Exam Bank No.: 738 **Last used on an NRC exam:** Never

RO Sequence Number: 1

Complete the following regarding this procedure step:

__ 14 CHECK If RCS Is Intact:

- **Containment radiation - NORMAL**
- **Containment pressure - NORMAL**
- **Containment wide range water level - NORMAL**

Per 0POP01-ZA-0018, Emergency Operating Procedures User's Guide, the bullets in this step signify that the crew should complete…

A. ALL steps in sequence.

B. ALL steps in ANY sequence.

C. ONLY APPLICABLE steps in sequence.

D. ONLY APPLICABLE steps in ANY sequence.

Answer: B ALL steps in ANY sequence.

STP LOT-23 NRC RO EXAM

Exam Bank No.: 738 **Source:** Bank **Modified from**

K/A Catalog Number: G2.4.19 Knowledge of EOP layout, symbols, and icons.

RO Importance: 3.4 **Tier:** 3 **Group/Category:** **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 504.05 **Objective Number:** Terminal

From memory, the student will be able to discuss the basis for each step, note, and caution for 0POP05-EO-EO00, Reactor Trip or Safety Injection, in accordance with station procedures, drawings, or basis documents.

Reference: 0POP01-ZA-0018, step 4.11

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible with confusion over numbering and bulleting
B: CORRECT: With bullets, all steps must be completed, but the order is not important.
C: INCORRECT: Plausible with confusion over numbering and bulleting
D: INCORRECT: Plausible with confusion over numbering and bulleting

Question Level: F **Question Difficulty** 3

Justification:

The student must apply an administrative requirement to a procedure step.

Exam Bank No.: 2849 **Last used on an NRC exam:** Never

RO Sequence Number: 2

_____(1)_____ is responsible for operating the Reservoir Makeup Pumping Facility (RMPF) and _____(2)____ is responsible for operating the Makeup Demineralizer Equipment.

A. (1) Unit 1
(2) is also

B. (1) Unit 1
(2) Unit 2

C. (1) Unit 2
(2) is also

D. (1) Unit 2
(2) Unit 1

Answer: D (1) Unit 2 (2) Unit 1

STP LOT-23 NRC RO EXAM

Exam Bank No.: 2849 **Source:** New **Modified from**

K/A Catalog Number: G2.2.3 Knowledge of the design, procedural, and operational differences between units.

RO Importance: 3.8 **Tier:** 3 **Group/Category:** **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 203.21 **Objective Number:** 32403

Given a list of plant procedural differences, evaluate and explain any resulting operational differences

Reference: LOT203.21 Student Handout, pages 3-4

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible with confusion over the various areas and responsibilities.
B: INCORRECT: Plausible with confusion over the various areas and responsibilities.
C: CORRECT: Plausible with confusion over the various areas and responsibilities.
D: CORRECT: These are the correct responsibilities.

Question Level: F **Question Difficulty** 2

Justification:

The student must know operational responsibilities.

Exam Bank No.: 484 **Last used on an NRC exam:** 2015

RO Sequence Number: 3

If both Feedwater Deaerator Storage Tank levels rise to 92%, then the…

A. running Condensate Pumps trip.

B. running Feedwater Booster Pumps trip.

C. Deaerator Vent Condenser Temperature Control Valve (TV-7413) closes.

D. Condensate Block Valves to Deaerator (MOV-574 and MOV-575) close.

Answer: D Condensate Block Valves to Deaerator (MOV-574 and 575) close.

Exam Bank No.: 484 **Source:** Bank **Modified from**

K/A Catalog Number: 056 K1.03 Knowledge of the physical connections and/or cause-effect relationships between the Condensate System and the following systems: MFW

RO Importance: 2.6 **Tier:** 2 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.13 **Objective Number:** 91845

Describe how level in the Deaerator Storage Tanks is controlled.

Reference: 0POP09-AN-07M3; LOT202.13 Powerpoint Presentation, page 28

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as stopping the condensate pumps would stop the DA level rise but does not occur.

B: INCORRECT: Plausible if the student has confusion about the flowpath between condensate and FW.

C: INCORRECT: Plausible if the student has confusion about the flowpath between condensate and FW.

D: CORRECT: DA inlet MOVs will get a direct signal to close on a DA storage tank high level.

Question Level: F **Question Difficulty** 2

Justification:

The student must recall the setpoints for DA Storage tank level control.

Exam Bank No.: 2838 **Last used on an NRC exam:** Never

RO Sequence Number: 4

Containment Isolation Phase A AND Phase B has occurred in the unit.

The operator may reset both these signals on ____(1)____. A successful reset of these signals may be validated by observing the _____(2)_____.

A. (1) CP-002 ONLY
(2) red “PHASE A ISOL” and “PHASE B ISOL” lights extinguished on CP-002

B. (1) CP-002 ONLY
(2) “PHASE A NOT RESET” and “PHASE B NOT RESET” annunciators extinguished on CP-005

C. (1) CP-002 OR CP-005
(2) red “PHASE A ISOL” and “PHASE B ISOL” lights extinguished on CP-002

D. (1) CP-002 OR CP-005
(2) “PHASE A NOT RESET” and “PHASE B NOT RESET” annunciators extinguished on CP-005

Answer: A (1) CP-002 ONLY (2) red "PHASE A ISOL" and "PHASE B ISOL" lights extinguished on CP-002

Exam Bank No.: 2838 **Source:** New **Modified from**

K/A Catalog Number: 103 A4.04 Ability to manually control and/or monitor in the control room: Phase A and phase B resets.

RO Importance: 3.5 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.21 **Objective Number:** 30565

State the locaton of the following containment isolation manual actuation controls and resets: Phase A, Phase B

Reference: LOT 201.21 Powerpoint Presentation, Slides 28 and 33

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: The reset switches are on CP-002. 3 red PHASE A lights will extinguish when the reset pushbuttons are pushed.

B: INCORRECT: Plausible as this is the correct panel for the switches and there are SI NOT RESET annunciators on CP-005 that will extinguish when SI is reset and if the student has confusion over these two reset functions.

C: INCORRECT: Plausible as Phase A may be actuated from either of these panels. These are the correct indications.

D: INCORRECT: Plausible as Phase A may be actuated from either of these panels and there are SI NOT RESET annunciators on CP-005 that will extinguish when SI is reset and if the student has confusion over these two reset functions.

Question Level: F **Question Difficulty** 3

Justification:

The student must recall control room locations of reset switches.

Exam Bank No.: 2836 **Last used on an NRC exam:** Never

RO Sequence Number: 5

What is the power supply for the ECW Pump 1A Discharge Valve, MOV-0121?

A. 125VDC E1B11

B. 125VDC E1A11

C. 480V MCC E1B3

D. 480V MCC E1A3

Answer: D 480V MCC E1A3

Exam Bank No.: 2836 **Source:** New **Modified from**

K/A Catalog Number: 076 K2.08 Knowledge of bus power supplies to the following: ESF-actuated MOVs

RO Importance: 3.1 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.13 **Objective Number:** 12

Describe the power supplies for the major components of the Essential Cooling Water System.

