- C. Incorrect: first part incorrect. Plausible because if the RPS channel power supply KVIA was de-energized this would be correct. Second part is correct. Only require 3/4 RPS trip functions to be operable.
- D. Incorrect: first part correct. TS 3.3.4 requires all 4 Control Rod Drive Trip Devices to be operable. Plausible because TS only require 3/4 RPS trip functions to be operable.

Technical Reference(s): **TS 3.3.4 (Control Rod Drive Trip Devices)**

Proposed references to be provided to applicants during examination: **None**

Learning Objective: **IC-RPS Obj R17**

Question Source: **Bank**

Question History: Last NRC Exam **2007 ONS SRO Exam Q #91**

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis

1 POINT

Question 82

Unit 1 initial conditions:

- Time = 0400
- Reactor power = 100%
- 1C HPIP is declared inoperable

Current conditions:

- Time = 0402
- 1HP-120 valve controller air line blows off
- HPI FLOW TRAIN "A" indication fails to zero gpm

Based on the conditions above, which ONE of the following describes the impact on 1HP-120 and a TS required action?

ASSUME NO OPERATOR ACTIONS

- A. 1HP-120 fails OPEN
Enter LCO 3.0.3 immediately
- B. 1HP-120 fails OPEN
Reduce thermal power \leq 75% within 1 hour
- C. 1HP-120 fails CLOSED
Enter LCO 3.0.3 immediately
- D. 1HP-120 fails CLOSED
Reduce thermal power \leq 75% within 1 hour

Question 82

T1/G2 – New K/A

028AA2.03, Pressurizer Level Control Malfunction

Ability to determine and interpret the following as they apply to the Pressurizer Level Control Malfunctions: Charging subsystem flow indicator and controller
(2.8/3.3)

K/A MATCH ANALYSIS

Requires ability to predict how the pressurizer level control valve fails due to loss of IA and the affect of a loss of an HPI train flow gauge on HPI operability

SRO-ONLY ANALYSIS

Requires knowledge of the bases for the operating limits established in Tech Specs for operability of an HPI train

ANSWER CHOICE ANALYSIS

Answer: C

- A. Incorrect: First part incorrect. Plausible because another primary valve (HP-31) fails open on a loss of IA. Second part is correct.
- B. Incorrect: First part incorrect. Plausible because another primary valve (HP-31) fails open on a loss of IA. Second part is incorrect. Plausible because the required action for one inoperable train is to reduce power < 75% in 3 hours.
- C. Correct: 1HP-120 fails CLOSED on a loss of IA. HPI FLOW TRAIN “A” failing causes the “A” HPI train to be inoperable. The “B” train is already inoperable due to the 1C HPIP OOS. TS 3.5.2 Condition H requires entering LCO 3.0.3 immediately for two HPI training inoperable.**
- D. Incorrect: First part is correct. Second part is incorrect. Plausible because the required action for one inoperable train is to reduce power < 75% in 3 hours.

Technical Reference(s): **AP/22 (Loss of Instrument Air); TS 3.5.2 (High Pressure Injection)**

Proposed references to be provided to applicants during examination: **None**

Learning Objective: **EAP-APG AP/14 Encl. R9; ADM-TSS R5, R6**

Question Source: **New**

Question History: Last NRC Exam _____

Question Cognitive Level: **Memory or Fundamental Knowledge
Comprehension or Analysis**

1 POINT

Question 83

Unit 1 initial conditions:

- Time = 0600
- Reactor Power = 36%
- Pressurizer level = 220 inches
- LDST Level = 85 inches

Current conditions:

- Time = 0610
- Reactor Power = 36%
- Pressurizer level = 220 inches
- LDST Level = 77.5 inches
- 1RIA-40 Alert and High Alarm actuated

Based on the above conditions, which ONE of the following describes the procedure to be entered and actions directed by the procedure?

A. EOP (Emergency Operating Procedure)

Transfer to SGTR Tab and initiate a Maximum Runback to 15% then manually trip the reactor and isolate the affected SG

B. EOP (Emergency Operating Procedure)

Transfer to SGTR Tab and initiate a plant shutdown to 5% then manually trip the reactor. Maintain Pressurizer level 140 - 180 inches while cooling down to isolate the affected SG

C. AP/31 (Primary to Secondary Leakage)

Initiate Enclosure 5.2 (Reduction of Secondary leakage and Cross-Unit Contamination) and perform Enclosure 5.8 (Resetting 1RIA-40 and OAC Setpoints)

D. AP/31 (Primary to Secondary Leakage)

Initiate a shutdown using AP/29 (Rapid Unit Shutdown) and perform Enclosure 5.2 (Reduction of Secondary leakage and Cross-Unit Contamination) to control Secondary Leakage.

Question 83

T1/G2 - jmb

037AG2.4.31, Steam Generator (S/G) Tube Leak

Knowledge of annunciator alarms, indications, or response procedures.

(4.2/4.1)

K/A MATCH ANALYSIS

Requires knowledge of conditions indicated by plant indications and alarms and procedures used to address the conditions.

SRO-ONLY ANALYSIS

Requires determination of plant conditions and selection of appropriate procedures to address the conditions given (43.5)

ANSWER CHOICE ANALYSIS

Answer: D

- A. Incorrect: First part is incorrect. Plausible as this is correct for a larger pri to sec leak (> 25 gpm).
- B. Incorrect: First part is incorrect. Plausible as this is correct for a larger pri to sec leak (> 25 gpm).
- C. Incorrect. Using Attachment 5.5 of AP/31 or Enclosure 5.1 of AP/2 the leak rate is ≈ 23 gpm. Miscalculating leak rate or failure to recognize correct routing in AP/31 would result in initiating Encl 5.2 and resetting the RIA & OAC setpoint as these actions are directed if leak rate is lower.
- D. Correct: Calculated tube leak size using changes in LDST level is ≈ 23 gpm. ($31.3 \text{ gal/in} \times 7.5 \text{ in} / 10 \text{ min} = 23.5 \text{ gpm}$) This amount of Primary to secondary leakage requires entry into AP/31 and a shutdown is initiated. Based on conditions the appropriate procedure for the plant S/D to meet Encl 5.1 requirements is AP/29. AP/31 Enclosure 5.2 is directed to be used to control secondary leakage.**

