

Draft Submittal
(Pink Paper)

Senior Reactor Operator Written Exam

HATCH DECEMBER 2007 EXAM

05000321/2007301 AND 05000366/2007301

**DECEMBER 3 - 6, 2007, AND
DECEMBER 10, 2007, (WRITTEN)**

QUESTIONS REPORT

for SRO

76. 201003A2.05 001/2/2/CRDM/NEW/FUND/HT2007-301/SRO/BLC/RFA

Unit 2 is performing a shutdown in accordance with 34GO-OPS-013-2, Normal Plant Shutdown. All control rods have been fully inserted per the selected rod sequence when the operator reaches this step in the procedure:

WHEN all control rods are fully inserted, PLACE the Reactor Mode Switch in SHUTDOWN AND record the time REACTOR placed in Condition 3 in the Operators Log AND below:

Time in Condition 3 _____

Which ONE of the following predicts how the CRDM Mechanisms will be affected and identifies the **preferred** procedure used to bypass the discharge volume high level trip and reset the scram after the mode switch is placed in the SHUTDOWN position?

- A. ✓ Reactor pressure WILL cause the CRDM internal ball valve to shift after the accumulator depressurizes.
34GO-OPS-013-2, Normal Plant Shutdown
- B. Reactor pressure WILL cause the CRDM internal ball valve to shift after the accumulator depressurizes.
34AB-C71-001-2, Scram Procedure
- C. All full-in (green) lights on the full core display will EXTINGUISH until the scram is reset.
34GO-OPS-013-2, Normal Plant Shutdown
- D. All full-in (green) lights on the full core display will EXTINGUISH until the scram is reset.
34AB-C71-001-2, Scram Procedure

A. Correct.

B. Incorrect because the 34GO-OPS-013-2 procedure includes steps to reset the scram. Plausible if applicant does not know that the shutdown procedure contains the steps to bypass the high SDV level trip and reset the scram.

C. Incorrect because the S51 (overtravel in) and S52 (normal full-in) reedswitches ensure the green full-in light remains illuminated. Plausible since the applicant may know that the CRDM will be in the overtravel position until the scram is reset.

D. Incorrect because the S51 (overtravel in) and S52 (normal full-in) reedswitches ensure the green full-in light remains illuminated. Also incorrect because the 34GO-OPS-013-2 procedure includes steps to reset the scram. Plausible since the applicant may know that the CRDM will be in the overtravel position until the scram is reset. Also plausible if applicant does not know that the shutdown procedure contains the steps to bypass the high SDV level trip and reset the scram.

QUESTIONS REPORT for SRO

A2. Ability to (a) predict the impacts of the following on the CONTROL ROD AND DRIVE MECHANISM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6) A2.05 Reactor Scram 4.1* / 4.1

SRO-only (tie to 10CFR55.43(5): Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

References

34GO-OPS-013-2, Normal Plant Shutdown

34AB-C71-001-2, Scram Procedure

C11-CRDM-LP-00102, Control Rod Drive Mechanism lesson plan

Tier:	2	Group:	2
Keyword:	CRDM	Source:	NEW
Cog Level:	FUND	Exam:	HT2007-301
Test:	SRO	Author/Reviewer:	BLC/RFA

QUESTIONS REPORT

for SRO

77. 204000G2.1.2 001/2/2/RWCU/BANK-MOD/HIGHER/HT2007-301/SRO/BLC/RFA

A leak has developed on the RWCU system. The following conditions currently exist:

RWCU HX room ambient temperature (N016C)	195° F
RWCU HX room ambient temperature (N016D)	195° F
RWCU HX room differential temperature (N022C/N023C)	105° F Δ T
RWCU HX room differential temperature (N022D/N023D)	105° F Δ T
158' elevation south east area (2D21-K601B)	1100mR/Hr

Based on these current plant conditions, which ONE of the following choices describes the required operator actions in accordance with the Secondary Containment Control?

[Reference provided]

- A. A reactor shutdown per 34GO-OPS-013 or 34GO-OPS-014 is required.
An immediate reactor scram is currently not required.
- B. An immediate reactor scram is required.
Emergency depressurization is not required.
- C. An immediate reactor scram is required.
Emergency depressurization is required.
- D. A reactor shutdown is currently not required.
Operate the HVAC per 34SO-T41-005 and attempt to isolate the RWCU leak.

A. Incorrect because a primary system is discharging into secondary containment and the differential temperature and area radiation level is greater than max safe. These conditions require an immediate reactor scram. Plausible if the applicant knows that a reactor shutdown is required when an area is above max safe and the leak is NOT a primary system.

B. Correct.

C. Incorrect because an emergency depressurization is not required. Plausible since the applicant may not know that the two area temps (or two ambient temps) are in the same area (and therefore do not meet the intent of two areas above max safe.)

D. Incorrect because ventilation systems should NOT be operated when a secondary containment radiation condition exists. Also incorrect because a reactor scram is required based on a primary system discharging with one area differential temperature above max safe. Plausible if applicant interprets the differential temperature as an ambient temperature.

QUESTIONS REPORT for SRO

This question is SRO only because it is tied to 10CFR55.43(5).

Do NOT provide the flowchart to the applicant as a reference. Provide ONLY Table 4 and Table 6 as a reference to the applicant.

SYSTEM: 204000 Reactor Water Cleanup System

2.1.2 Knowledge of operator responsibilities during all modes of plant operation. (CFR: 41.10 / 45.13)

IMPORTANCE 3.0 / 4.0

References

31EO-EOP-014-2, Secondary Containment Control Flowchart

Tier:	2	Group:	2
Keyword:	RWCU	Source:	BANK-MOD
Cog Level:	HIGHER	Exam:	HT2007-301
Test:	SRO	Author/Reviewer:	BLC/RFA

QUESTIONS REPORT

for SRO

78. 211000G2.1.14 002/2/1/E-PLAN/NEW/HIGHER/HT2007-301/SRO/BLC/RFA

A transient has occurred involving a failure to scram (ATWS) that requires Standby Liquid Control (SLC) initiation per the emergency operating procedure guidance.

Based on this status, which ONE of the following identifies the required personnel notifications in accordance with 73EP-EIP-004-0, Duties of Emergency Director?

A. Dismissal of non-essential personnel from the plant site is mandatory.

Notification of protective action recommendations (PARS) to state and local authorities is NOT mandatory for these conditions.

B. Dismissal of non-essential personnel from the plant site is mandatory.

Notification of protective action recommendations (PARS) to state and local authorities IS mandatory for these conditions.

C. Dismissal of non-essential personnel from the plant site is NOT mandatory.

Staff augmentation MUST be performed if the emergency event is occurring outside of normal working hours, on the weekend, or on a holiday by activating the HNP Autodialer System in the control room.

D. Dismissal of non-essential personnel from the plant site is NOT mandatory.

The emergency response facilities (ERFs) MUST be activated.

A. Correct.

B. Incorrect because these conditions represent a site area classification, (**new E-Plan classification is SS2**) which does not necessarily require a mandatory PAR. Plausible if applicant thinks that this is a general emergency classification.

C. Incorrect because a site evacuation is required (73EP-EIP-004-0, Step 7.4.11). Plausible if applicant thinks that this is an Alert classification.

D. Incorrect because a site evacuation is required (73EP-EIP-004-0, Step 7.4.11). Plausible if the applicant thinks that this is an Alert classification.

SRO only based on 10CFR55.43 (5): assessment of facility conditions and selection of procedures
Do NOT provide any references for this question.

SYSTEM: 211000 Standby Liquid Control System

2.1.14 Knowledge of system status criteria which require the notification of plant personnel. (CFR: 43.5 / 45.12)
IMPORTANCE 2.5 / 3.3

References

DRAFT 73EP-EIP-001-0, Emergency Classification and Initial Actions
73EP-EIP-004-0, Duties of Emergency Director

QUESTIONS REPORT
for SRO

Tier: 2
Keyword: E-PLAN
Cog Level: HIGHER
Test: SRO

Group: 1
Source: NEW
Exam: HT2007-301
Author/Reviewer: BLC/RFA

QUESTIONS REPORT

for SRO

79. 212000A2.20 001/2/1/RPS/NEW/HIGHER/HT2007-301/SRO/BLC/RFA

During an outage, maintenance is in progress on seven hydraulic control units (HCUs) to replace the scram valve diaphragms. The following conditions currently exist:

Mode switch: REFUEL position, all rods inserted

Discharge volume isolation test switch: ISOLATE position, under clearance

Scram discharge volume high level bypass switch: NORMAL position

Due to a clearance error, one of the HCUs begins to slowly fill the discharge volume as the mechanics begin working and the following alarm is received:

SCRAM DISCH VOL NOT DRAINED (603-119)

With these current conditions, which ONE of the following describes the operation of the RPS logic and the technical specification allowances associated with the high level bypass switch?