Reference: LOT 201.13 Powerpoint Presentation. Slide 91

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as cross-train power is used for CCW system valves that change position during ESF actuations.

B: INCORRECT: Plausible as other important MOVs are powered from DC (AFW system)

C: NCORRECT: Plausible as cross-train power is used for CCW system valves that change position during ESF actuations.

D: CORRECT: MCC E1A3 is at the ECW Intake Structure and provides power to this valve.

Question Level: F **Question Difficulty** 2

Justification:

The student must recall the power supply for the ECW Pump Discharge Valves.

Exam Bank No.: 2386 **Last used on an NRC exam:** 2015

RO Sequence Number: 6

As the primary RO, according to procedure 0POP01-ZQ-0022, Plant Operations Shift Routines, which of the following activities are to be performed PRIOR to assuming the shift?

A. Safety Function Checklist

B. Operator Burden Report

C. Surveillance Schedule review

D. Radiation Monitoring Status

Answer: C Surveillance Schedule

Exam Bank No.: 2386 **Source:** Bank **Modified from**

K/A Catalog Number: G2.1.3 Knowledge of shift or short-term relief turnover practices.

RO Importance: 3.7 **Tier:** 3 **Group/Category:** **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 507.01 **Objective Number:** 92186

Given the title of an administrative procedure, DISCUSS the requirements associated with the referenced procedure.

Reference: 0POP01-ZQ-0022, Plant Operations Shift Routines, Form 6

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as it is an activity that must be completed as early as practical in the shift.
B: INCORRECT: Plausible as it is an activity that must be completed as early as practical in the shift.
C: CORRECT: According to form 6, to be completed prior to assuming the shift.
D: INCORRECT: Plausible as it is an activity that must be completed as early as practical in the shift.

Question Level: F **Question Difficulty** 2

Justification:

Must have knowledge of the requirements for a proper shift turnover.

Exam Bank No.: 2846 **Last used on an NRC exam:** Never

RO Sequence Number: 7

Unit 1 is in a refueling outage. Core reload is in progress.

Which of the following would require Core Alterations to be suspended?

(Consider each case separately)

A. Communications are lost between the Control Room Operator and the One Stop Shop Outage Shift Manager.

B. While inserting a fuel assembly in the core, Source Range NI-31 rises from 10 cps to 25 cps.

C. The audible count rate stops working in the Control Room and the RCB.

D. The last two boron samples from the in-service RHR train were 3055 ppm at 0200 and 3052 ppm at 1400.

Answer: C The audible count rate stops working in the Control Room and the RCB.

Exam Bank No.: 2846 **Source:** New **Modified from**

K/A Catalog Number: G2.1.44 Knowledge of RO duties in the control room during fuel handling, such as responding to alarms from the fuel handling area, communication with the fuel storage facility, systems operated from the control room in support of refueling operations, and supporting instrumentation.

RO Importance: 3.9 **Tier:** 3 **Group/Category:** **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 201.43 **Objective Number:** 32271

Describe the procedural requirements of the fuel handling equipment operating procedures to nclude purpose, scope, precautions, and limitations.

Reference: 0POP08-FH-0009, Section 5.0, Technical Specification 3.9.2

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as other communications being lost will require stopping core alterations.

B: INCORRECT: Plausible as if both NIs rise by a factor of 2, core alterations must be stopped.

C: CORRECT: Audio indication is only from NI-31 and NI-32 and is required in both containment and the control room.

D: INCORRECT: Plausible as boron concentration has dropped, but not at the 25 ppm magnitude that requires stopping core alterations.

Question Level: F **Question Difficulty** 3

Justification:

The student must assess the informaton and determine if refueling must be halted.

Exam Bank No.: 2847 **Last used on an NRC exam:** Never

RO Sequence Number: 8

In order to protect valuable property during a large break LOCA, an operator needs to enter an area with high radiation levels:

- The area has a dose rate of 66 Rem/ hour.
- The operator will be in the area for 30 minutes.

Based on this information, the operator ____(1)___ be a volunteer. This radiation exposure must be approved by the ____(1)_____.

A. (1) does not have to
(2) Radiation Protection Manager

B. (1) does not have to
(2) Emergency Director

C. (1) must
(2) Radiation Protection Manager

D. (1) must
(2) Emergency Director

Answer: D (1) must (2) Emergency Director

Exam Bank No.: 2847 **Source:** New **Modified from**

K/A Catalog Number: G2.3.4 Knowledge of radiation exposure limits under normal or emergency conditions.

RO Importance: 3.2 **Tier:** 3 **Group/Category:** **10CFR Reference:** 55.41(b)(12)

STP Lesson: EPT 003.00 **Objective Number:** 4

Discuss radiation exposure controls associated with emergency conditions. Include emergency dose guidelines and access requirements.

Reference: 0ERP01-ZV-IN06, Radiological Exposure Guidelines, Addendum 1

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as the individual does not have to be a volunteer, and the Radiation Protection Manager does approvals during normal operations.

B: INCORRECT: Plausible as the individual does not have to be a volunteer. This is the correct approval authority.

C: INCORRECT: Plausible with confusion about the different levels covered in Addendum 1 and the RPM does approvals during normal operations.

D: CORRECT The operator would receive 33 rem. This requires ED approval and over 25 rem the operator must be a volunteer.

Question Level: H **Question Difficulty** 3

Justification:

The student must recall the requirements for emergency exposure, do a calculation, and apply the requirements to the situation.

Exam Bank No.: 2851 **Last used on an NRC exam:** Never

RO Sequence Number: 9

With the unit in MODE 2, the following RCS chemistry sample data becomes available:

- Specific activity is 543 uci/gm
- E-bar = .1874

Based on this information, an "Upper Control Value" is _____(1)_____ and Technical Specification LCO 3.4.8, RCS Specific Activity _____(2)_____.

(0PCP01-ZA-0038, Table 3.4 is provided)

A. (1) NOT exceeded
(2) must be entered

B. (1) NOT exceeded
(2) does NOT apply in this mode

C. (1) exceeded
(2) must be entered

D. (1) exceeded
(2) does NOT apply in this mode

Answer: C (1) exceeded (2) must be entered

Exam Bank No.: 2851 **Source:** New **Modified from**

K/A Catalog Number: G2.1.34 Knowledge of primary and secondary plant chemistry limits.

RO Importance: 2.7 **Tier:** 3 **Group/Category:** **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 104.03 **Objective Number:** 31825

From memory, the trainee will be able to explain the Technical Specifications for the Reactor Coolant System activity and chemistry limits in accordance with lesson instructions.

Reference: 0PCP01-ZA-0038, Addendum 3, Table 3.4; Technical Specification 3.4.8

Attached Reference ☑ **Attachment:** 0PCP01-ZA-0038, Addendum 3, Table 3.4

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible with a math error or confusion over the table and TS applicability.