Technical Reference(s): **EOP Rev. 36 - IMAs & SAs, SGTR Tab, AP/31 Rev. 15**

Proposed references to be provided to applicants during examination: **None**

Learning Objective: **EAP-APG Obj R9 EAP-SGTR Obj R2**

Question Source: **New**

Question History: Last NRC Exam _____

Question Cognitive Level: **Memory or Fundamental Knowledge
Comprehension or Analysis**

1 POINT

Question 84

Unit 2 initial conditions:

- Reactor power = 70% stable
- 2A2 RCP secured 10 days ago

Current conditions

- Control Rod Group 4 Rod 1 dropped to 0% withdrawn
- Excore and Incore Quadrant Power Tilt (QPT) readings exceed the TRANSIENT limits, but are within the MAXIMUM limits

Based on the above conditions and per AP/15 (Dropped or Misaligned Control Rods), which ONE of the following describes the runback requirement and the TS bases for QPT limits?

An ICS runback _____ and QPT limits ensure _____.

- A. and operator action is required to reduce power to $\leq 45\%$
clad failure does not occur due to power peaking for all modes of operation
- B. and operator action is required to reduce power to $\leq 45\%$
localized power peaking is minimized and a flat flux profile is maintained as the core ages
- C. automatically reduces power to $\leq 60\%$ of Allowable Thermal Power
clad failure does not occur due to power peaking for all modes of operation
- D. automatically reduces power to $\leq 60\%$ of Allowable Thermal Power
localized power peaking is minimized and a flat flux profile is maintained as the core ages

Question 84

T1/G2 - okm

BA01AG2.4.11, Plant Runback
**Knowledge of abnormal condition procedures
(4.0/4.2)**

K/A MATCH ANALYSIS

Requires knowledge of the control rod ICS runback and knowledge of AP/15 actions

SRO-ONLY ANALYSIS

Requires knowledge of facility procedures and bases for TSs

ANSWER CHOICE ANALYSIS

Answer: A

- A. CORRECT: Per AP/15 and ICS design the rod runback reduces power to 55% however the allowable power level is 75% for 3-RCP operations; therefore AP/15 directs action to further reduce to $\leq 45\%$. Cladding failure due to power peaking for all modes of operation (normal and abnormal) is the reason for QPT limits**
- B. Incorrect: First part is correct; QPT limits are there to assure core safety limits will not be exceeded during all modes of operation especially accidents; localized power peaking occurs naturally in a core as it ages; and a flat flux profile are concerns associated with normal operation and fuel depletion
- C. Incorrect: Plausible in that ICS runback lowers power to $\leq 55\%$, however power must be reduced to $\leq 60\%$ of Allowable Thermal Power which for 3-RCP operations is 45% not 55% so further operator action is needed to lower power. Second part is correct.
- D. Incorrect: Plausible in that ICS runback lowers power to $\leq 55\%$, however power must be reduced to $\leq 60\%$ of Allowable Thermal Power which for 3-RCP operations is 45% not 55% so further operator action is needed to lower power. Localized power peaking occurs naturally in a core as it ages; and a flat flux profile are concerns associated with normal operation and fuel depletion

Technical Reference(s): **AP/15, RT-PD**

Proposed references to be provided to applicants during examination: **NONE**

Learning Objective: **EAP-APG R9, RT-PD R5, R6**

Question Source: **New**

Question History: Last NRC Exam _____

Question Cognitive Level: **Memory or Fundamental Knowledge
Comprehension or Analysis**

1 POINT

Question 85

Unit 1 initial conditions:

- Reactor power = 100%
- 1B HPI Pump OOS

Current conditions:

- LOSCM tab in progress
- Rule 2 is complete
- RCS pressure = 825 psig increasing slowly
- Core SCM = 4°F increasing
- Loop SCM = 0°F
- Pzr level = 0 inches
- 1C HPI Pump has a sheared shaft

Based on the above conditions, which ONE of the following states how SG pressure will be controlled per the LOSCM tab and which EOP tab will be used to cool down the unit to decay heat removal conditions?

- A. Control SG steaming and feeding rates to establish RCS cooldown rate within TS limits / LOCA CD
- B. Control SG steaming and feeding rates to establish RCS cooldown rate within TS limits / FCD
- C. Establish EFDW Flow to both SGs and fully depressurize both SGs / LOCA CD
- D. Establish EFDW Flow to both SGs and fully depressurize both SGs / FCD

Question 85

T1/G2

BE08EA2.1, LOCA Cooldown

Ability to determine and interpret the following as they apply to the (LOCA Cooldown): Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

(2.8/4.2)

K/A MATCH ANALYSIS

Requires determination that conditions exist for a controlled cooldown of the RCS using SGs and selection of procedure used to direct the cooldown to cold shutdown conditions.

SRO-ONLY ANALYSIS

Requires assessment of plant conditions and based on that assessment selection of the appropriate procedure used to control the plant cooldown. (43.5)

ANSWER CHOICE ANALYSIS

Answer: C

- A. Incorrect: First part is incorrect. Plausible because this would be the normal steps taken if HPI were not degraded. Second part is correct.
- B. Incorrect: First part is incorrect. Plausible because this would be the normal steps taken if HPI were not degraded. Second part is plausible because with no RCPs operating and $SCM > 0^{\circ}F$ a transfer would be made to the FCD tab.
- C. CORRECT: With loss of SCM and degraded HPI, the SG's are fed to the LOSCM setpoint and fully depressurized. A transfer will be made to the LOCA CD tab of the EOP.**
- D. Incorrect: First part is correct. Second part is plausible because with no RCPs operating and $SCM > 0^{\circ}F$ a transfer would be made to the FCD tab.