A. A reactor scram has NOT occurred.

Placing the high level bypass switch in the bypass position will PREVENT a scram.
Bypassing this trip does NOT require entering an RPS Instrumentation LCO action.

B. A reactor scram has NOT occurred.

Placing the high level bypass switch in the bypass position will PREVENT a scram.
Bypassing this trip does requires entering an RPS Instrumentation LCO action.

C. A reactor scram has occurred.

If the high level switch had been in the bypass position, the scram would have still occurred.

Bypassing this trip does NOT require entering an RPS Instrumentation LCO action.

D. A high level scram has occurred.

If the high level switch had been in the bypass position, the scram would have been PREVENTED.

Bypassing this trip requires entering an RPS Instrumentation LCO action.

QUESTIONS REPORT
for SRO

A. Correct.

B. Incorrect because the bypass switch will work when the mode switch is in Refuel (or shutdown). Also incorrect because the high level trip is only required in Mode 5 IF a rod is withdrawn. Plausible if applicant doesn't know that the bypass switch also works when the mode switch is in the refuel position (versus only the shutdown position).

C. Incorrect because the not drained alarm comes in at 3 gallons; whereas the high level trip occurs at 63 gallons, i.e., a scram has not occurred yet. Also incorrect because the bypass switch will prevent the high level trip when the mode switch is in Refuel (or shutdown). Plausible if applicant doesn't know alarm setpoint and thinks that the bypass switch only works when the mode switch is in the shutdown position.

D. Incorrect because the not drained alarm comes in at 3 gallons; whereas the high level trip occurs at 63 gallons, i.e., a scram has not occurred yet. Also incorrect because the high level trip is only required in Mode 5 IF a rod is withdrawn. Plausible if applicant doesn't know alarm setpoint and thinks that this trip feature is required during mode 5 with all rods inserted.

SRO only because of A2 K&A and 10CFR55.43 (2): Facility operating limitations in the technical specifications and their bases.

A2. Ability to (a) predict the impacts of the following on the REACTOR PROTECTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6) A2.20 Full system activation (full-SCRAM) . . 4.1*/ 4.2*

References

34AR-603-119-1, Scram Disch Vol Not Drained annunciator procedure
34AR-603-101-1, Scram Disch Vol High Level Trip alarm procedure
34AR-603-110-1, Scram Disch Vol High Level Trip Bypass alarm procedure
Tech Spec 3.3.1.1, RPS Instrumentation

Tier:	2	Group:	1
Keyword:	RPS	Source:	NEW
Cog Level:	HIGHER	Exam:	HT2007-301
Test:	SRO	Author/Reviewer:	BLC/RFA

QUESTIONS REPORT
for SRO

80. 215004A2.02 002/2/1/REFUEL/NEW/HIGHER/HT2007-301/SRO/BLC/RFA

A complete core offload was performed at the beginning of a refueling outage.

Four bundles have just been reloaded around SRM "D" and the prescribed fuel reload sequence continues by spiralling outward from SRM "D." The operability status of the remaining SRMs are:

SRM "A" is inoperable; post maintenance testing is in progress
All other SRMs are operable

During the testing on SRM "A", the operator inadvertently withdraws the SRM "C" detector a small amount and the following alarms are received:

SRM DETECTOR RETRACTED WHEN NOT PERMITTED (603-222)
ROD OUT BLOCK (603-238)

Which ONE of the following identifies the impact on refueling operations?

- A. Core alterations must now be suspended.
- B. Core alterations may continue in the northwest quadrant.
- C. Core alterations may continue only in the northeast quadrant.
- D. Core alterations may continue anywhere in the core except in the quadrant where SRM "A" is located.

A. Incorrect because core alterations are allowed in a quadrant without an adjacent operable SRM provided that the bundles being spiral reloaded are in a single fueled region containing an operable SRM. Plausible if applicant does not know that tech specs allows refueling with only one operable detector.

B. Correct.

C. Incorrect because the partially withdrawn SRM is inoperable. Plausible if applicant knows that the single fueled region tech spec LCO provision was exercised to begin the reload.

D. Incorrect because SRM C is inoperable due to being partially withdrawn. Also incorrect because core alterations may not be performed in the southwest quadrant where SRM "C" is located.

QUESTIONS REPORT for SRO

SRO only because this is linked to 10CFR55.43(6): Procedures and limitations involved in initial core loading, alterations in core configuration, control rod programming, and determination of various internal and external effects on core reactivity. Also linked to Tech specs 3.3.1.2

A2. Ability to (a) predict the impacts of the following on the SOURCE RANGE MONITOR (SRM) SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6) A2.02 SRM inop condition 3.4 / 3.7

References:

C51-SRM-LP-01201, SRM lesson plan

TS 3.3.1.2, SRM Instrumentation

34AR-603-222, SRM Detector Retracted When Not Permitted annunciator procedure

34AR-603-238, Rod Out Block annunciator procedure

F15-RF-LP-04502, Refueling

Tier:	2	Group:	1
Keyword:	REFUEL	Source:	NEW
Cog Level:	HIGHER	Exam:	HT2007-301
Test:	SRO	Author/Reviewer:	BLC/RFA

QUESTIONS REPORT

for SRO

81. 245000A2.07 001/2/2/EHC/NEW/HIGHER/HT2007-301/SRO/BLC/RFA

Due to a slowly degrading condenser vacuum leak on Unit 1, the control room crew has reduced reactor power from rated power over the last several hours. Current plant conditions are:

285 MW(e)

Condenser vacuum at 25.0 "Hg and steady

The SRO is evaluating whether the current power configuration will facilitate a manual turbine trip while maintaining the reactor critical.

Which ONE of the following predicts the plant response if the turbine is manually tripped at this power, including the required procedure to be implemented after the turbine is manually tripped?

- A. Steam flow will be within the capacity of the bypass valves.
Enter 34GO-OPS-005-1, Power Changes, to adjust reactor power if necessary after the turbine is manually tripped.
- B. Steam flow will be within the capacity of the bypass valves.
Enter 34GO-OPS-013-1, Normal Plant Shutdown
- C✓ Steam flow will NOT be within the capacity of the bypass valves.
Enter 34AB-C71-001-1, Scram Procedure
- D. Steam flow will NOT be within the capacity of the bypass valves.
Enter 34GO-OPS-005-1, Power Changes, after the turbine is tripped to lower reactor power.

A. Incorrect because 285 MW(e) is more than 25% rated steam flow (bypass capacity). 285 MW(e) is also above the first stage turbine pressure bypass point (27.6% power = 260 MW(e)). Also incorrect because 34GO-OPS-005-1 is only used when reactor power level is greater than 35%. Plausible if applicant doesn't know rated electrical on Unit 1 (~ 915 MW(e))

B. Incorrect because 285 MW(e) is more than 25% rated steam flow (bypass capacity). 285 MW(e) is also above the first stage turbine pressure bypass point (27.6% power = 260 MW(e)). Plausible if applicant doesn't know rated electrical on Unit 1 (~ 915 MW(e))

C. Correct.

D. Incorrect because 34GO-OPS-005-1 is only used when reactor power level is greater than 35%. Plausible if the applicant thinks that the RPS turbine trip will be bypassed but forgets that the Reactor High Pressure scram will cause a scram. Plausible if applicant reasons that this procedure was previously being used during the preceding power reduction(s).

QUESTIONS REPORT for SRO

SRO-only due to link to 10CFR55.43 (5): Assessment of plant conditions and selection of appropriate procedures.

A2. Ability to (a) predict the impacts of the following on the MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6) A2.07 Loss of reactor/turbine pressure control system: Plant-Specific 3.8 / 3.9

References

34AB-N61-002-1, Main Condenser Vacuum Low

34AR-650-148-1, Turbine Vacuum Low-Low annunciator procedure

34GO-OPS-005-1, Power Changes

34GO-OPS-013-1, Normal Plant Shutdown

B21-SLLS-LP-01401, Main Steam & Low Low Set lesson plan

Tier:	2	Group:	2
Keyword:	EHC	Source:	NEW
Cog Level:	HIGHER	Exam:	HT2007-301
Test:	SRO	Author/Reviewer:	BLC/RFA

QUESTIONS REPORT

for SRO

82. 262001A2.08 003/2/1/4160VAC/NEW/FUND/HT2007-301/SRO/BLC/RFA

While performing an electrical tagout, a system operator inadvertently opened breaker #1 in 125VDC Cabinet 1D (1R25-S004) which provides control power to a 4160VAC emergency bus. Subsequent attempts to re-close the breaker are unsuccessful, i.e., the breaker keeps tripping open.