B: INCORRECT: Plausible with a math error or confusion over the table and TS applicability.

C: CORRECT: With the given E-bar value, the limit on specific activity is 533 uci/gm. This is an upper limit of the procedure and also a TS LCO that applies in MODES 1-5.

D: INCORRECT: Plausible as the upper limit is exceeded and with confusion over the TS and when it applies.

Question Level: H **Question Difficulty** 4

Justification:

The student must assess the chemistry data and decide whether limits are exceeded and TS are met.

Exam Bank No.: 2850 **Last used on an NRC exam:** Never

RO Sequence Number: 10

Heat detectors near Steam Generator 1D have stopped working. Per 0PGP03-ZF-0018, Fire Protection System Functionality Requirements…

The equipment near the non-functional detectors will _____(1)_____.

The crew should _____(2)_____.

A. (1) remain operable
(2) establish an hourly fire watch

B. (1) remain operable
(2) monitor RCB air temperature hourly

C. (1) be declared inoperable
(2) establish an hourly fire watch

D. (1) be declared inoperable
(2) monitor RCB air temperature hourly

Answer: B (1) remain operable (2) monitor RCB air temperature hourly

Exam Bank No.: 2850 **Source:** New **Modified from**

K/A Catalog Number: G2.4.25 Knowledge of fire protection procedures.

RO Importance: 3.3 **Tier:** 3 **Group/Category:** **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 507.01 **Objective Number:** 92186

Given the title of an administrative procedure, discuss the requirments associated with the referenced procedure.

Reference: 0PGP03-ZF-0018, Step 4.8.1.3

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as the equipment will remain operable and usually some type of fire watch is assigned, but not an hourly watch inside the RCB. Also, temperature monitoring is the best option.

B: CORRECT: Inside the RCB, an 8 hour fire watch can be assigned, but air temperatures can be monitored hourly as the best option. Equipment in the area will remain operable.

C: INCORRECT: Plausible if the student believes that equipment operability is affected by the loss of fire detection equipment and some type of fire watch is usually assigned but not inside the RCB.

D: INCORRECT: Plausible if the student believes that equipment operability is affected by the loss of fire detection equipment. This is the correct action.

Question Level: F **Question Difficulty** 3

Justification:

The student must recall requirements of the fire protection procedure.

Exam Bank No.: 2387 **Last used on an NRC exam:** 2015

RO Sequence Number: 11

Which of the following is correct regarding breaker racking tags per 0PGP03-ZO-ECO1A, Equipment Clearance Order Instructions?

A. A breaker racking tag may not be placed over a danger, test or caution tag.

B. The name of the person in the field controlling the evolution shall be written on the breaker racking tag.

C. While a breaker racking tag is attached to a control room handswitch, the operation of that switch is permitted.

D. An operator may go to the breaker, inspect the area and remove the breaker racking tag. The operator will then report the status to the Shift Manager/Unit Supervisor.

Answer: B The name of the person in the field controlling the evolution shall be written on the tag

Exam Bank No.: 2387 **Source:** Bank **Modified from**

K/A Catalog Number: G2.2.13 Knowledge of tagging and clearance procedures.

RO Importance: 4.1 **Tier:** 3 **Group/Category:** **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 507.01 **Objective Number:** 92186

Given the title of an administrative procedure, DISCUSS the requirements associated with the referenced procedure.

Reference: Procedure 0PGP03-ZO-ECO1A, Equipment Clearance Order Instructions

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as more than one tag can be placed on a switch but not this tag.
B: CORRECT: The name of the person in the field controlling the evolution shall be written on the tag.
C: INCORRECT: Plausible as test tags allow manipulation of switches.
D: INCORRECT:Plausible with confusion over the requirements for this activity.

Question Level: F **Question Difficulty** 3

Justification:

Must have knowledge of the requirements of the ECO procedures.

Exam Bank No.: 2848 **Last used on an NRC exam:** Never

RO Sequence Number: 12

The unit is at 100%.

- A material deficiency is causing an annunciator to repeatedly alarm. The RO requests to remove the ICS Alarm from ALARM CHECKING.

Per 0PGP03-ZO-0039, Operations Configuration Management, to accomplish this task the crew should enter the associated ICS point in the _____(1)_____ and direct _____(2)_____ to review the status change within 36 hours.

A. (1) OAS Log
(2) I&C Maintenance

B. (1) Points Off Scan Log
(2) I&C Maintenance

C. (1) OAS Log
(2) Engineering

D. (1) Points Off Scan Log
(2) Engineering

Answer: D (1) Points Off Scan Log (2) Engineering

Exam Bank No.: 2848 **Source:** New **Modified from**

K/A Catalog Number: G2.2.43 Knowledge of the process used to track inoperable alarms.

RO Importance: 3.0 **Tier:** 3 **Group/Category:** **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 507.01 **Objective Number:** 92183

Given the title of an administrative procedure, IDENTIFY the individuals (by job title) with specific responsibilities in the procedure.

Reference: 0PGP03-ZO-0039, Configuration Mangement, Section 4.5

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible if the student confuses logs and believe an alarm would be worth tracking for operability. I&C does perform maintenance on faulty alarms.

B: INCORRECT: Plausible as this is the correct log. I&C does perform maintenance on faulty alarms.

C: INCORRECT: Plausible if the student confuses logs and believe an alarm would be worth tracking for operability. This is the correct group.

D: CORRECT: The Points Off Scan Log is used and Engineering must review within 36 hours.

Question Level: F **Question Difficulty** 2

Justification:

The student must have knowledge of the process to remove an annunciator from service.

Exam Bank No.: 2869 **Last used on an NRC exam:** Never

RO Sequence Number: 13

Unit 1 is at 100%. SUFP 14 is out of service.

- All SGFPTs trip.
- The crew performs 0POP05-EO-EO00, Reactor Trip or Safety Injection, then transitions to 0POP05-EO-ES01, Reactor Trip Response.

While performing 0POP05-EO-ES01, within 15 MINUTES, the crew is required to have AT LEAST ___(1)___ AFW pumps in service in order to _____(2)_____.

A. (1) 3
(2) prevent pressurizer overfill

B. (1) 3
(2) avoid a transition to 0POP05-EO-FRC2, Degraded Core Cooling

C. (1) 2
(2) prevent pressurizer overfill

D. (1) 2
(2) avoid a transition to 0POP05-EO-FRC2, Degraded Core Cooling

Answer: A (1) 3 (2) prevent pressurizer overfill

Exam Bank No.: 2869 **Source:** New **Modified from**

K/A Catalog Number: APE 054 AK3.04 Knowledge of the reasons for the following responses as they apply to the Loss of Main Feedwater (MFW): Actions contained in the EOPs for loss of MFW.

RO Importance: 4.4 **Tier:** **Group/Category:** **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 504.05 **Objective Number:** 81674

Given a step, note, or caution form 0POP05-EO-ES01, state/identify the basis for the step, note, or caution and the basis for the action to include the action itself, its purpose and result.