Technical Reference(s): **EP/1/1800/001 LOSCM Tab Rev 36**

Proposed references to be provided to applicants during examination: **None**

Learning Objective: **EAP-LOSCM Obj. R12 & 17**

Question Source: **New**

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis

1 POINT

Question 86

Unit 3 initial conditions:

- Reactor Power = 100% stable
- 3A1 RCP vibration = 4 mils slowly increasing

Current conditions:

- 3SA-9/E2 (RC PUMP VIBRATION EMERG HIGH) actuates
- 3A1 RCP vibration = 22 mils slowly increasing

Based on the conditions above, which ONE of the following describes how the SRO will direct the sequence of actions to mitigate this event?

- A. The OATC will perform a rapid runback per AP/29 (Rapid Unit Shutdown) to <70% and then the BOP will manually trip the 3A1 RCP.
- B. The OATC will perform a rapid runback per AP/16 (Abnormal RCP Operation) to <70% and then the BOP will manually trip the 3A1 RCP.
- C. The OATC will manually trip the reactor and then perform IMAs; the BOP will manually trip 3A1 RCP and then perform a symptom check.
- D. The BOP will manually trip the 3A1 RCP and the OATC will then perform IMAs while the BOP performs a symptom check.

Question 86

T2/G1 - okm

003G2.4.49, Reactor Coolant Pump

Ability to perform without reference to procedures those actions that require immediate operation of system components and controls

(4.6/4.4)

K/A MATCH ANALYSIS

Requires the ability to recognize conditions requiring the immediate tripping of a RCP (including the prerequisite tripping of the Reactor)

SRO-ONLY ANALYSIS

Requires the assessment of plant conditions and selecting the sequence of procedures during abnormal/emergency situations (43.5) The SRO prioritizes the sequence of how these procedures are implemented. He determines that securing RCP takes precedents over the normal practice of the BOP performing a symptoms check immediately following a reactor trip.

ANSWER CHOICE ANALYSIS

Answer: C

- A. Incorrect: AP/29 is plausible if candidate does not recognize that an immediate RCP trip is required. AP/29 is normally the AP used to rapidly reduce power.
- B. Incorrect: This would be correct if the immediate trip criteria is not met.
- C. Correct: SRO must immediately recognize that conditions require the immediate tripping of the Reactor and then the RCP per AP/16. Once tripped EOP IMAs will be directed. After IMAs are directed the SRO will then direct the BOP to trip the RCP per AP/16 (still in progress) while the OATC is performing IMAs.**
- D. Incorrect: This routing is plausible as it is based on taking an immediate action in AP/16.

Technical Reference(s): **OMP 1-18 Rev. 027, 3/AP/16 Rev. 18**

Proposed references to be provided to applicants during examination: **NONE**

Learning Objective: **EAP-EOP Obj. R7, R20, EAP-APG Obj. R9**

Question Source: **NEW**

Question History: Last NRC Exam _____

Question Cognitive Level: **Memory or Fundamental Knowledge
Comprehension or Analysis**

1 POINT

Question 87

Unit 1 plant conditions:

Reactor power = 100%

Date/time = 8/4 / 2300

- 1B LPI train removed from service and drained for planned maintenance

Date/time = 8/5 / 1000

- 1LP-15, 1A LPI to HPI & RBS, motor overload found tripped and won't reset.

Based on the conditions above, which ONE of the following describes the actions required per the applicable Tech Specs?

SEE ATTACHMENT

- A. The 1B LPI train must be restored to OPERABLE status by 2300 on 8/7 and 1LP-15 must be restored to OPERABLE status by 1000 on 8/8.
- B. The 1B LPI train and 1LP-15 must be restored to OPERABLE status by 2300 on 8/7.
- C. Restore either 1B LPI Train or 1LP-15 by 1100 on 8/5 or the unit must be in MODE 3 by 2200 on 8/5.
- D. 1LP-15 must be restored to OPERABLE status by 1000 on 8/8 and the 1B LPI train must be restored to OPERABLE status by 2300 on 8/11.

Question 87

T2/G1- okm

005G2.2.38, Residual Heat Removal System

Knowledge of conditions and limitations in the facility license

(3.6/4.5)

K/A MATCH ANALYSIS

Requires knowledge of LPI Tech Specs

SRO-ONLY ANALYSIS

Requires knowledge of the conditions and limitations in the facility license (43.1)

ANSWER CHOICE ANALYSIS

Answer: C

- A. Incorrect: First part is plausible as the 1B LPI pump is inoperable and TS 3.5.3 was applicable as an initial condition (restoration time is also incorrect for 3.5.3). The second part is plausible as it is the time frame associated with TS 3.5.2 for an inoperable HPI/LPI flowpath. However TS 3.0.6 is applied initially and requires entry into the supported system LCO upon loss of a safety function. TS 3.5.2 directs entry into LCO 3.0.3 immediately since no HPI/LPI flowpath exists.
- B. Incorrect: Plausible as it is the time allotted for restoration of an Inoperable HPI/LPI flowpath in TS 3.5.2.
- C. Correct: Initially (2300 on 2/4) TS 3.5.3 applies to the LPI inoperability. However TS 3.0.6 is applied and requires entry into the supported system LCO upon loss of a safety function. TS 3.5.2 directs entry into LCO 3.0.3 immediately since no HPI/LPI flowpath exists. TS 3.0.3 requires restoration of at least one of the functions within 1 hour and if not restored requires plant to be in Mode 3 within 12 hours.**
- D. Incorrect: First part is allowable outage time associated with the LPI/HPI flowpath per TS 3.5.2 and second part is for one LPI Train per TS 3.5.3.

Technical Reference(s): **TS 3.5.2; 3.5.3**

Proposed references to be provided to applicants during examination: **TS 3.5.2; 3.5.3**

Learning Objective: **ADM –TSS R5, R6**

Question Source: **Bank (ADM160201)**

Question History: Last NRC Exam _____

Question Cognitive Level: **Memory or Fundamental Knowledge
Comprehension or Analysis**

1 POINT

Question 88

Which ONE of the following describes the minimum LPSW Inlet flow (gpm) to a RBCU for operability per OP/1/A/1104/015 (Reactor Building Cooling System) limits & precautions and the bases for the minimum LPSW flow?