Assuming that the 1A RHR SW Pump was initially running for a surveillance test, which ONE of the following states how this pump's 4160 VAC breaker will be affected by the loss of control power, including the correct procedure needed to operate the breaker?

A. The pump breaker will automatically open.

The control power undervoltage trip must be disabled in accordance with 34AB-R22-001-1, Loss of DC Busses, in order to close ANY of the breakers on this emergency bus.

B. The pump breaker will automatically open.

The control power undervoltage trip must be disabled in accordance with 34AB-R22-001-1, Loss of DC Busses, in order to re-close ONLY this breaker on this emergency bus.

C✓ The pump will continue to run.

The ONLY way to stop the pump is to depress the button marked "push-to-trip" (inside the breaker cubicle) in accordance with 34SO-R22-001-1, 4160VAC System.

D. The pump will continue to run.

The ONLY way to stop the pump is to depress the button marked "push-to-trip" (inside the breaker cubicle) in accordance with 34AB-R22-001-1, Loss of DC Busses.

QUESTIONS REPORT
for SRO

A. Incorrect because only a few breakers have this auto-open feature and they are only located on 4160VAC emergency bus 1F. (This pump is powered from 1E.) Also incorrect because this AOP does not provide guidance for overriding this trip feature. Plausible because this trip-open feature does exist on the 1C RHR SW pump.

B. Incorrect because only a few breakers have this auto-open feature and they are only located on 4160VAC emergency bus 1F. Also incorrect because this AOP does not provide guidance for overriding this trip feature. Plausible if the applicant knows that this AOP provides guidance for restoring control power.

C. Correct.

D. Incorrect because the loss of control power renders the switch on the outside of the cubicle door inoperable. Also incorrect because the switch on the outside of the door only works when the breaker is racked in the TEST position. Also incorrect because the guidance to locally open the breaker is not found in the AOP. Plausible if the applicant remembers that the charging spring will still be charged.

SRO only because linked to 10CFR55.43(5): Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

A2. Ability to (a) predict the impacts of the following on the A.C. ELECTRICAL DISTRIBUTION ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6) A2.08 Opening a disconnect under load 3.3 / 3.6

References

34SO-R22-001-1, 4160VAC System
R22-4160VAC-LP-02702, 4160 VAC lesson plan
34AB-R22-001-1, Loss of DC Buses AOP

Tier:	2	Group:	1
Keyword:	4160VAC	Source:	NEW
Cog Level:	FUND	Exam:	HT2007-301
Test:	SRO	Author/Reviewer:	BLC/RFA

QUESTIONS REPORT

for SRO

83. 295003AA2.04 001/1/1/TRANSFORMER/NEW/HIGHER/HT2007-301/SRO/BLC/RFA

Unit 1 and 2 are operating at 100% power with all 4KV busses normally aligned.

A transformer fire and fault occurs on Startup transformer 2C and all automatic actions associated with the transformer fault occur as expected.

Which ONE of the following identifies how the unavailability of the transformer affects the AC system lineup and describes the performance of the 34SV-SUV-013-0, Weekly Breaker Alignment surveillance?

A✓ BOTH units are in an active LCO for 3.8.1, AC Sources - Operating

The surveillance is required to be performed WITHIN 1 HOUR even though its acceptance criteria will NOT be met.

B. BOTH units are in an active LCO for 3.8.1, AC Sources - Operating

The surveillance is required to be performed IMMEDIATELY even though its acceptance criteria will NOT be met.

C. ONLY Unit 2 is in an active LCO for 3.8.1, AC Sources - Operating

The surveillance is required to be performed IMMEDIATELY and its acceptance criteria WILL be met.

D. ONLY Unit 2 is in an active LCO for 3.8.1, AC Sources - Operating

The surveillance is required to be performed WITHIN 1 HOUR and its acceptance criteria WILL be met.

QUESTIONS REPORT
for SRO

Note: Both SATs 1C and 2C are fed from the same point on the 230 kV grid. A SAT 2C fault results in PCB s 179470, 179480 tripping open, which affects SAT 1C availability.

A. Correct

B. Incorrect because TS 3.8.1.A.1 requires surveillance within one hour. Plausible because action statement is similar time frame.

C. Incorrect because both units will be in an active LCO. Also incorrect because TS 3.8.1.A.1 requires surveillance within one hour. Plausible because transformer is on Unit 2.

D. Incorrect because both units will be in an active LCO. Also incorrect because the acceptance criteria will not be met. Plausible because transformer is on Unit 2.

SRO only because of tie to 10CFR55.43(2): Tech specs

AA2. Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER : (CFR: 41.10 / 43.5 / 45.13) AA2.04 System lineups..... 3.5/ 3.7

References

34SV-SUV-013-0, Weekly Breaker Alignment Checks
S22-ELECT-LP-02701, Electrical Distribution System lesson plan
Tech Spec 3.8.1, AC Sources - Operating

Tier:	1	Group:	1
Keyword:	TRANSFORMER	Source:	NEW
Cog Level:	HIGHER	Exam:	HT2007-301
Test:	SRO	Author/Reviewer:	BLC/RFA

QUESTIONS REPORT
for SRO

84. 295004AA2.02 001/1/1/DC POWER/NEW/FUND/HT2007-301/SRO/BLC/RFA

Unit 2 was operating at 50% power when the 125VDC Distribution Cabinet 2D, 2R25-S129 was lost and the following annunciator was received:

ECCS/RPS DIVISION 1 TROUBLE (602-110)

The SRO is in the process of identifying which analog transmitter trip system (ATTS) units were affected and is performing a loss of safety function determination in accordance with the Technical Requirements Manual (TRM).

Which ONE of the following identifies the affected analog transmitter trip units and describes the TRM Loss of Function Diagrams (LFD)?

A. Two RPS ATTS cabinets will be de-energized.

The loss of function statement found at the bottom of the LFD identifies the channel combinations which are no longer available for the safety function.

B. Two RPS ATTS cabinets will be de-energized.

The loss of function statement found at the bottom of the LFD identifies the channel combinations required to be operable in order to maintain the safety function.

C. Two ECCS ATTS cabinets will be de-energized.

The loss of function statement found at the bottom of the LFD identifies the channel combinations required to be operable in order to maintain the safety function.

D. Two ECCS ATTS cabinets will be de-energized.

The loss of function statement found at the bottom of the LFD identifies the channel combinations which are no longer available for the safety function.

QUESTIONS REPORT
for SRO

Each ATTS panel has two internal power supplies. Only one power supply needs to be available to supply the entire ATTS panel. The ECCS division consists of panels H11-P925, P926, P927 and P928.

125VDC Dist Cab 2D Breakers 1 & 2 power up both of the power supplies for panel 2H11-P925. Breakers 5 & 7 power up both of the power supplies for panel 2H11-P927.

The loss of function statement typically found at the bottom of the LFD identifies the channel combinations required to be operable in order for instrument function capability as defined in the instrumentation specification to be maintained.

A. Incorrect because the DC cabinet which was lost does not provide power to the RPS ATTS cabinets. Also incorrect because the LFD identifies the channels required for the safety function. Plausible since RPS ATTS cabinets are similar to the ECCS cabinets.

B. Incorrect because the DC cabinet which was lost does not provide power to the RPS ATTS cabinets.

C. Correct.

D. Incorrect because the LFD identifies the channels required for the safety function. Plausible if applicant does not understand the content provided in LFDs.

SRO only because linked to 10CFR55.43 (2): Tech specs

AA2. Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: (CFR: 41.10 / 43.5 / 45.13) AA2.02 Extent of partial or complete loss of D.C. power.... 3.5/ 3.9

References

TRM Section 11.0, Loss of Function Diagrams

34AB-R22-001-2, Loss of DC Buses AOP

34AR-602-110-2, ECCS/RPS Division 1 Trouble annunciator procedure

Tier:	1	Group:	1
Keyword:	DC POWER	Source:	NEW
Cog Level:	FUND	Exam:	HT2007-301
Test:	SRO	Author/Reviewer:	BLC/RFA

QUESTIONS REPORT

for SRO

85. 295014G2.4.31 001/1/2/RODS/NEW/HIGHER/HT2007-301/SRO/BLC/RFA

Unit 2 is starting up and reactor power is 14% power. The operator is pulling rods to achieve 2 bypass valves to roll the turbine.