Reference: 0POP05-EO-ES01, Step 3

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: Per ES01, if the initiating event was a loss of all normal feedater, a 3rd AFW is required to be placed in service within 15 minutes of the reactor trip to prevent pressurizer overfill.

B: INCORRECT: Plausible as this is the correct number of AFW pumps, and if the student believes a lesser number is inadequate to maintain proper core cooling.

C: INCORRECT: Plausible as the minimum AFW flow requirement in EO00 can be met more easily with 2 pumps than with 1. This is the correct reason.

D: INCORRECT: Plausible as the minimum AFW flow requirement in EO00 can be met more easily with 2 pumps than with 1 and if the student believes a lesser number is inadequate to maintain proper core cooling.

Question Level: F **Question Difficulty** 3

Justification:

The student must recall requirements and reasons for those requirements in abnormal operating procedures.

Exam Bank No.: 2751 **Last used on an NRC exam:** 2018

RO Sequence Number: 14

The crew is performing 0POP05-EO-FRH2, Response to Steam Generator Overpressure, for Steam Generator 1D.

- SG PORV 1D will NOT operate from CP-007.

To operate SG PORV 1D from the IVC, the crew should first _____(1)_____ the SG 1D PORV Servo Amp and then _____(2)____ to open or close the valve.

A. (1) energize
(2) place the local controller in MANUAL

B. (1) deenergize
(2) place the local controller in MANUAL

C. (1) energize
(2) operate the manual override knobs

D. (1) deenergize
(2) operate the manual override knobs

Answer: D (1) depress the SG PORV down arrow pushbutton for greater than 20 seconds (2) operate the manual override knobs.

Exam Bank No.: 2751 **Source:** Bank **Modified from** 2751

K/A Catalog Number: E13 EA1.1 Ability to operate and/or monitor the following as they apply to the Steam Generator Overpressure: Components and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

RO Importance: 3.1 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 504.34 **Objective Number:** 83142

Given a step, note, or caution from 0POP05-EO-FRH2, state its basis.

Reference: 0POP05-EO-FRH2, Response to Steam Generator Overpressure, Step 4.0 and Addendum 1

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible with a misunderstanding of the function of the Servo Amp and there is a local controller in the ASP.

B: INCORRECT: Plausible as this is the correct first action and there is a local controller in the ASP.

C: INCORRECT: Plausible with a misunderstanding of the function of the Servo Amp. This is the correct local action.

D: CORRECT: These are the steps in FRH2 in order to operate a PORV that cannot be operated from the control room.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess the conditions then determine a correct course of action in FRH2.

Exam Bank No.: 2805 **Last used on an NRC exam:** Never

RO Sequence Number: 15

With the unit at 100% power, a Pressurizer PORV sticks open and can NOT be isolated.

- The operators have completed the immediate actions of 0POP05-EO-EO00, Reactor Trip or Safety Injection, and are performing the remainder of the procedure.

At this time, pressurizer level should be ____(1)____

The instrumentation required by Technical Specification 3.3.3.6, Accident Monitoring Instrumentation, to monitor the change in pressurizer level is ____(2)___

A. (1) lowering
(2) Pressurizer Level transmitters LT-465, 466, 467, and 468

B. (1) lowering
(2) cold-calibrated Pressurizer Level transmitter LT-675

C. (1) rising
(2) Pressurizer Level transmitters LT-465, 466, 467, and 468

D. (1) rising
(2) cold-calibrated Pressurizer Level transmitter LT-675

Answer: C (1) rising (2) Pressurizer Level transmitters LT-465, 466. 467, and 468

Exam Bank No.: 2805 **Source:** New **Modified from**

K/A Catalog Number: APE 008 G2.4.3 Ability to identify post-accident instrumentation: Pressurizer Vapor Space Accident

RO Importance: 3.7 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 503.01 **Objective Number:** 92102

Describe the general requirements of the Technical Specifications or the Technical Requirements Manual (TRM) to include components or administrative requirements affected, limitations, major time frames involved, major surveillances in order to comply, and the bases for the specification requirement.

Reference: Technical Specification 3.3.3.6, Table 3.3-10, LOT 501.21 Powerpoint Presentation, Slide 111

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as level does lower initially for a few seconds but then rapidly rises. These are the correct transmitters.

B: INCORRECT: Plausible as level does lower initially for a few seconds but then rapidly rises and if the student thinks the cold cal instrument would be appropriate since the plant is cooled down during the accident response.

C: CORRECT: During a pressurizer vapor space accident, level initially lowers for a few seconds, but during the performance of 0POP05-EO-EO00, the overall trend will be rising pressurizer level until filled solid. TS 3.3.3.6, Accident Monitoring Instrumentation, requires the 4 Pressuizer Level instruments, LT-465, 466, 467, 468.

D: INCORRECT: Plausible as this is the correct level response, and if the student thinks the cold cal instrument would be appropriate since the plant is cooled down during the accident response.

Question Level: H **Question Difficulty** 3

Justification:

This question requires the student to assess plant conditions for a pressurizer vapor space accident and determine a pressurizer level trend while performing emergency procedures. It also requires the student to recall the Technical Specification required accident monitoring instrumentation to monitor pressurizer level during the event.

Exam Bank No.: 2806 **Last used on an NRC exam:** Never

RO Sequence Number: 16

A small break LOCA has occurred in the unit. The crew has just completed all actions in 0POP05-EO-EO00, Reactor Trip or Safety Injection.

- Due to multiple equipment failures, the following conditions exist:
  - Core exit thermocouple temperatures are reading 1005°F.
  - Reactor vessel water plenum level is 15%.

Currently, there is a(an) _____(1)_____ path on Core Cooling.

The crew should perform _____(2)_____.

A. (1) RED
(2) 0POP05-EO-FRC1, Response to Inadequate Core Cooling

B. (1) RED
(2) 0POP05-EO-FRC2, Response to Degraded Core Cooling

C. (1) ORANGE
(2) 0POP05-EO-FRC1, Response to Inadequate Core Cooling

D. (1) ORANGE
(2) 0POP05-EO-FRC2, Response to Degraded Core Cooling

Answer: D (1) ORANGE (2) 0POP05-EO-FRC2, Response to Degraded Core Cooling

Exam Bank No.: 2806 **Source:** New **Modified from**

K/A Catalog Number: APE 009 G2.4.21 Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, rector coolant system integrity, containment conditions, radioactivity release control, etc.: Small Break LOCA

RO Importance: 4.0 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(5)

STP Lesson: LOT 504.31 **Objective Number:** 92194

STATE/IDENTIFY the condition(s) under which 0POP05-EO-FRC2 is entered.

Reference: 0POP05-EO-FO02 Core Cooling Critical Safety Function Status Tree

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible if the student incorrectly implements the status tree and determines a RED condition exists and enters the RED path procedure.