- A. 550
minimize erosion of the RBCU coils
- B. 550
prevent water hammers in the LPSW piping during certain postulated events
- C. 950
minimize erosion of the RBCU coils
- D. 950
prevent water hammers in the LPSW piping during certain postulated events

Question 88

T2/G1 - gcw

022G2.1.32, Containment Cooling System

Ability to explain and apply system limits and precautions.

(3.8/4.0)

K/A MATCH ANALYSIS

Requires knowledge of Reactor Building Cooling System limit and precaution for minimum RBCU flow and the bases

SRO-ONLY ANALYSIS

Requires knowledge of facility operating limitations in the technical specifications (SLCs) and their bases (43.2)

ANSWER CHOICE ANALYSIS

Answer: B

- A. Incorrect: First part is correct. Second part is incorrect. Plausible in that 950 gpm LPSW Flow is required to prevent RBCU coil erosion.
- B. Correct: Per SLC 16.9.12 and system OP Limit & Precautions, inlet flow must be ≥ 550 gpm to prevent more severe post accident water-hammers that threaten LPSW piping integrity from occurring during a LOCA/LOOP.**
- C. Incorrect: Both parts are incorrect. Plausible in that 950 gpm LPSW Flow has been required to prevent RBCU coil erosion.
- D. Incorrect: First part is incorrect. Plausible in that 950 gpm LPSW Flow has been required to prevent RBCU coil erosion.

Technical Reference(s): **SLC 16.9.12, OP/1104/015**

Proposed references to be provided to applicants during examination: **NONE**

Learning Objective: **PNS-RBC R20, R11**

Question Source: **New**

Question History: Last NRC Exam _____

Question Cognitive Level: **Memory or Fundamental Knowledge**
Comprehension or Analysis

1 POINT

Question 89

Unit 3 initial conditions:

- LOCA in progress
- RB Pressure = 16 psig increasing

Current conditions:

- BWST Level = 5 feet stable
- 3SA8/D11, BS "A" HEADER FLOW HIGH/LOW, actuated
- 3A RBS Pump amps are oscillating
- 3B Train RBS parameters are normal for the plant conditions

Based on the above conditions, which ONE of the following describes the actions required by the Alarm Response Guide and the effect of those actions on the plant's design basis?

- A. Allow 3A RBS Pump to run, throttle discharge valve (3BS-1), and vent the pump.
RBS is necessary to maintain RB pressure and temperature within design values.
- B. Allow 3A RBS Pump to run, throttle discharge valve (3BS-1), and vent the pump.
RBS is necessary to maintain RB pressure within design value. No design value exists for RB temperature.
- C. Secure the 3A RBS Pump.
RBS is necessary to maintain RB pressure and temperature within design values.
- D. Secure the 3A RBS Pump.
RBS is necessary to maintain RB pressure within design value. No design value exists for RB temperature.

Question 89

T2/G1 - okm

026A2.07, Containment Spray System (CSS)

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: Loss of containment spray pump suction when in recirculation mode, possibly caused by clogged sump screen, pump inlet high temperature exceeded cavitation, voiding), or sump level below cutoff (interlock) limit
(3.6/3.9)

K/A MATCH ANALYSIS

Requires knowledge of TS Bases in that the impact of losing a spray pump is still within the RB P-T design basis limits. Procedure usage to correct, control, or mitigate is covered by the Alarm Response Guide

SRO-ONLY ANALYSIS

55.43(2) Facility operating limitations in the technical specifications and their bases

ANSWER CHOICE ANALYSIS

Answer: C

- A. Incorrect. Throttling is contrary to the guidance in the ARG. Plausible because throttling the discharge valve would be a method to raise suction pressure, which can be a cause of cavitation.
- B. Incorrect. According to TS Basis, a design value for RB Temperature exists. Throttling is contrary to the guidance in the ARG. Plausible because throttling the discharge valve would be a method to raise suction pressure, which can be a cause of cavitation. Also plausible because ES actuation is triggered by containment pressure, not temperature.
- C. **Correct. CAUTION in the ARG states that RBS is to be secured if loss of suction is causing the low flow. Loss of suction is indicated by the oscillating amps in conjunction with the alarm. Tech Spec Bases states RB spray is required to keep post-accident pressure and temperature within design values.**
- D. Incorrect. According to TS Bases, a design value for RB Temperature exists. Plausible because ES actuation is triggered by containment pressure, not temperature.

Technical Reference(s): **OP/1/A/6101/008, ARG 1SA-08/D-11 // TS 3.6.5, Reactor Building Spray and Cooling System, Bases**

Proposed references to be provided to applicants during examination: **NONE**

Learning Objective: **PNS-RBS R11**

Question Source: **BANK**

Question History: Last NRC Exam: **2006 SRO Exam #34**

Question Cognitive Level: **Memory or Fundamental Knowledge**
Comprehension or Analysis

1 POINT

Question 90

Unit 1 initial conditions:

- Reactor power = 100%

Current conditions:

- Main Turbine trips
- 1FDW-35 (1A SG SU Feedwater Regulating Valve) fails OPEN
- Statalarm 1SA-2/B-9 (MS Stm Gen A Level High/Emerg Low) actuates
- 1A SG level = 98% OR increasing
- 1B SG level = 53 inches XSUR decreasing

Based on the above conditions, which ONE of the following describes the required action in accordance with the EOP Subsequent Actions and the bases for limiting SG Level?

- A. Take manual control 1FDW-35 and reduce 1A SG level / ensure overcooling event due to steam generator overfill will not lead to pressurized thermal shock of the reactor vessel.
- B. Take manual control 1FDW-35 and reduce 1A SG level / ensure containment pressure remains within the maximum design limits assumed in the accident analysis for a MSLB
- C. Trip both Main FDW Pumps and stop steaming 1A SG / ensure overcooling event due to steam generator overfill will not lead to pressurized thermal shock of the reactor vessel.
- D. Trip both Main FDW Pumps and stop steaming 1A SG / ensure containment pressure remains within the maximum design limits assumed in the accident analysis for a MSLB

Question 90

T2/G1 - jmb

059A2.12, Main Feedwater System

Ability to (a) predict the impacts of the following malfunctions or operations on the MFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Failure of feedwater regulating valves

(3.1/3.4)

K/A MATCH ANALYSIS

Requires a prediction of the impact of a failed FW Regulating valve and the appropriate procedure actions to address the impact.