Due to a previous rod being difficult to move, the CRD drive water pressure had been temporarily raised to 300 psid and not re-adjusted back down to a normal pressure. When the operator placed the rod movement control switch to the single notch out position for the next control rod, the rod quickly moved from position 16 to 22. (intended position was 18)

Which ONE of the following identifies an expected annunciator that will be received and the evaluation of this event?

A. ROD OUT BLOCK (603-238)

This is a mispositioned control rod. Tech Spec 3.1.6. Rod Pattern Control has a required action statement.

B. ROD DRIFT (603-247)

This is NOT a mispositioned control rod. Tech Spec 3.1.3 Control Rod Operability has a required action statement.

C. RMCS/RWM ROD BLOCK OR SYSTEM TROUBLE (603-239)

This is a mispositioned rod. There are no required actions for tech specs for this condition.

D. ROD OVERTRAVEL (603-248-1)

This is NOT a mispositioned rod. There are no required actions for tech specs in this condition.

QUESTIONS REPORT
for SRO

Note: This condition will cause both annunciators 603-238 & 603-239 to alarm.

A. Incorrect because BPWS Tech Spec is only applicable in Modes 1 & 2 when thermal power is < 10%. Plausible because this alarm will be received and the rod is considered mispositioned IAW 34GO-OPS-065-0, Section 7.5.1

B. Incorrect because the rod is considered mispositioned IAW 34GO-OPS-065-0, Section 7.5.1. (Alarm may not be received.) Plausible if applicant thinks that the rod is inoperable.

C. Correct.

D. Incorrect because this alarm is only applicable for full-out position 48. Also incorrect since rod is considered mispositioned IAW 34GO-OPS-065-0, Section 7.5.1. Plausible if applicant knows that tech specs do not apply and does not understand the alarm input.

SRO only because this question is tied to tech spec 10CFR55.43 (2)

APE: 295014 Inadvertent Reactivity Addition

2.4.31 Knowledge of annunciators alarms and indications / and use of the response instructions. (CFR: 41.10 / 45.3)
IMPORTANCE 3.3 / 3.4

References

34GO-OPS-065-0, Control Rod Movement
34AR-603-248-1, Rod Overtravel annunciator procedure
34AR-603-247-1, Rod Drift annunciator procedure
34AR-603-238-1, Rod Out Block annunciator procedure
34AR-603-239-1, RMCS/RWM Rod Block or System Trouble annunciator procedure
34AB-C11-004-1, Mispositioned Control Rods
Tech Spec 3.1.6, Rod Pattern Control
Tech Spec 3.1.3, Control Rod Operability

Tier:	1	Group:	2
Keyword:	RODS	Source:	NEW
Cog Level:	HIGHER	Exam:	HT2007-301
Test:	SRO	Author/Reviewer:	BLC/RFA

QUESTIONS REPORT
for SRO

86. 295020AA2.04 001/1/2/HPCI/RCIC/NEW/HIGHER/HT2007-301/SRO/

A heatup and pressurization on Unit 2 was in progress with the following plant conditions:

Reactor pressure: 130 psig
HPCI/RCIC: Operable in standby lineup
MSIVs: Closed

The heatup and pressurization was temporarily stopped to accommodate opening the MSIVs in accordance with 34GO-OPS-001-2, Attachment 2, (Opening the MSIVs with Reactor Pressure > 0 psig.) While pressure was being equalized across the MSIVs, reactor pressure gradually lowered to 125 psig. Once the MSIVs were open, the crew re-commenced the heatup and pressurization by withdrawing control rods and reactor pressure is now at 160 psig. (no other actions have been taken)

Which ONE of the following describes the impact on the startup and the actions which are allowed by tech specs given the current status of HPCI and RCIC?

- A. The heatup and pressurization can continue.
The mode switch may be taken from startup to run.
Restore HPCI to operable within 14 days.
- B. The heatup and pressurization can continue.
The mode switch may NOT be taken to run.
Restore HPCI to operable within 14 days.
- C. The heatup and pressurization can NOT continue.
The mode switch may NOT be taken to run.
Reduce steam pressure to = 150 psig within 36 hours.
- D. The heatup and pressurization can NOT continue.
Place the mode switch to the shutdown position in 12 hours
Reduce steam pressure to = 150 psig within 36 hours.

QUESTIONS REPORT

for SRO

HPCI isolated at 128 psig. The crew should recognize that reactor pressure (125 psig) lowered below the HPCI isolation setpoint while they were equalizing across the MSIVs. Thus, an inadvertent containment isolation (Group 3) has occurred.

A. Incorrect because LCO 3.0.4 condition a or c cannot be met. Plausible if applicant thinks that LCO 3.0.4 condition b applies.

B. Correct.

C. Incorrect because the heatup and pressurization in Mode 2 can continue. Plausible if applicant thinks that the LCO can be exited by simply lowering pressure.

D. Incorrect because the heatup and pressurization in Mode 2 can continue with RCIC operable. Plausible if the applicant thinks that both HPCI and RCIC have isolated and that Condition E is applicable.

SRO only because this question is tied to 10CFR55.43(2): Facility operating limitations in the technical specifications and their bases.

AA2. Ability to determine and/or interpret the following as they apply to INADVERTENT CONTAINMENT ISOLATION : (CFR: 41.10 / 43.5 / 45.13) AA2.04 Reactor pressure..... 3.9 / 3.9

References

34GO-OPS-001-2, Plant Startup procedure

Tech Spec 3.5.1, ECCS-Operating

34SO-E41-001-2, HPCI procedure

E51-RCIC-LP-03901, RCIC lesson plan

Tier:

1

Group:

2

Keyword:

HPCI/RCIC

Source:

NEW

Cog Level:

HIGHER

Exam:

HT2007-301

Test:

SRO

Author/Reviewer:

QUESTIONS REPORT

for SRO

87. 295025EA2.06 001/1/1/STEAM COOLING/MODIFIED BANK/HIGHER/HT2007-301/SRO/BLC/RFA

A loss of all high and low pressure injection has occurred on **Unit 2** with the following conditions:

All rods inserted

Reactor Water Level.....-190 inches and decreasing 2"/min

Reactor Pressure..... 858 psig being controlled by LLS logic

Steam Cooling is in progress

Because of successful maintenance efforts, HPCI has become available and the crew has just started injecting to the vessel. The current reactor water level is -189 inches and rising.

Given these conditions, which ONE of the following procedures is required to be implemented?

- A. CP-2, RPV Flooding
- B. CP-1, Steam Cooling
- C. CP-1, Emergency Depressurization
- D. RC RPV Control (Non-ATWS)

EOPs require remaining pressurized following a loss of all high and low pressure injection systems and beginning steam cooling (@ -185") UNTIL an injection system is regained; then ED. In this case ED'g will eliminate the injection system (HPCI); and EOPs specifically exempt ED in this situation. The question satisfies KA because requires interpretation of RPV water level as it pertains to high reactor pressure, i.e. being in steam cooling.

A. Incorrect because level instrumentation is available. Plausible because this is an override step in the steam cooling procedure.

B. Incorrect because an override step in the steam cooling procedure states that if reactor water level is increasing, then perform RC/P (non atws). Plausible if the applicant realizes that level is still less than -185" (entry condition for steam cooling).

C. Incorrect because an override step in the steam cooling procedure states that if any system is regained then emergency depressurization is required IF level cannot be restored. Since level is being restored, then emergency depress is not required. Plausible if the applicant fails to assess that level is being raised and strictly adheres to the override step.

D. Correct.

QUESTIONS REPORT
for SRO

SRO only because of link to 10CFR55.43 (5): Assessment of facility conditions and selection of appropriate procedure.

EA2. Ability to determine and/or interpret the following as they apply to HIGH REACTOR PRESSURE:
(CFR: 41.10 / 43.5 / 45.13) EA2.06 Reactor water level..... 3.7/ 3.8

[No reference provided to applicant]

References

Licensee's LOR Exam Bank (modified)

Media Number: LR-LP-20309

Objective Number: 201.083.A.04

LR-LP-201083

SRO NRC CAT - B, RO NRC CAT - B, Active - -1, References - 31EO-EOP-015-2S, rls, KeyWords - PUBLISH, PROCEDURE,BIENNIAL(B)

EOP-CP1-LP-20309, Contingency Procedures (CP-1) lesson plan

Tier:	1	Group:	1
Keyword:	STEAM COOLING	Source:	MODIFIED BANK
Cog Level:	HIGHER	Exam:	HT2007-301
Test:	SRO	Author/Reviewer:	BLC/RFA

QUESTIONS REPORT
for SRO

88. 295026G2.1.28 001/1/1/TORUS TEMP/NEW/FUND/HT2007-301/SRO/BLC/RFA

Which ONE of the following describes the suppression pool water temperature instrumentation and tech spec 3.3.3.1, Post Accident Monitoring (PAM) instrumentation channel requirements?