B: INCORRECT: Plausible if the student incorrectly implements the status tree and determines a RED condition exists. This is the correct procedure for an ORANGE path. It is plausible that the procedures could be confused as for the "S" and the "Z" CSFs, on an ORANGE path, FRS1 and FRZ1 are used.

C: INCORRECT: Plausible as this is an ORANGE path, and if the student confuses two procedures with very similar names. It is plausible that the procedures could be confused as for the "S" and the "Z" CSFs, on an ORANGE path, FRS1 and FRZ1 are used.

D: CORRECT: With these conditions, an ORANGE path exists on Core Cooling, since CETs are in excess of 708F but under 1200F. This would require entry into 0POP05-EO-FRC2, Response to Degraded Core Cooling

Question Level: H **Question Difficulty** 3

Justification:

This question requires the student to assess plant conditions and then navigate the status tree by correctly answering various decision blocks. The student must know that above 708F, there is no subcooling.

Exam Bank No.: 2807 **Last used on an NRC exam:** Never

RO Sequence Number: 17

The unit was at 100% power when a **loss of all offsite power** occurred.

- 0POP05-EO-ES01, Reactor Trip Response, is in progress.

In this procedure, the crew should control SG levels between _____(1)_____ NR.

SG levels are controlled in this band in order to _____(2)_____ of the RCS.

A. (1) 25-50%
(2) minimize the possibility of a steam generator tube rupture

B. (1) 25-50%
(2) enhance natural circulation

C. (1) 23-33%
(2) minimize the possibility of a steam generator tube rupture

D. (1) 23-33%
(2) enhance natural circulation

Answer: B (1) 25-50% (2) enhance natural circulation

Exam Bank No.: 2807 **Source:** New **Modified from**

K/A Catalog Number: APE015/17 AK3.0 Knowledge of the reasons for the following responses as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): Ensuring that S/G levels are controlled properly for natural circulation enhancement.

RO Importance: 4.1 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 504.06 **Objective Number:** 33185

Given a step, note, or caution from 0POP05-EO-ES01, state/identify the basis for the step, note, or caution and the basis for the action to include the action itself, its purpose, and result.

Reference: 0POP05-EO-ES01, Step 8; LOT 504.06 Powerpoint Presentation, Slide 35

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as this is the correct level band, and it is important to keep the SG tubes covered in certain EOPs but not the reason here.

B: CORRECT: During the performance of ES01, levels are maintained by Step 8 at 25-50% in order to enhance natural circulation

C: INCORRECT: Plausible as this is the pressurizer level band established just before the SG level band nd it is important to keep the SG tubes covered in certain EOPs but not the reason here.

D: INCORRECT: Plausible as this is the pressurizer level band established just before the SG level band and this is the correct reason.

Question Level: F **Question Difficulty** 3

Justification:

This question requires knowledge of procedure 0POP05-EO-ES01 and the requirements for maintaining conditions conducive to natural circulation.

Exam Bank No.: 2810 **Last used on an NRC exam:** Never

RO Sequence Number: 18

A Steam Generator Tube Rupture has occurred. The crew has cooled down, depressurized the RCS, and terminated Safety Injection.

- RCS pressure is 985 psig.
- PZR pressure is 935 psig.
- RCS Hot Leg temperatures are indicating 472°F.
- Max Quad TC Avg temperature is indicating 488ºF.

The current value of RCS Subcooling is…

A. 50ºF

B. 57ºF

C. 66ºF

D. 73ºF

Answer: B 57F

Exam Bank No.: 2810 **Source:** New **Modified from**

K/A Catalog Number: EPE 038 EK1.01 Knowledge of the operational implications of the following concepts as they apply to the SGTR: Use of steam tables.

RO Importance: 3.1 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 504.15 **Objective Number:** 92408

Given a copy of a step from 0POP05-EO-EO30, state/identify how the action is performed and the basis for the action to include the action itself, its purpose and the result.

Reference: Steam Tables

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible if student uses pressurizer pressure and Max Quad TC Avg.
B: CORRECT: Using Max Quad TC Avg and RCS pressure, there is 57F of subcooling.
C: INCORRECT: Plausible if student uses pressurizer pressure and RCS hot leg temperature
D: INCORRECT: Plausible if student uses RCS pressure and RCS hot leg temperature.

Question Level: H **Question Difficulty** 3

Justification:

The student must be able to use steam tables to determine the amount of subcooling that is established.

Exam Bank No.: 2820 **Last used on an NRC exam:** Never

RO Sequence Number: 19

The reason for the maximum containment water level specified as an entry condition to 0POP05-EO-FRZ2, Response to Containment Flooding, is water above this elevation could _____(1)_____.

Per 0POP05-EO-FRZ2, a potential source of unexpected water into containment could be ruptured _____(2)_____ piping.

A. (1) impact critical systems and components necessary for accident response
(2) CCW

B. (1) contribute to a containment overpressure event
(2) CCW

C. (1) impact critical systems and components necessary for accident response
(2) AFW

D. (1) contribute to a containment overpressure event
(2) AFW

Answer: A (1) impact critical systems and components necessary for accident response (2) CCW

Exam Bank No.: 2820 **Source:** New **Modified from**

K/A Catalog Number: W/E15 EK3.2 Knowledge of the reasons for the following responses as they apply to Containment Flooding: Normal, abnormal, and emergency operating procedures associated with Containment Flooding.

RO Importance: 2.8 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 504.41 **Objective Number:** 30356

State/identify the possible sources for containment flooding.

Reference: LOT 504.41 Powerpoint Presentation, slide 8

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: Above 69", critical equipment could be impacted as this is above the maximum expected level. CCW is one of the systems that is mentioned in FRZ2 as having the potential to contribute unexpectedly to water level inside containment.

B: INCORRECT: Plausible if the student believes that since more of the containment volume than expected is taken up by water, the containment pressure response could be impacted. This is the correct system.

C: INCORRECT: Plausible as this is the correct reason and AFW lines do run into containment but not referenced by the procedure.

D: INCORRECT: Plausible if the student believes that since more of the containment volume than expected is taken up by water, the containment pressure response could be impacted. AFW lines do run into containment but they are not referenced by the procedure.

Question Level: F **Question Difficulty** 2

Justification:

The student must recall steps and basis for FRZ2.

Exam Bank No.: 2841 **Last used on an NRC exam:** Never

RO Sequence Number: 20

The unit is at 100%. Spent Fuel Pool Cooling Pump (SFPCP) 1B is in service.

- A Large Break LOCA occurs.
- At the same time, 4.16KV Bus E1C LOCKS OUT.

Spent Fuel Pool Cooling will be restored by _____(1)_____.

The RO should use _____(2)_____ to accomplish this task.