SRO-ONLY ANALYSIS

Requires knowledge of facility operating limitations in the technical specifications (SLC) and their bases. (43.2)

ANSWER CHOICE ANALYSIS

Answer: C

- A. Incorrect: First part is incorrect. Plausible as EOP directs manual control of FDW if level is not being properly controlled, however with the levels given the Main FDW Pumps would both be tripped and manual control of 1FDW-35 would be inappropriate. Second part is correct.
- B. Incorrect: First part is incorrect as noted above. Second part is incorrect. Plausible as limiting SG inventory would limit energy addition to containment following a MSLB however it is not the limiting event for containment pressure post accident. This is also the purpose of AFIS.
- C. Correct: EOP SAs directs both Main FDW Pumps to be tripped (they should be automatically tripped at 96% OR level) and stop steaming the affected SG (1A). The second part is correct per SLC 16.7.5 the overfill protection circuit (High Level MFPT Trip) will "assure that an overcooling event due to steam generator overfill will not lead to pressurized thermal shock of the reactor vessel."**
- D. Incorrect: First part is correct. Second part is incorrect. Plausible as limiting SG inventory would limit energy addition to containment following a MSLB however it is not the limiting event for containment pressure post accident. This is also the purpose of AFIS.

Technical Reference(s): **1SA-2/B-9 Rev 24, EOP SA Tab. Rev 36**

Proposed references to be provided to applicants during examination: **None**

Learning Objective: **EAP-SA Obj R4 & R5, ADM-TSS Obj R5**

Question Source: **New**

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis

1 POINT

Question 91

Unit 1 plant conditions:

- Station Blackout occurred approximately one hour ago
- Power has NOT been restored
- SSF is activated per AP/25 (SSF EOP)

SSF Control Room indications:

- Both Loop's Tc: 555°F slowly decreasing
- Both Loop's Th: 570°F slowly decreasing
- CETCs: 570°F slowly decreasing
- RCS Pressure: 2170 psig slowly increasing
- Pzr level: 250 inches slowly increasing
- RC M/U Flow: 28.3 gpm
- Unit 1 Total ASW flow: 175 gpm
- 1A SG Level: 200 inches slowly increasing
- 1B SG Level 200 inches slowly increasing
- Pzr Heaters Group B & C ON

Based on the above conditions, which ONE of the following describes the action directed by AP/25 and the design bases of the SSF?

- A. Establish letdown and Turn Pzr Htrs "OFF" / provide an alternate and independent means to achieve and maintain MODE 3 with an average RC temperature $\geq 525^{\circ}\text{F}$ for all three units for a minimum of 72 hours
- B. Establish letdown and Turn Pzr Htrs "OFF" / provide an alternate and independent means to cooldown the plant from MODE 3 to placing Decay Heat in service for all three units within 72 hours
- C. Reduce ASW flow and RC M/U Flow / provide an alternate and independent means to achieve and maintain MODE 3 with an average RC temperature $\geq 525^{\circ}\text{F}$ for all three units for a minimum of 72 hours
- D. Reduce ASW flow and RC M/U Flow / provide an alternate and independent means to cooldown the plant from MODE 3 to placing Decay Heat in service for all three units within 72 hours

Question 91
T2/G2 – jmb

016G2.1.30, Non-Nuclear Instrumentation System (NNIS)
Ability to locate and operate components, including local controls.
(4.4/4.0)

K/A MATCH ANALYSIS

Requires ability to use non-nuclear instrumentation to determine plant status and determine/operate local (SSF) controls as required

SRO-ONLY ANALYSIS

Requires knowledge of facility operating limitations in the technical specifications and their bases.

ANSWER CHOICE ANALYSIS

Answer: A

- A. Correct: Conditions given require RCS inventory control to be established by restoring Letdown and pressure increase to be halted by turning OFF Pzr heaters. SSF Facility is designed to provide an alternate and independent means to achieve and maintain MODE 3 with an average RC temperature $\geq 525^{\circ}\text{F}$ for all three units for a minimum of 72 hours following specific event that require control to be established outside of and isolated from the control room.**
- B. Incorrect: Actions given are correct. Design purpose of the SSF is incorrect. Plausible as the initial conditions in the statement are correct however the cooldown to Decay Heat conditions is not desired until either control is restored to the control room and forced flow in the RCS is established.
- C. Incorrect: Action directed is incorrect. Plausible as RCS Temp trend indicates a slight cooldown and reducing ASW flow would reduce the CD rate. Pzr level being high could be corrected by reducing RCMU flow however the directed action is to establish letdown. Purpose/bases statement is correct.
- D. Incorrect: Action directed is incorrect as noted above. Purpose/bases statement is incorrect as noted above.

Technical Reference(s): **AP/25 Rev 25 Encl. 5.1A, EAP-SSF TS Bases 3.10.1**

Proposed references to be provided to applicants during examination: **NONE**

Learning Objective: **EAP-SSF Obj. R10, ADM-TSS Obj. R5**

Question Source: **M (EAP204901)**

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis

1 POINT

Question 92

Unit 1 initial conditions:

- Reactor power = 100%

Current conditions:

- Vacuum = 6 inches Hg stable
- 1A SG Outlet pressure = 985 psig stable
- 1B SG Outlet pressure = 982 psig stable
- One Main Steam (MS) Relief valve is open

Based on the above conditions, which ONE of the following describes the method used to control Main Steam header pressure and the minimum RCS temperature allowed during this process in accordance with the EOP Subsequence Actions?

- A. Adjust the Turbine Header setpoint to reduce MS pressure until the valve reseats 532°F
- B. Adjust the Turbine Header setpoint to reduce MS pressure until the valve reseats 527°F
- C. Use Atmospheric Dump Valves to reduce MS pressure until the valve reseats 532°F
- D. Use Atmospheric Dump Valves to reduce MS pressure until the valve reseats 527°F

Question 92

T2/G2 – new K/A

055G2.2.44, Condenser Air Removal

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

(4.2/4.4)

K/A MATCH ANALYSIS

Requires knowledge of the requirements for low condenser vacuum with a stuck MSR/V

SRO-ONLY ANALYSIS

Requires knowledge of the Facility Emergency Operating Procedure to prevent loss of SDM due to low RCS temperature.