[Reference provided]

- A. The T48-R647 recorder receives input from only the upper temperature elements. The 2 torus temperature channels required by TS 3.3.3.1 can ONLY be comprised of two lower elements, i.e., N009A-D.
- B. The T48-R647 recorder receives input from both upper and lower temperature elements. The 2 torus temperature channels required by TS 3.3.3.1 can ONLY be comprised of two lower elements, i.e., N009A-D
- C✓ The T48-R647 recorder receives input from only the upper temperature elements. The 2 torus temperature channels required by TS 3.3.3.1 can ONLY be comprised of one lower element (N009A-D) AND one upper element. (N301-N311)
- D. The T48-R647 recorder receives input from both upper and lower temperature elements. The 2 torus temperature channels required by TS 3.3.3.1 can ONLY be comprised of one lower element (N009A-D) AND one upper element. (N301-N311)

A. Incorrect because TRM Table 10.3-1 requires one N009 and one N300 temperature element. Plausible since the TS function is for pool water temperature.

B. Incorrect because T48-R647 only receives input from the N300 elements. Also incorrect because TRM Table 10.3-1 requires one N009 and one N300 temperature element. Plausible since the TS function is for pool water temperature.

C. Correct

D. Incorrect because recorder T48-R647 only receives input from N300 elements. Plausible since this recorder is for torus temperature indication.

SRO only because of tie to 10CFR55.43 (2): Tech specs

Provide applicant only the Tech Spec 3.3.3.1. (Don't provide TRM)

295026 Suppression Pool High Water Temperature

2.1.28 Knowledge of the purpose and function of major system components and controls.
(CFR: 41.7) IMPORTANCE 3.2 /3.3

34SV-SUV-019-1/2, Attachment 2, Torus Temperature Monitoring
TS 3.3.3.1, PAM Instrumentation

TRM Table T10.3-1, Sheet 5 of 7, Qualified Post Accident Monitoring Instrumentation

34AR-657-072-1, Multipoint Rcdr 1T47-R611 Temp High annunciator procedure

34AR-654-009-1, Multipoint Rcdr 1T47-R612 Temp High annunciator procedure

QUESTIONS REPORT
for SRO

Tier: 1
Keyword: TORUS TEMP
Cog Level: FUND
Test: SRO

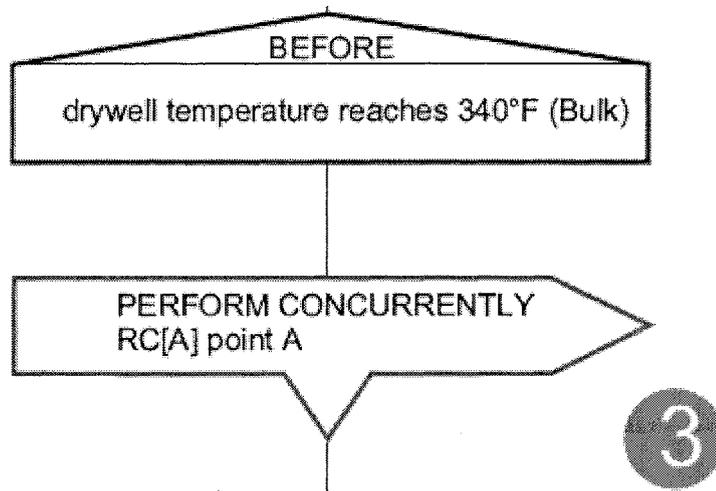
Group: 1
Source: NEW
Exam: HT2007-301
Author/Reviewer: BLC/RFA

QUESTIONS REPORT

for SRO

89. 295028EA2.06 001/1/1/DW TEMP/NEW/FUND/HT2007-301/SRO/BLC/RFA

A loss of drywell cooling has occurred. The SRO reaches the following step in the primary containment control flowchart drywell temperature leg:



Which ONE of the following describes the meaning of the word "Bulk" and the tech spec bases for the drywell temperature limiting condition of operation?

- A. "Bulk" means a weighted average of the containment atmosphere, i.e., drywell AND the torus air spaces.
In the event of a DBA, with the initial drywell average air temperature = 340 °F, the resultant peak accident temperature is maintained below the drywell design temperature.
- B. "Bulk" means a weighted average of the containment atmosphere, i.e., drywell AND the torus air spaces.
During a DBA, with the initial drywell average air temperature = 150 °F, the resultant peak accident temperature is maintained below the drywell design temperature.
- C. "Bulk" means a weighted average of ONLY the drywell air space temperature.
During a DBA, with the initial drywell average air temperature = 340 °F, the resultant peak accident temperature is maintained below the drywell design temperature.
- D. "Bulk" means a weighted average of ONLY the drywell air space temperature.
During a DBA, with the initial drywell average air temperature = 150 °F, the resultant peak accident temperature is maintained below the drywell design temperature.

QUESTIONS REPORT
for SRO

A. Incorrect because bulk implies average. Also incorrect because analyses require a drywell starting temperature of = 150 to preclude reaching the 340 °F design temperature of containment. Plausible if applicant does not know the definition of bulk or does not know the LCO bases.

B. Incorrect because bulk implies average. Plausible if applicant thinks that the drywell also includes the torus airspace.

C. Incorrect because analyses require a drywell starting temperature of = 150 to preclude reaching the 340 °F design temperature of containment. Plausible if applicant does not know the LCO bases.

D. Correct.

SRO only because of link to 10CFR55.43 (5): Tech Spec 3.6.1.5 bases for 150 deg LCO limit. Per discussion w/ RFA on 9/25/07: Ability to differentiate between torus air space and drywell air space is implied.

EA2. Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE : (CFR: 41.10 / 43.5 / 45.13) EA2.06 Torus/suppression chamber air space temperature:
Plant-Specific..... 3.4 / 3.7

References

EOP-TERMS-LP-20304, EOP Terminology & Definitions

TS 3.6.1.5, Drywell Air Temperature (including bases)

TRM Table T10.3-1, Qualified Post Accident Monitoring Instrumentation

34SV-SUV-019-1, Surveillance Checks

Tier:	1	Group:	1
Keyword:	DW TEMP	Source:	NEW
Cog Level:	FUND	Exam:	HT2007-301
Test:	SRO	Author/Reviewer:	BLC/RFA

QUESTIONS REPORT

for SRO

90. 295033G2.4.50 001/1/2/REFUEL/NEW/HIGHER/HT2007-301/SRO/BLC/RFA

A refueling accident occurred in the Unit 1 fuel pool and the following alarms were received in the Unit 1 control room:

REFUELING FLOOR VENT EXHAUST RADIATION HIGH REFUELING FLOOR AREA RADIATION HIGH

The operator has determined that the 1D11-K611A-D are causing the valid EXHAUST rad alarm and the refueling floor 1D21-K601D is causing the valid AREA rad alarm.

Which ONE of the following describes the significance of these secondary containment alarm setpoints?

[Reference provided]

- A. The annunciator setpoint for the EXHAUST rad monitor satisfies the entry condition value listed in the secondary containment control table 6.

The threshold for an alert classification, due to fuel damage by fuel handling accident, is NOT met.

- B. The annunciator setpoint for the AREA rad monitor satisfies the entry condition value listed in the secondary containment control table 6.

The threshold for an alert classification, due to fuel damage by fuel handling accident, IS met.

- C. The annunciator setpoint for the AREA rad monitor satisfies the entry condition value listed in the secondary containment control table 6.

The threshold for an alert classification, due to fuel damage by fuel handling accident, IS met.

- D. The annunciator setpoint for the EXHAUST rad monitor DOES NOT meet the entry condition value listed in the secondary containment control table 6.

The threshold for an alert classification, due to fuel damage by fuel handling accident, is NOT met.

QUESTIONS REPORT

for SRO

REFUELING FLOOR VENT EXHAUST RADIATION HIGH (601-409)
REFUELING FLOOR AREA RADIATION HIGH (601-110)

A. Incorrect because the exhaust alarm is only HIGH (versus HIGH HIGH). Plausible if applicant does not know there is a HIGH HIGH alarm available.

B. Incorrect because the ARM setpoint is 15 mr/hr, i.e., the operator must use 1D21-P600 recorder to determine reading. Also incorrect because alert classification occurs above the alarm setpoint value, which cannot be determined from the information provided. Plausible if applicant does not know the alarm setpoint is below the 50 mr/hr threshold value.