A. (1) aligning CCW to the SFP Heat Exchangers ONLY
(2) 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant

B. (1) aligning CCW to the SFP Heat Exchangers ONLY
(2) 0POP05-EO-EO00, Reactor Trip or Safety Injection

C. (1) starting a SFPCP and aligning CCW to the SFP Heat Exchangers
(2) 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant

D. (1) starting a SFPCP and aligning CCW to the SFP Heat Exchangers
(2) 0POP05-EO-EO00, Reactor Trip or Safety Injection

Answer: C (1) starting a SFPCCP and aligning CCW to the SFP Heat Exchangers (2) 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.

Exam Bank No.: 2841 **Source:** New **Modified from**

K/A Catalog Number: 033 A2.02 Ability to (a) predict the impacts of the following malfunctions or operations on the Spent Fuel Pool Coolling System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of SPFCS

RO Importance: 2.7 **Tier:** 2 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 201.42 **Objective Number:** 92073

Describe the effects on the Spent Fuel Pool Cooling and Cleanup System of a safety injection and/or loss of offsite power to an ESF bus (one, two, all)

Reference: 0POP04-FC-0001, Addendum 3

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as this is an action that must be taken and if the student believes a pump is running. This is the correct procedure.

B: INCORRECT: Plausible as this is an action that must be taken and if the student believes a pump is running and EO00 does align some systems but not this one.

C: CORRECT: With a Safety Injection signal, CCW to the SFP HXs will isolate. With a loss of E1C, power is lost to SFPCCP 1B. To restore SFP cooling, CCW must be aligned and a pump started. This is accomplished in EO10 since this is the highest level procedure in progress.

D: INCORRECT: Plausible as these actions are needed and if the student believes EO00 is the correct procedure.

Question Level: H **Question Difficulty** 4

Justification:

The student must assess the given conditions and determine the impact on the SFPCCS and the procedure to use to correct the situation.

Exam Bank No.: 2829 **Last used on an NRC exam:** Never

RO Sequence Number: 21

Following a Large Break LOCA, the crew needs to secure Containment Spray.

The Containment Spray RESET/BLOCK pushbuttons can be operated from _____(1)_____.

Operating the Containment Spray RESET/BLOCK pushbuttons allows the operator to _____(2)_____.

A. (1) CP-002 ONLY
(2) close the discharge valves ONLY

B. (1) CP-002 ONLY
(2) close the discharge valves AND stop the pumps

C. (1) CP-002 or CP-005
(2) close the discharge valves ONLY

D. (1) CP-002 or CP-005
(2) close the discharge valves AND stop the pumps

Answer: A (1) CP-002 ONLY (2) close the discharge valve ONLY

Exam Bank No.: 2829 **Source:** New **Modified from**

K/A Catalog Number: 026 A4.05 Ability to manually operate and/or monitor in the control room: Containment Spray reset switches.

RO Importance: 3.5 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.11 **Objective Number:** 81164

Describe the instrumentation and controls available to operate and monitor the Containment Spray System.

Reference: LOT 201.11 Powerpoint Presentation, Slide 36

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: The CS signal can only be reset from CP-002. With a reset, the discharge valve can be closed, but the pump cannot be stopped since the sequencer has not yet been reset.

B: INCORRECT: Plausible as this is the correct location, but the pump cannot be stopped.

C: INCORRECT: Plausible as CS actuation switches are on both panels. This is the correct action that can be taken.

D: INCORRECT: Plausible as CS actuation switches are on both panels but the pump cannot be stopped.

Question Level: F **Question Difficulty** 3

Justification:

The student must know where to operate Containment Spray controls.

Exam Bank No.: 2827 **Last used on an NRC exam:** Never

RO Sequence Number: 22

Unit 1 is in MODE 4.

- RHR Train 1A is in service.
- RHR Train 1B is available
- RHR Train 1C is NOT available.

A loss of power to 125VDC E1A11 occurs. The crew enters 0POP04-DJ-0001, Loss of Class 1E 125VDC Power.

As a result of this occurrence, the RCS _____(1)_____. In response, the crew should_____(2)_____.

A. (1) cools down
(2) secure RHR Train 1A and place RHR Train 1B in service.

B. (1) cools down
(2) control cooldown rate with RHR Train 1A by cycling RHR Train 1A Miniflow Valve MOV-0067A

C. (1) heats up
(2) secure RHR Train 1A and place RHR Train 1B in service.

D. (1) heats up
(2) control cooldown rate with RHR Train 1A by cycling RHR Train 1A Miniflow Valve MOV-0067A

Answer: A (1) cool down (2) secure RHR Train 1A and place RHR Train 1B in service.

Exam Bank No.: 2827 **Source:** New **Modified from**

K/A Catalog Number: 013 A2.05 Engineered Safety Features Actuation System: Ability to a) predict the impacts of the following malfunctions or operations on the ESFAS; and b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of DC Control Power.

RO Importance: 3.7 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 505.01 **Objective Number:** 92109

Given a plant condition, describe and/or interpret the requirements and/or limits of a precaution or step of a referenced procedure.

Reference: 0POP04-DJ-0001

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: With a loss of 125VDC E1A11, RHR Train 1A will fail to full cooling, bypass valve closed. Addendum 1 directs the operator to place the available train, RHR Train 1B in service. If this is not possible, flow is cycled using the miniflow recirc valve.

B: INCORRECT: Plausible as the plant will cooldown and this is another available action if another train is not available.

C: INCORRECT: Plausible with confusion over the operation of RHR in this condition. This is the correct action.

D: INCORRECT: lausible with confusion over the operation of RHR in this condition and this is another available action if another train is not available.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess plant conditions with a loss of E1A11, determine the impact on the RHR system, and take corrective actions per 0POP04-DJ-0001.

Exam Bank No.: 2821 **Last used on an NRC exam:** Never

RO Sequence Number: 23

The crew is conducting Solid Plant Operations per 0POP03-ZG-0007, Plant Cooldown, Addendum 9, Plant Cooldown with the PZR Water Solid.

- 5M02-B-6, RCS COLD OVERPRESS ALERT- TRAIN A, alarms.

Per the alarm response procedure, this alarm alerts the crew that _____(1)_____.

A potential cause of this alarm is Letdown Pressure Control Valve, PCV-135 failing ___(2)___.

A. (1) the RO must arm COMS
(2) OPEN

B. (1) the RO must arm COMS
(2) CLOSED

C. (1) the RO must monitor the proper operation of COMS
(2) OPEN

D. (1) the RO must monitor the proper operation of COMS
(2) CLOSED

Answer: D (1) the RO must monitor the proper operation of COMS (2) CLOSED

Exam Bank No.: 2821 **Source:** New **Modified from**

K/A Catalog Number: EPE E08 EK1.3 Knowledge of the operational implications of the following concepts as they apply to Pressurized Thermal Shock: Annunciators and conditions indicating signals, and remedial actions associated with Pressurized Thermal Shock.

RO Importance: 3.5 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 506.01 **Objective Number:** 92159

Discuss requirements from any addendum from the referenced procedure.

Reference: 0POP03-ZG-0007, Addendum 9; 0POP09-AN-05M2

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible if the student does not understand that COMS is already armed for solid plant operations and if the student misunderstands the function of PCV-135.