ANSWER CHOICE ANALYSIS

Answer: C

- A. Incorrect: First part is incorrect. Plausible because this would be correct if vacuum were > 7 inches Hg. Second part is correct.
- B. Incorrect: First part is incorrect. Plausible because this would be correct if vacuum were > 7 inches Hg. Second part is incorrect but plausible because 525°F is the error corrected minimum temperature for criticality.
- C. Correct: Because vacuum is < 6 inches Hg the ADVs will be used to lower MS pressure and reset the MSR/V. The lowest allowed RCS temperature during this evolution is 532°F.**
- D. Incorrect: First part is correct. Second part is incorrect but plausible because 527°F is the error corrected minimum temperature for criticality.

Technical Reference(s): **EOP Rev 36, SA**

Proposed references to be provided to applicants during examination: **None**

Learning Objective: **EAP-SA T1**

Question Source: **New**

Question History: Last NRC Exam _____

Question Cognitive Level: **Memory or Fundamental Knowledge**
Comprehension or Analysis

1 POINT

Question 93

Unit 1 initial conditions:

- Reactor power = 100%
- 1A GWD tank release in progress

Current conditions:

- Loss of power to RM-80 skid of 1RIA-45 (Norm Vent Gas)
- 1SA8/B-9 RM PROCESS MONITOR RADIATION HIGH in alarm
- 1SA8/B-10 RM PROCESS MONITOR FAULT in alarm

Based on the above conditions, which ONE of the following states the action required per the Alarm Response Guideline and the bases for the determination of the setpoints for the RIA alarms for this release?

- A. Manually close 1GWD-4 / Ensure that average annual releases of radioactive material in effluents will be small percentages of the limits specified in 10CFR20
- B. Manually close 1GWD-4 / Ensure that resulting 1 hour dose at the Exclusion Area boundary will not exceed the 10CFR100 dose guideline limits during the release of the activity from the tank
- C. Verify 1GWD-4 has automatically closed / Ensure that average annual releases of radioactive material in effluents will be small percentages of the limits specified in 10CFR20
- D. Verify 1GWD-4 has automatically closed / Ensure that resulting 1 hour dose at the Exclusion Area boundary will not exceed the 10CFR100 dose guideline limits during the release of the activity from the tank

Question 93

T2/G2

071A2.05, Waste Gas Disposal System (WGDS)

Ability to (a) predict the impacts of the following malfunctions or operations on the Waste Gas Disposal System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Power failure to the ARM and PRM Systems (2.5/2.6)

K/A MATCH ANALYSIS

Requires ability to predict the response of the GWD release valve to a loss of power to the station vent RIA and determine the action required by the alarm response procedure.

SRO-ONLY ANALYSIS

Requires knowledge of the SLC bases used in determining the alarm setpoints used during radioactive releases. (43.2)

ANSWER CHOICE ANALYSIS

Answer: A

- A. Correct: 1RIA-45 does not automatically terminate GWD releases. It does monitor the release via the station vent stack the required action in the ARG and AP/18 is to stop releases in progress. The bases for the setpoints in SLC 16.11.3 is to ensure that average annual releases of radioactive material in effluents will be small percentages of the limits specified in 10CFR20.**
- B. Incorrect: First part is correct. Second part is incorrect and plausible as it is based on the limit used in establishing RCS Activity Tech Spec limits for dose at the Site Boundary.
- C. Incorrect: First part is incorrect. Plausible because an alarm/failure of the release RIAs (RIA-37 or 38) will automatically close 1GWD-4. Second part is correct.
- D. Incorrect: Both parts are incorrect and plausible as noted above in B.

Technical Reference(s): **1SA8/B-9, 1SA8/B-10, SLC 16.11.3 & 16.11.2**

Proposed references to be provided to applicants during examination: **None**

Learning Objective: **RAD-RIA (R2 & 15), ADM-TSS Obj R5**

Question Source: **New**

Question History: Last NRC Exam _____

Question Cognitive Level: **Memory or Fundamental Knowledge
Comprehension or Analysis**

1 POINT

Question 94

Plant conditions:

- The work list for night shift has detailed instructions for stroking a valve to flush a hot spot from down stream piping
- Each step has a signoff blank provided

Based on the above conditions, which ONE of the following is correct per OMP 1-23 (Operations Worklist Process)?

- A. Perform the task using the provided signoff steps after verifying the worklist was signed by a qualified preparer and reviewer.
- B. Perform the task using the provided signoff steps after face to face communications with the Unit Coordinator confirms the intent and potential consequences of the task.
- C. Do NOT perform the worklist task because the worklist cannot take the place of an approved procedure.
- D. Do NOT perform the worklist task unless the OSM gives approval to use the provided instructions.

Question 94

T3 – New K/A

G2.1.15, Conduct of Operations

Knowledge of administrative requirements for temporary management directives, such as standing orders, night orders, Operations memos, etc

(2.7/3.4)

K/A MATCH ANALYSIS

Requires knowledge of Operations Worklist Process

SRO-ONLY ANALYSIS

Knowledge of SRO responsibilities in performing items on the worklist

ANSWER CHOICE ANALYSIS

Answer: C

- A. Incorrect: Plausible in that an approved procedure uses a qualified preparer and reviewer.
- B. Incorrect: Plausible in that these actions are required when the worklist is given to the shift SRO.
- C. Correct: Per OMP 1-23 the worklist cannot take the place of an approved procedure.**
- D. Incorrect: Plausible in that the OSM is the highest authority on shift.