C. Incorrect because the ARM alarm setpoint is 15 mr/hr. The alert classification is not reached or cannot be determined from the information provided. Plausible if applicant does not know the difference between the HIGH HIGH alarm and the HIGH alarm

D. Correct.

Provide Reference: Page 33 of 46 in 73EP-EIP-001-0, Section 18.0 Fuel Damage By Fuel Handling Accident
Provide Reference: Table 4 and Table 6 of Secondary Containment Control (not flowchart)

SRO-only because linked to 10CFR55.43 (5): Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. Also linked to 10CFR55.43 (7): Fuel handling facilities and procedures.

EPE: 295033 High Secondary Containment Area Radiation Levels

2.4.50 Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.
(CFR: 45.3) IMPORTANCE 3.3 / 3.3

References

31EO-EOP-014-1, Unit 1 Secondary Containment Control flowchart

73EP-EIP-001-0, Section 18, Fuel Damage By Fuel Handling Accident

34AR-601-409-1, Refueling Floor Vent Exhaust Radiation High annunciator procedure

34AR-601-110-1, Refueling Floor Area Radiation High annunciator procedure

Tier:	1	Group:	2
Keyword:	REFUEL	Source:	NEW
Cog Level:	HIGHER	Exam:	HT2007-301
Test:	SRO	Author/Reviewer:	BLC/RFA

QUESTIONS REPORT
for SRO

91. 295038G2.2.22 001/1/1/RELEASE/NEW/FUND/HT2007-301/SRO/BLC/RFA

While operating at 100% power, the following alarm is received:

O/G AVG ANNUAL REL LIMIT WILL BE EXCEEDED (601-406-2)

Which ONE of the following radiation monitors triggered this alarm and which limiting condition of operation (LCO) includes the required actions if the radiation monitor is declared inoperable?

- A. Offgas pretreatment rad monitors (D11-K601 and K602)
Main Condenser Offgas LCO 3.7.6
- B. Offgas pretreatment rad monitors (D11-K601 and K602)
Offsite Dose Calculation Manual (ODCM) Gaseous Effluent Monitoring
Instrumentation LCO 3.1.1
- C. Stack offgas rad monitor (Normal range D11-K600A and B)
Main Condenser Offgas LCO 3.7.6
- D. Stack offgas rad monitor (Normal range D11-K600A and B)
Offsite Dose Calculation Manual (ODCM) Gaseous Effluent Monitoring
Instrumentation LCO 3.1.1

A. Incorrect because LCO 3.7.6 does not include action statements when this rad monitor becomes inoperable. Plausible because the rad monitor alarm setpoint is based on the 240 microCurie limiting condition of operation in LCO 3.7.6.

B. Correct.

C. Incorrect because the alarm is not triggered by the stack rad monitor. Also incorrect because LCO 3.7.6 does not include action statements when this rad monitor becomes inoperable. Plausible because the rad monitor alarm setpoint is based on the 240 microCurie limiting condition of operation in LCO 3.7.6. Also plausible if applicant does not know what causes alarm and simply relies on annunciator wording.

D. Incorrect because the alarm is not triggered by the stack rad monitor. Plausible if applicant simply relies on the annunciator label or does not know the basis for gaseous instrumentation setpoints in ODCM.

SRO only because tied to 10CFR55.43 (2): Licensing basis ODCM

EPE: 295038 High Off-Site Release Rate

2.2.22 **Knowledge of limiting conditions for operations and safety limits.** (CFR: 43.2 / 45.2)

IMPORTANCE 3.4 / 4.1

References

LCO 3.7.6, Main Condenser Offgas

HNP ODCM, Chapter 3, Gaseous Effluents

34AR-601-406-2, O/G Avg Annual Rel Limit Will Be Exceeded annunciator procedure

QUESTIONS REPORT
for SRO

Tier: 1
Keyword: RELEASE
Cog Level: FUND
Test: SRO

Group: 1
Source: NEW
Exam: HT2007-301
Author/Reviewer: BLC/RFA

QUESTIONS REPORT

for SRO

92. 400000A2.03 001/2/1/CCW/NEW/HIGHER/HT2007-301/SRO/BLC/RFA

Unit 2 is at 30% power during a startup after an extended outage when the following alarm is received:

RBCCW HX OUTLET TEMP HIGH (650-249)

The control room operator observes the RBCCW pump suction temperature is 101 °F and dispatches the system operator to increase service water flow through the heat exchanger. As the operator is locally throttling open the service water valve, service water system pressure lowers below the RBCCW system pressure and the following alarm is received:

HX PSW/RBCCW DIFF PRESS LOW (650-238)

Which ONE of the following identifies a service water valve listed in the high temperature annunciator procedure that should have been opened to correct the high temperature condition and also identifies the minimum required tech spec actions for the low pressure condition?

- A. 2P41-F440A, RBCCW Hx service water discharge valve.
Service water grab samples are required to be taken once per shift even if the service water system effluent rad monitor is operable.
- B✓ 2P41-F440A, RBCCW Hx service water discharge valve.
The service water system effluent rad monitor is required to be operable.
Grab samples are not required to be taken.
- C. 2P41-F491, RBCCW Hx - PSW discharge valve.
The service water system effluent rad monitor is required to be operable.
Grab samples are not required to be taken.
- D. 2P41-F491, RBCCW Hx - PSW discharge valve.
Service water grab samples are required to be taken once per shift even if the service water system effluent rad monitor is operable.

QUESTIONS REPORT
for SRO

The P41-F440A(B) valves are the heat exchanger outlet valves whereas the P41-F491 valve is a common discharge valve for both heat exchangers. The F491 valve will affect the pressure.

A. Incorrect because the service water grab samples are ONLY required if the rad monitor is inoperable. Plausible because this is one of the required actions listed in this ODCM LCO.

B. Correct.

C. Incorrect because this is not the valve listed in the high temperature alarm procedure. Plausible if the applicant knows that this valve is named in the dP alarm procedure to adjust the PSW/RBCCW differential pressure.

D. Incorrect because this is not the valve listed in the high temperature alarm procedure. Incorrect because the service water grab samples are ONLY required if the rad monitor is inoperable. Plausible because this is one of the required actions listed in this ODCM LCO. Plausible if the applicant knows that this valve is named in the dP alarm procedure to adjust the PSW/RBCCW differential pressure. Also plausible if applicant knows that dP alarm procedure states that if the dP instruments are inoperable, then confirm the rad monitor is operable.

SRO only because this question is tied to 10CFR55.43 (2): Facility operating limitations in the technical specifications and their bases. Also tied to 10CFR55.43 (5): Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

A2. Ability to (a) predict the impacts of the following on the CCWS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: (CFR: 41.5 / 45.6)

A2.03 High/low CCW temperature . . 2.9 / 3.0

References

34AR-650-238-2, Hx PSW/RBCCW Diff Press Low annunciator procedure

34AR-650-249-2, RBCCW Hx Outlet Temp High annunciator procedure

34SO-P42-001-1, Section 7.3.8, Adjusting RBCCW/PSW Differential pressure

HNP ODCM, Section 2.1.1, Liquid Effluent Monitoring Instrumentation Control

P42-RBCCW-LP-00901, RBCCW lesson plan

Tier:	2	Group:	1
Keyword:	CCW	Source:	NEW
Cog Level:	HIGHER	Exam:	HT2007-301
Test:	SRO	Author/Reviewer:	BLC/RFA

QUESTIONS REPORT

for SRO

93. 600000G2.4.29 001/1/1/E-PLAN/MODIFIED BANK/HIGHER/HT2007-301/SRO/BLC/RFA

Unit 2 is in a refueling outage and the "A" Loop of RHR is in shutdown cooling.
The following events occurred at the times listed below:

- 10:00 am: Fire brigade dispatched following a fire reported to the control room in an unidentified electrical panel in the Southwest corner of Unit 2 Reactor Building 130' elev.
- 10:10 am: Fire brigade leader arrives at the scene and contacts the control room to inform the SRO that a breaker was on fire.
- 10:12 am: Fire brigade leader reports to control room that the power supply to 2E11-F015A RHR injection valve (600V MCC E-A Frame 3C) was burning.

Which ONE of the following describes the emergency plan classification requirements?

- A. Declare an Unusual Event beginning at 10:00.
Do not declare an Alert.
- B. Declare an Alert beginning at 10:12.
Do not declare an Unusual Event.
- C. Declare an Unusual Event beginning at 10:00.
Declare an Alert beginning at 10:12.
- D. Declare an Unusual Event at 10:10.
Do not declare an Alert.