B: INCORRECT: Plausible if the student does not understand that COMS is already armed for solid plant operations. This is the correct position of PCV-135.

C: INCORRECT: Plausible as RCS pressure is approaching the PORV setpoint and if the student misunderstands the function of PCV-135.

D: CORRECT: This alarm means that RCS pressure is within 20 psig of the PORV setpoint. PCV-135 failing closed will stop flow out of the RCS and with constant charging flow, pressure will rise quickly.

Question Level: H **Question Difficulty** 3

Justification:

The crew must assess plant conditions and determine what is occuring.

Exam Bank No.: 2819 **Last used on an NRC exam:** Never

RO Sequence Number: 24

Following a Large Break LOCA, CET temperatures have exceeded 1200°F.

- The crew entered 0POP05-EO-FRC1, Response to Inadequate Core Cooling.
- SI and Charging Flow have NOT been established.
- 600 gpm of AFW flow has been established.

The crew should FIRST depressurize all intact SGs to _____(1)_____ using _____(2)_____.

A. (1) atmospheric pressure
(2) SG PORVs

B. (1) atmospheric pressure
(2) Steam Dumps

C. (1) 305 psig
(2) SG PORVs

D. (1) 305 psig
(2) Steam Dumps

Answer: C (1)305 psig (2) SG PORVs

Exam Bank No.: 2819 **Source:** New **Modified from**

K/A Catalog Number: APE 074 EA2.03 Ability to determine or interpret the following as they apply to Inadequate Core Cooling: Availability of turbine bypass valves for cooldown.

RO Importance: 3.8 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 504.30 **Objective Number:** 31942

From memory, the student will be able to discuss the basis for each step, note, and caution from 0POP05-EO-FRC1, Response to Inadequate Core Cooling, in accordance with station procedures, drawings, and basis documents.

Reference: 0POP05-EO-FRC1

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as this pressure is obtained later in the procedure. SG PORVs will be used due to a MSLI.

B: INCORRECT: Plausible as this pressure is obtained later in the procedure. SG PORVs will be used due to a MSLI.

C: CORRECT: With these conditions, the US would conduct the first depressurization to 305 psig. With a Large Break LOCA, Main Steam has isolated making use of the SG PORVs necessary.

D: INCORRECT: Plausible as this is the correct pressure but SG PORVs will be used.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess the conditions in the procedure and understand how to respond.

Exam Bank No.: 2809 **Last used on an NRC exam:** Never

RO Sequence Number: 25

With the unit at 100% power, a required automatic reactor trip did NOT occur.

- The RO could NOT manually trip the reactor from CP-005.

At this point, the RO could trip the reactor by…

operating the other Reactor Trip switch from ____(1)____, or

removing power to the Rod Drive MG Sets by deenergizing MCCs _____(2)_____.

A. (1) CP-001
(2) 1K1 and 1L1

B. (1) CP-001
(2) 1L2 and 1J1

C. (1) CP-007
(2) 1K1 and 1L1

D. (1) CP-007
(2) 1L2 and 1J1

Answer: C (1) CP-007 (2) 1K1 and 1L1

Exam Bank No.: 2809 **Source:** New **Modified from**

K/A Catalog Number: EPE 029 EA1.12 Ability to operate and monitor the following as they apply to an ATWS: MG set power supply and reactor trip breakers.

RO Importance: 4.1 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(6)

STP Lesson: LOT 201.18 **Objective Number:** 30444

List the power supplies for the major components of the Rod Control System.

Reference: LOT 201.18 Powerpoint Presentation, Slide 26

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as CP-001 has an SI switch which will cause a reactor trip and these are the correct power supplies.

B: INCORRECT: Plausible as CP-001 has an SI switch which will cause a reactor trip and these two MCCs would also be deenergized by opening the red handswitches on CP-010.

C: CORRECT: CP-005 and CP-007 both have reactor trip switches. MCC 1K1 and 1L1, which may be deenergized by operating the red handswitches on CP-010, are the power supplies to the Rod Drive MG sets.

D: INCORRECT: Plausible as this is the correct location and these two MCCs would also be deenergized by opening the red handswitches on CP-010.

Question Level: F **Question Difficulty** 3

Justification:

The student must know location and power supplies to the reactor trip breakers and Rod Drive MG Sets.

Exam Bank No.: 2815 **Last used on an NRC exam:** Never

RO Sequence Number: 26

The unit was at 100% when a Large Break LOCA occurred.

- The crew was performing 0POP05-EO-EO10, when 1M02-D-1, RWST LO-LO/EMPTY, alarmed.
- The US entered 0POP05-EO-ES13, Transfer to Cold Leg Recirculation.

While performing steps in 0POP05-EO-ES13, complications occurred, and the crew has not yet been able to establish cold leg recirculation.

- With RWST level still lowering, 1M02-D-1, RWST LO-LO/EMPTY, reflashes.

When the crew enters 0POP05-EO-EC11, Loss of Emergency Coolant Recirculation, they should verify that level is less than ____(1)___ gallons and then _____(2)_____.

A. (1) 32,500
(2) stop all Containment Spray pumps

B. (1) 32,500
(2) stop all pumps taking suction from the RWST

C. (1) 75,000
(2) stop all Containment Spray pumps

D. (1) 75,000
(2) stop all pumps taking suction from the RWST

Answer: B (1) 32,500 (2) stop all pumps taking suction from the RWST

Exam Bank No.: 2815 **Source:** New **Modified from**

K/A Catalog Number: EPE W/E11 EK1.3 Knowledge of the operational implications of the following concepts as they apply to the Loss of Emergency Coolant Recirculation: Annunciators and conditions indicating signals, and remedial actions associated with the Loss of Emergency Coolant Recirculation

RO Importance: 3.6 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 504.20 **Objective Number:** 82520

Given a step, note, or caution from 0POP05-EO-EC11, state its basis.

Reference: 0POP05-EO-EC11, Conditional Information Page

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible because this is the right volume and stopping the CS pumps, which are high volume pumps, would slow the level drop, but not the action here.

B: CORRECT: At 32,500 gallons and still lowering the required CIP action is to stop all pumps taking suction from the RWST.

C: INCORRECT: Plausible as the alarm first sounds at 75,000 gallons and if the student confuses the EMPTY setpoint and other RWST related alarms. Stopping the CS pumps would slow the level drop, but not the action here.

D: INCORRECT: Plausible as the alarm first sounds at 75,000 gallons and if the student confuses the EMPTY setpoint and other RWST related alarms. This is the correct action.

Question Level: H **Question Difficulty** 3

Justification:

The student must recall the volume at which pumps must be stopped.

Exam Bank No.: 1764 **Last used on an NRC exam:** 2009

RO Sequence Number: 27

The unit is being drained down for midloop operations per 0POP03-ZG-0009, Mid-Loop Operation.