Technical Reference(s): **OMP 1-23**

Proposed references to be provided to applicants during examination: **None**

Learning Objective: **None**

Question Source: **New**

Question History: Last NRC Exam: _____

Question Cognitive Level: **Memory or Fundamental Knowledge**
Comprehension or Analysis

1 POINT

Question 95

Unit 1 plant conditions

- Mode 6
- Core reload in progress

Current conditions:

- Fuel Assembly being placed in the core requires manual indexing

Which ONE of the following is a requirement directed by OP/0/A/1506/001 (Fuel And Component Handling) to allow manual indexing of the fuel bridge?

- A. A Reactor Engineer shall be present
- B. Notify the Reactor Operator in the control room
- C. Obtain permission from the SRO in charge of fuel handling
- D. Obtain verification from the spotter of the intended location

Question 95

T3

G2.1.42, Conduct of Operations
Knowledge of new and spent fuel movement procedures
(2.5/3.4)

K/A MATCH ANALYSIS

Requires knowledge of fuel handling procedure requirement for bypassing interlocks

SRO-ONLY ANALYSIS

Requires knowledge of fuel handling procedures (43.7)

ANSWER CHOICE ANALYSIS

Answer: C

- A. Incorrect: Reactor Engineer presence is a requirement for bypassing only specific interlocks.
- B. Incorrect: The Reactor operator may be notified however this is not an additional procedural requirement.
- C. CORRECT: Manual indexing is defined as bypassing an interlock and required permission of either the SRO in charge of refueling, the fuel handling supervisor or management oversight designee per OP/0/A/1506/001.**
- D. Incorrect: This is the normal duty of the spotter.

Technical Reference(s): **OP/0/A/1506/001**

Proposed references to be provided to applicants during examination: **None**

Learning Objective: **FH-FHS Obj R36**

Question Source: **New**

Question History: Last NRC Exam _____

Question Cognitive Level: **Memory or Fundamental Knowledge**
Comprehension or Analysis

1 POINT

Question 96

Which ONE of the following describes a Work Control SRO responsibility prior to granting clearance on a Maintenance Work Request per OMP 2-15, Attachment E (Checklist for Granting Clearance to Begin Work)?

- A. Ensure a zero energy check is performed
- B. Verify all Red Tags are hung on the correct component
- C. Evaluate the work impact on other plant evolutions already in progress
- D. Ensure the Work Group supervisor has signed on to the appropriate WOTA

Question 96

T3 - okm

G2.2.19, Equipment Control

Knowledge of maintenance work order requirements.

(2.3/3.4)

K/A MATCH ANALYSIS

This question requires knowledge of maintenance work order requirements.

SRO-ONLY ANALYSIS

This question requires knowledge of maintenance work order requirements that the SRO is responsible for when granting clearance to begin work.

ANSWER CHOICE ANALYSIS

Answer: C

- A. Incorrect: Plausible because a zero energy check must be performed. However the work control group performs this.
- B. Incorrect: Plausible in the SRO verifies the tag out is complete but does not verify tags are hung correctly.
- C. CORRECT: Prior to granting clearance the SRO must evaluate the work impact on other plant evolutions or testing already in progress**
- D. Incorrect: Plausible because the Work Group supervisor must sign on to the appropriate WOTA. However this done after clearance is provided.

Technical Reference(s): **OMP 2-15**

Proposed references to be provided to applicants during examination: **None**

Learning Objective: **None**

Question Source: **New**

Question History: Last NRC Exam _____

Question Cognitive Level: **Memory or Fundamental Knowledge**
Comprehension or Analysis

1 POINT

Question 97

Unit 1 plant conditions:

- Startup in progress
- Control rod group 1 = 100% withdrawn
- Control rod group 2 = 100% withdrawn
- Control rod group 3 = 100% withdrawn
- Control rod group 4 = 0 % withdrawn
- TD EFDW pump OOS

Based on the above conditions, which ONE of the following describes the current technical specification operational MODE, and whether a change to the next higher Mode is allowed and why?

A. Mode 2

No, T.S. 3.0.4 does NOT allow a Mode change unless the applicable action statements for the next higher Mode allow continued operation without time limits.

B. Mode 2

Yes. T.S. 3.0.4 allows a Mode change as long as the applicable condition statements are entered upon entry to the next higher Mode.

C. Mode 3

No. T.S. 3.0.4 does NOT allow a Mode change unless the applicable action statements for the next higher Mode allow continued operation without time limits.

D. Mode 3

Yes. T.S. 3.0.4 allows a Mode change as long as the applicable condition statements are entered upon entry to the next higher Mode.

Question 97

T3 – ja/JMB

G2.2.35, Equipment Control

Ability to determine Technical Specification Mode of Operation

(3.6/4.5)

K/A MATCH ANALYSIS

KA requires determination of mode. Item addresses condition where mode is in process of being changed.

SRO-ONLY ANALYSIS

10CFR55.43(b) item 2 is met because the SRO must understand Technical Specification concerning RPS.

ANSWER CHOICE ANALYSIS

Answer: C

- A. Incorrect, first part is incorrect. Mode 2 is not entered until CR Group 5 is withdrawn. Second part is correct.
- B. Incorrect, both parts are incorrect.
- C. Correct, mode 2 is not entered until CR Group 5 is withdrawn. T.S. 3.0.4 does NOT allow a Mode change unless the applicable action statements for the next higher Mode allow continued operation without time limits.**
- D. Incorrect, first part is correct. Second part is incorrect. Plausible because entry would be made if a mode change was made.

Technical Reference(s): **TS 1.0.1 Definition, TS 3.3.1, TS 3.0.4**

Proposed references to be provided to applicants during examination: **None**

Learning Objective: **CP-011 R37/38**

Question Source: **BANK**

Question History: Last NRC Exam **ONS 2008 SRO Retest Q#97**

Question Cognitive Level: **Memory or Fundamental Knowledge
Comprehension or Analysis**

1 POINT

Question 98

Plant conditions:

- Unit 1 Reactor power = 100%
- Unit 2 in MODE 5
 - 2LPSW-5 CLOSED

Current conditions:

- RIA-31 in HIGH alarm
- 2RIA-35 in HIGH alarm

Based on the above conditions, which ONE of the following describes which AP should be entered first and a required action?

Enter _____ and _____.