Need to cover this question with licensee....E-Plan classification is changing at Hatch, but question will still work.

This K/A was changed from 6000000 G2.4.49 [Ability to perform w/o reference to procedures those actions that require immediate operation of system components and controls]

TO

6000000 G2.4.29 [Knowledge of the emergency plan] BECAUSE the Hatch Fire AOP does not include any immediate actions.

SRO only because of link to 10CFR55.43 (5): Assessment of facility conditions and E-plan classification.
APE: 600000 Plant Fire On Site

2.4.29 Knowledge of the emergency plan. (CFR: 43.5 / 45.11) IMPORTANCE RO 2.6 / SRO 4.0

References

Draft 73EP-EIP-001-0, EMERGENCY CLASSIFICATION AND INITIAL ACTIONS
EP-LP-20101-03, Initial/Terminating Activities

QUESTIONS REPORT
for SRO

Tier: 1
Keyword: E-PLAN
Cog Level: HIGHER
Test: SRO

Group: 1
Source: MODIFIED BANK
Exam: HT2007-301
Author/Reviewer: BLC/RFA

QUESTIONS REPORT
for SRO

94. G2.1.14 001/3/1/NOTIFICATIONS/NEW/FUND/HT2007-301/SRO/BLC/RFA

Which ONE of the following identifies a plant personnel notification (including the specific procedure) that is first required when the reactor is made critical and is AGAIN required when the mode switch is transferred to RUN?

- A✓ On-shift Lab foreman
In accordance with 34GO-OPS-001-2, Plant Startup
- B. Northern/Southern Control Center
In accordance with 34GO-OPS-001-2, Plant Startup
- C. Plant Manager
IAW Reactivity Management Program, 40AC-ENG-016-0
- D. Reactor Engineer
IAW Reactivity Management Program, 40AC-ENG-016-0

A. Correct.

B. Incorrect because the procedure does not state this because at these points, the dispatcher is not affected. Plausible if applicant perceives that impending tie-to-the-grid activities are being approached.

C. Incorrect because the procedure does not state this. Plausible if applicant reasons that these plateaus are important for the plant manager to be aware of.

D. Incorrect because the procedure does not state this. Plausible if applicant reasons that these plateaus are important for the reactor engineer to be aware of.

SRO only because of link to 10CFR55.43 (5): procedures

2.1.14 Knowledge of system status criteria which require the notification of plant personnel. (CFR: 43.5 / 45.12)
IMPORTANCE 2.5 / 3.3

References

34GO-OPS-001-2, Plant Startup

Tier:	3	Group:	1
Keyword:	NOTIFICATIONS	Source:	NEW
Cog Level:	FUND	Exam:	HT2007-301
Test:	SRO	Author/Reviewer:	BLC/RFA

QUESTIONS REPORT
for SRO

95. G2.1.7 001/3/1/OPRM/NEW/HIGHER/HT2007-301/SRO/BLC/RFA

Unit 2 is operating with the following conditions:

Core flow is 50.82 Mlbm/hr
Reactor power is 78%
OPRMs are OPERABLE

Given these plant conditions, which ONE of the following is correct?

- A. The OPRMs are NOT armed at this point on the power-to-flow map.
Tech Specs require only the period based algorithm for the OPRM operability.
- B. The OPRMs are armed at this point on the power-to-flow map.
Tech Specs require only the period based algorithm for the OPRM operability.
- C. The OPRMs are NOT armed at this point on the power-to-flow map.
Tech Specs require both the amplitude and period algorithms for the OPRM operability.
- D. The OPRMs are armed at this point on the power-to-flow map.
Tech Specs require both the amplitude and period algorithms for the OPRM operability.

A. Correct

B. Incorrect because this point is outside the OPRM armed region of >25% power and < 60% core flow. Plausible if applicant does not know when the OPRMs auto-arm themselves.

C. Incorrect because only the period based algorithm is required by tech specs. Plausible if applicant does not know basis for OPRM trip function or reasons that two out of three algorithms are required operable.

D. Incorrect because this point is outside the OPRM armed region of >25% power and < 60% core flow. Also incorrect because only the period based algorithm is required by tech specs. Plausible if applicant does not know when the OPRMs auto-arm themselves or does not know the bases for the OPRM trip function.

SRO only because of link to 10CFR55.43 (2): Tech Specs bases

2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics / reactor behavior / and instrument interpretation. (CFR: 43.5 / 45.12 / 45.13) IMPORTANCE 3.7 / 4.4

References

34GO-OPS-005-2, Power Changes, Attachment 1, Power-to-flow map
Tech Spec 3.3.1.1., RPS Instrumentation (including bases)

QUESTIONS REPORT
for SRO

Tier: 3
Keyword: OPRM
Cog Level: HIGHER
Test: SRO

Group: 1
Source: NEW
Exam: HT2007-301
Author/Reviewer: BLC/RFA

QUESTIONS REPORT

for SRO

96. G2.2.19 001/3/2/WORK/NEW/FUND/HT2007-301/SRO/BLC/RFA

In accordance with 50AC-MNT-001-0, Maintenance Program, which ONE of the following describes how "minor work" and "tool pouch work" are classified, including when a maintenance work order (MWO) is required?

A. ✓ Minor work and tool pouch work are BOTH classified as "minor maintenance."

Minor Work is documented with a CR or an MWO. Tool pouch work outside the power block does not require documentation.

B. Minor work and tool pouch work are BOTH classified as "minor maintenance."

Tool pouch work is documented such as a CR or an MWO. Minor work outside the power block does not require documentation.

C. Tool pouch work is ONLY classified as "elective maintenance."
Minor work is ONLY classified as "other maintenance."

Minor Work is documented with a CR or an MWO. Tool pouch work outside the power block does not require documentation.

D. Tool pouch work is ONLY classified as "elective maintenance."
Minor work is ONLY classified as "other maintenance."

Tool pouch work is documented with a CR or an MWO. Minor work outside the power block does not require documentation.

A. Correct.

B. Incorrect because minor work requires documentation; whereas tool pouch work sometimes doesn't require documentation. Plausible if applicant does not know the titles of minor maintenance sub-categories.

C. Incorrect because both tool pouch and minor work can be classified as either corrective, elective, or "other." Plausible if applicant does not know that minor maintenance can be involved with the three major categories of maintenance activities; i.e. corrective, elective, or other.

D. Incorrect because both tool pouch and minor work can be classified as either corrective, elective, or "other." Also incorrect because minor work requires documentation; whereas tool pouch work sometimes doesn't require documentation. Plausible if applicant does not know that minor maintenance can be involved with the three major categories of maintenance activities; i.e. corrective, elective, or other OR also plausible if applicant does not know the titles of the sub-categories of minor maintenance.

QUESTIONS REPORT for SRO

SRO-only because of job/task requirements for Work Control Center.

2.2.19 Knowledge of maintenance work order requirements. (CFR: 43.5 / 45.13) IMPORTANCE 2.1 / 3.1

References

50AC-MNT-001-0, Maintenance Program (Section 8.1.6.2)

NMP-GM-006, Work Management (Section 4.10)

Tier: 3

Group: 2

Keyword: WORK

Source: NEW

Cog Level: FUND

Exam: HT2007-301

Test: SRO

Author/Reviewer: BLC/RFA

QUESTIONS REPORT

for SRO

97. G2.2.34 001/3/2/CRDM/NEW/HIGHER/HT2007-301/SRO/BLC/RFA

Unit 2 was operating at 100% power with the following conditions:

The following 10 rods have been declared "slow": (see attached map)
22-31, 26-15, 26-39, 26-47, 30-15, 30-23, 34-39, 38-15, 38-23, 38-31, 42-27.

Which ONE of the following identifies the minimum required actions if HCU accumulator 26-27 develops a nitrogen leak which cannot be repaired?

[Reference provided]

- A. Be in Mode 3 within 12 hours, i.e., all rods inserted.
- B. Declare rod 26-27 "slow" within 8 hours. No further LCO actions are required.
- C. Declare rod 26-27 inoperable within 8 hours. Insert the rod within the following 3 hours and disarm (either electrically OR hydraulically) the rod within 4 hours.
- D. Declare rod 26-27 inoperable within 8 hours. Insert rod 26-27 within the following 3 hours and disarm (ONLY hydraulically - electrically not allowed) the rod within 4 hours.

- A. Incorrect because none of these rods are considered adjacent. Plausible if applicant determines TS 3.1.4 Action A applies.
- B. Incorrect because the TS LCO 3.1.4 requirements are no longer met when the nitrogen leak developed. Plausible if applicant determines that TS LCO 3.1.5 Action A is allowed.
- C. Correct.
- D. Incorrect because TS 3.1.3 bases allow either dis-arming method. Plausible if applicant does not know bases allowances for reactivity control methods.

SRO only because of link to 10CFR55.43 (2): Tech Specs

2.2.34 Knowledge of the process for determining the internal and external effects on core reactivity. (CFR: 43.6)
IMPORTANCE 2.8 / 3.2*

References

34SV-C11-003-1, Attachment 3, CRD Signoff map (marked up with the 10 rods)
Tech Spec 3.1.3, Control Rod Operability (including bases)
Tech Spec 3.1.4, Control Rod Scram Times (including bases)
Tech Spec 3.1.5, Control Rod Scram Accumulators (including bases)

**DISTRIBUTE ONLY THE TECH SPECS TO STUDENTS WITH CORE MAP
DO NOT DISTRIBUTE THE BASES TO ANY OF THE TECH SPECS.**

QUESTIONS REPORT
for SRO

Tier: 3
Keyword: CRDM
Cog Level: HIGHER
Test: SRO

Group: 2
Source: NEW
Exam: HT2007-301
Author/Reviewer: BLC/RFA

QUESTIONS REPORT
for SRO

98. G2.3.9 001/3/3/CONTAINMENT/NEW/HIGHER/HT2007-301/SRO/BLC/RFA

A unit shutdown was just completed to facilitate identification of drywell leakage.
Current plant conditions are:

Reactor pressure 450 psig
Mode Switch in SHUTDOWN

Given these conditions, which ONE of the following describes the containment purge procedure and when the minimum requirements have been met for Shift Supervisor authorization for the initial drywell entry?

A. Drywell and torus purging are NOT allowed to be performed concurrently.

O₂ concentration is > 10% as indicated on 2P33-R601A(B), and/or 2P33-R603 recorder(s) and confirmed > 19.5% by only ONE lab sample.

B. Drywell and torus purging are NOT allowed to be performed concurrently.

O₂ concentration is > 10% as indicated on 2P33-R601A(B), and/or 2P33-R603 recorder(s) and confirmed > 19.5% by at least TWO lab samples.

C. Drywell and torus purging can be performed concurrently.

O₂ concentration is > 10% as indicated on 2P33-R601A(B), and/or 2P33-R603 recorder(s) and confirmed > 19.5% by only ONE lab sample.

D. Drywell and torus purging can be performed concurrently.

O₂ concentration is > 10% as indicated on 2P33-R601A(B), and/or 2P33-R603 recorder(s) and confirmed > 19.5% by at least TWO lab samples.

A. Incorrect because two lab samples are required. Plausible if applicant does not know procedure requirement.

B. Correct.

C. Incorrect because concurrent purging has the potential to bypass the torus feature in Mode 3 if a LOCA occurs. Also incorrect because two lab samples are required. Plausible if applicant does not know the restriction on concurrent purging operations in Mode 3 or does not know the drywell entry authorization requirements.

D. Incorrect because concurrent purging has the potential to bypass the torus feature in Mode 3 if a LOCA occurs. Plausible if applicant does not know the restriction on concurrent purging operations in Mode 3.

QUESTIONS REPORT for SRO

SRO only because tied to 10CFR55.43(4): K/A G2.3.9

SRO only because tied to Shift Supervisor responsibilities.

2.3.9 Knowledge of the process for performing a containment purge. (CFR: 43.4 / 45.10) IMPORTANCE 2.5 / 3.4

References

31GO-OPS-005-0, Primary Containment Entry procedure

34SO-T48-002-2, CAC/CAD system operating procedure

Tier: 3

Group: 3

Keyword: CONTAINMENT

Source: NEW

Cog Level: HIGHER

Exam: HT2007-301

Test: SRO

Author/Reviewer: BLC/RFA

QUESTIONS REPORT

for SRO

99. G2.4.11 001/3/3/SHUTDOWN CLG/NEW/HIGHER/HT2007-301/SRO/BLC/RFA

Unit 2 was in Mode 4 with the following conditions:

"A" loop of RHR operating in shutdown cooling, Coolant temp 180 deg F
Both Recirc pumps under clearance out of service

Following a trip and reset of an RPS MG set, the control room operator is unable to re-open the outboard shutdown cooling isolation valve (2-E11-F009). All local efforts to manually open this valve have not been successful.

Given these conditions, which ONE of the following identifies the required actions, if any, in accordance with Tech Spec 3.4.8, RHR Shutdown Cooling System - Cold Shutdown and also defines the term "boil off time" in accordance with 34AB-E11-001-2, Loss of Shutdown Cooling?

A✓ "Boil-off time" is the time from when the loss of shutdown cooling occurred until the time water level reaches TAF.

Verify an alternate method of decay heat removal is available within 1 hour.
Ambient heat losses can be considered as, or contributing to, the alternate method.

B. "Boil-off time" is the time from when the loss of shutdown cooling occurred until the time 212 deg F is reached.

Verify an alternate method of decay heat removal is available within 1 hour.
Ambient heat losses can be considered as, or contributing to, the alternate method.

C. "Boil-off time" is the time differential between the time of complete loss of shutdown cooling and the time water level reaches TAF.

No tech spec action is required, LCO conditions are currently met.

D. "Boil-off time" is the time differential between the time of complete loss of shutdown cooling and the onset of boiling.

No tech spec action is required, LCO conditions are currently met.

QUESTIONS REPORT
for SRO

A. Correct.

B. Incorrect because this is the definition (according to the AOP) for "saturation time."
Plausible if applicant does not know the AOP terminology.

C. Incorrect because the LCO conditions are not met and required action A and B must be met. Plausible if applicant mis-interprets the allowance for both RHR subsystems and recirc pumps to be removed from operation for up to 2 hours per 8 hour period.

D. Incorrect because this is the definition (according to the AOP) for "saturation time."
Also incorrect because the LCO conditions are not met and required action A and B must be met. Plausible if applicant does not know the AOP terminology or mis-interprets the allowance for both RHR subsystems and recirc pumps to be removed from operation for up to 2 hours per 8 hour period.

SRO-only due to the link to 10CFR55.43 (2): Tech Specs

G2.4.11 Knowledge of abnormal condition procedures. (CFR: 41.10 / 43.5 / 45.13) IMPORTANCE 3.4 / 3.6

References

Tech Spec 3.4.8, RHR Shutdown Cooling System - Cold Shutdown (including bases)

34AB-E11-001-2, Loss of Shutdown Cooling AOP

Tier:	3	Group:	3
Keyword:	SHUTDOWN CLG	Source:	NEW
Cog Level:	HIGHER	Exam:	HT2007-301
Test:	SRO	Author/Reviewer:	BLC/RFA

QUESTIONS REPORT

for SRO

100. G2.4.26 001/3/4/FIRE BRIGADE/NEW/FUND/HT2007-301/SRO/BLC/RFA

Which ONE of the following describes the MINIMUM required number of fire brigade members, including their assignment limitations?

- A. 4 members + 1 leader (total of 5)
Personnel assigned to the fire brigade CAN also be used to fulfill the minimum shift crew composition requirements as defined by plant Tech Specs.
- B. 4 members + 1 leader (total of 5)
A minimum of three of these persons must have competent knowledge of safety-related systems and components.
- C. 5 members + 1 leader (total of 6)
Personnel assigned to the Fire Brigade can NOT be used to fulfill the minimum shift crew composition requirements as defined by Tech Specs.
- D. 5 members + 1 leader (total of 6)
A minimum of three of these persons must have competent knowledge of safety-related systems and components.

A. Incorrect because fire brigade members cannot be used to fulfill tech spec crew composition req'ts. Plausible since system operators can be fire brigade members; only 3 required by tech specs for system operators only..normal shift may have 6 or 7 system operators.

B. Correct.

C. Incorrect because only 5 total are required. Plausible if applicant thinks that the fire brigade leader is in addition to the fire brigade.

D. Incorrect because only 5 total are required. Plausible if applicant thinks that the fire brigade leader is in addition to the fire brigade.

SRO only because of tie to 10CFR55.43(1): Conditions and limitations in the facility license.

2.4.26 Knowledge of facility protection requirements including fire brigade and portable fire fighting equipment usage. (CFR: 43.5 / 45.12) IMPORTANCE 2.9 / 3.3

References

30AC-OPS-003-0, Plant Operations

40AC-ENG-008-0S, Fire Protection Program

10CFR50.48, Fire Protection

Tier: 3

Group: 4

Keyword: FIRE BRIGADE

Source: NEW

Cog Level: FUND

Exam: HT2007-301

Test: SRO

Author/Reviewer: BLC/RFA