- A. AP-18 (Abnormal Release of Radioactivity)
Initiate Keowee system generation
- B. AP-18 (Abnormal Release of Radioactivity)
Suspend Keowee system generation
- C. AP-26 (Loss of Decay Heat Removal)
Stop all LPI pumps
- D. AP-26 (Loss of Decay Heat Removal)
Isolate the 2A LPI cooler and place the 2B cooler in service

Question 98

T3 - gcw

G2.3.13, Radiation Control

Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.

(3.4/3.8)

K/A MATCH ANALYSIS

Requires knowledge of radiological safety procedures in recognizing the need to evacuate the RB due to the leak with RIA monitor alarms

SRO-ONLY ANALYSIS

43(5) Requires assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations

ANSWER CHOICE ANALYSIS

Answer: B

- A. Incorrect: AP/18 must be entered first as directed by the ARGs for the RIA alarms. Second part is incorrect but plausible in that initiation of Keowee operation would help to dilute the LPSW returning to Lake Keowee and passing onward to Lake Hartwell.
- B. CORRECT: AP/18 must be entered first as directed by the ARGs for the RIA alarms. Also, per AP/18, Keowee Hydro operation must be suspended to prevent further release of contaminated water to Lake Hartwell.**
- C. Incorrect: AP/26 is the incorrect AP but is plausible in that the RIAs indicate that an LPI cooler leak exists in the 1A LPI cooler which could lead to the assumption that a loss of decay heat removal situation exists. Second part is also incorrect but plausible in that stopping all LPI pumps is done in AP/26.
- D. Incorrect: AP/26 is the incorrect AP but is plausible in that the RIAs indicate that an LPI cooler leak exists in the 1A LPI cooler which could lead to the assumption that a loss of decay heat removal situation exists. Second part is also incorrect but plausible in that these steps isolate the leaking cooler and place 1B cooler in service

Technical Reference(s): ARG for 2SA-8/B-9, AP/18, AP/26

Proposed references to be provided to applicants during examination: **NONE**

Learning Objective: **EAP-APG R9**

Question Source: **NEW**

Question History: Last NRC Exam:

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis

1 POINT

Question 99

Unit 1 initial conditions:

- Reactor power = 100%

Current conditions:

- RCS pressure = 1136 psig slowly decreasing
- Core SCM = 0°F
- RB pressure = 11.6 psig slowly decreasing
- 1A SG pressure = 1010 psig slowly decreasing
- 1B SG pressure = 1008 psig slowly decreasing

Based on the above conditions, which ONE of the following describes whether Emergency Dose Limits are in affect and what is the maximum (TEDE) dose that an NEO can receive while performing a task outside of the control room without exceeding any applicable limits?

- A. Yes / 5 rem for performing Time Critical Tasks
- B. Yes / 25 rem for protecting property
- C. No / 2 rem for performing Time Critical Tasks
- D. No / 10 rem for lifesaving activities

Question 99

T3 - okm

G2.3.4, Radiation Control

Knowledge of radiation exposure limits under normal or emergency conditions.
(3.2/3.7)

K/A MATCH ANALYSIS

Requires knowledge of whether emergency dose limits are in effect and for what task they apply

SRO-ONLY ANALYSIS

The SRO as the procedure director evaluates facility conditions and determines if EDLs are in affect.

ANSWER CHOICE ANALYSIS

Answer: A

A. CORRECT: Plant conditions indicate a LOCA is occurring. This requires EDLs to be in effect. 5 rem is the maximum dose that could be received under EDLs for performing Time Critical Tasks.

B. Incorrect: First part is correct. Second part is incorrect. Plausible because 25 rem is the limit for lifesaving activities.

C. Incorrect: First part is incorrect. Plausible if they misdiagnose a MSLB. Second part is incorrect. Plausible in that 2 rem is the normal administrative limit.

D. Incorrect: First part is incorrect. Plausible if they misdiagnose a MSLB. Second part is incorrect. Plausible because 10 rem is the maximum allowed dose for protecting property.

Technical Reference(s):

Proposed references to be provided to applicants during examination: **NONE**

Learning Objective: **EAP-TCA R**

Question Source: **NEW**

Question History: Last NRC Exam _____

Question Cognitive Level: Memory or Fundamental Knowledge
Comprehension or Analysis

1 POINT

Question 100

Which ONE of the following describes a required condition for taking actions outside of an Abnormal Procedure per OMP 1-18 (Implementation Standard During Abnormal and Emergency Events) and the lowest level of approval required?

Time is NOT available for a procedure change and a procedure step ...

- A. is incorrect / Two SROs
- B. is incorrect / CR SRO ONLY
- C. will delay the outage for greater than 12 hours / Two SROs
- D. will delay the outage for greater than 12 hours / CR SRO ONLY

Question 100

T3 - gcw

G2.4.11, Emergency Procedures / Plan
Knowledge of abnormal condition procedures.
(4.0/4.2)

K/A MATCH ANALYSIS

Requires knowledge of taking steps outside of abnormal condition procedures

SRO-ONLY ANALYSIS

(43.5) Requires assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

ANSWER CHOICE ANALYSIS

Answer: B

- A. Incorrect: First part is correct. Second part is incorrect. Plausible because it is the preferred method if the OSM is not available.
- B. CORRECT: A procedure step is incorrect is one the reasons allowed to deviate from the approved AP. Normally this requires OSM approval. In lieu of the OSM two SROs can approve the action. However if only the CR SRO is available then he alone can make the determination.**
- C. Incorrect: First part is incorrect. Plausible because delay of the outage schedule is a focus item and delays require initiation of a PIP. Second part is incorrect. Plausible because it is the preferred method if the OSM is not available.
- D. Incorrect: First part is incorrect. Plausible because delay of the outage schedule is a focus item and delays require initiation of a PIP. Second part is correct.

Technical Reference(s): **OMP 1-18, Attachment G**

Proposed references to be provided to applicants during examination: **NONE**

Learning Objective: **ADM-OMP R10**

Question Source: **New**

Question History: Last NRC Exam _____

Question Cognitive Level: **Memory or Fundamental Knowledge**
Comprehension or Analysis