- Pressurizer level is 5%.
- RHR Train "A" is in service.
- RHR Trains "B" and "C" are in standby.
- 1M02-F4, RHR PUMP 1A DISCH FLOW LO, alarms.

Based on these plant conditions, the Unit Supervisor should direct…

A. the RO to raise RHR Train "A" flow from 925 gpm to 3000 gpm.

B. the RO to start RHR Pump "B" per the "Skill of the Craft" guidance found in the Conduct of Operations.

C. entry into 0POP04-RC-0007, Mode 5 Or Mode 6 LOCA With The Reactor Vessel Head On.

D. entry into 0POP04-RH-0001, Loss of Residual Heat Removal.

Answer: D enter 0POP04-RH-0001, Loss of Residual Heat Removal.

Exam Bank No.: 1764 **Source:** Bank **Modified from**

K/A Catalog Number: 005 G2.4.4 Residual Heat Removal System: Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.

RO Importance: 4.5 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 201.09 **Objective Number:** 4245

GIVEN a plant or system condition, PREDICT the operation of the Residual Heat Removal system.

Reference: 0POP04-AN-01M2, F-4, 0POP04-RH-0001, Loss of Residual Heat Removal

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible if the student does not realize that the pump has tripped.

B: INCORRECT: Plausible as skill of the craft guidance is in the Conduct of Ops for various manipulations. Although we want to place Train B RHR in service due to the loss of RHR Pump 1A, this is not done using Skill of the Craft. Written instructions exist for operation of the RHR System.

C: INCORRECT: Plausible as this procedure can be directed upon an RHR leak.

D: CORRECT: RHR PUMP 1A DISCH FLOW LO annunciator response directs the operator to perform the actions of 0POP04-RH-0001, Loss of Residual Heat Removal. This alarm is also an entry condition for 0POP04-RH-0001.

Question Level: H **Question Difficulty** 3

Justification:

The student must determine that the annunciator indicates that the RHR Pump has tripped and must then select the appropriate procedure for placing a standby train of RHR in service.

Exam Bank No.: 2072 **Last used on an NRC exam:** 2011

RO Sequence Number: 28

With the unit at 100%, a Control Bank "A" control rod dropped fully into the core.

- The crew has entered 0POP04-RS-0001, Control Rod Malfunction, and are ready to begin withdrawal of the dropped rod.
- The Rod Bank Selector Switch is in the Control Bank "A" position

The OTHER control rods in Control Bank 'A' will not move as the dropped rod is withdrawn because the…

A. Step Counters for Control Bank 'A' have NOT been reset.

B. Pulse-to-Analog Converter for Control Bank 'A' is set to the current position of the remaining Control Bank 'A' rods.

C. Lift Coil disconnect switches for the remaining Control Bank 'A' rods have been placed in the DISCONNECT position.

D. dropped rod has created a rod block signal that only allows the remaining Control Bank 'A' rods to be inserted.

Answer: C Lift Coil disconnect switches for the remaining Control Bank 'A' rods have been placed in the DISCONNECT position.

Exam Bank No.: 2072 **Source:** Bank **Modified from**

K/A Catalog Number: APE 005 AK2.02 Knowledge of the interrelations between the Inoperable/Stuck Control Rod and the following: Breakers, relays, disconnects, and control room switches.

RO Importance: 2.5 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 201.18 **Objective Number:** 91298

DESCRIBE the basic operation for picking up a dropped rod.

Reference: LOT 201.18, 0POP04-RS-0001, Addendum 1

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as the Step Counters are manipulated in this procedure but do not have any control functions.

B: INCORRECT: Plausible as the Pulse to Analog Converter is manipulated in this procedure but not for this purpose.

C: CORRECT: The Lift Coil Disconnect switches are placed in the DISCONNECT position to prevent the remaining control rods in the affected bank from moving as the dropped rod is withdrawn.

D: INCORRECT: Plausible as there are rod block signals for a variety of power conditions but not for this one.

Question Level: H **Question Difficulty** 3

Justification:

The student must know the control features of the rod control system and the process for recovering a dropped rod.

Exam Bank No.: 2290 **Last used on an NRC exam:** 2014

RO Sequence Number: 29

The unit is in MODE 4, cooling down to MODE 5 during a refueling outage:

- 2 trains of RHR are in service.
- All RCPs are secured.
- 5M03-A-1, SR SHUTDN FLUX HI, alarms.
- The RO notes a positive startup rate on both Source Range Monitors.

The Unit Supervisor should enter _____(1)_____ AND _____(2)_____.

A. (1) 0POP05-EO-FRS1, Response To Nuclear Power Generation - ATWS
(2) initiate the Containment Evacuation Alarm

B. (1) 0POP04-RC-0008, Boron Dilution Event
(2) initiate the Containment Evacuation Alarm

C. (1) 0POP05-EO-FRS1, Response To Nuclear Power Generation - ATWS
(2) ensure Containment Ventilation Isolation actuation

D. (1) 0POP04-RC-0008, Boron Dilution Event
(2) ensure Containment Ventilation Isolation actuation

Answer: B (1) 0POP04-RC-0008, Boron Dilution Event (2) initiate the Containment Evacuation Alarm

Exam Bank No.: 2290 **Source:** Bank **Modified from**

K/A Catalog Number: 013 G2.4.9 Nuclear Instrumentation System: Knowledge of low power/shutdown implications in accident (e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies.

RO Importance: 3.8 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 505.01 **Objective Number:** 92106

Given plant conditions/symptoms, evaluate the conditions/symptoms and state whether or not the referenced procedure is to be used.

Reference: 0POP04-RC-0008 page 2; 0POP05-EO-FRS1 page 2

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Procedure is plausible because FRS1 is applicable in this mode and would likely be entered (orange path) with similar indications had the event started after a trip in MODE 3. Action is plausible because it is an action contained within FRS1.

B: CORRECT: This is an entry condition for 0POP04-RC-0008. Step 4 directs the operators to initiate containment evacuation.

C: INCORRECT: Procedure is plausible because FRS1 is applicable in this mode and would likely be entered (orange path) with similar indications had the event started after a trip in MODE 3.

D: INCORRECT:Plausible because this is the correct procedure and ensuring a CVI is an action in FRS1.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must analyze the given plant events/conditions and determine using a knowledge of plant procedures, which procedure to enter and must have further procedure knowledge to determine which action is correct for the given procedure.

Exam Bank No.: 2561 **Last used on an NRC exam:** 2017

RO Sequence Number: 30

The unit is in Mode 4 with the following conditions:

- RHR Trains A and C are in service.
- All SG NR levels are 50% and stable.

Subsequently;

- There is a loss of offsite power.
- NO RHR pumps are available.

Per 0POP04-RH-0001, Loss of RHR Cooling, what is the PREFERRED method to maintain the appropriate RCS cooldown rate?

A. Adjust Steam Dumps

B. Open SG PORVs

C. Initiate RCS Feed and Bleed

D. Align HHSI to RCS Cold Legs

Answer: B Open SG PORVs

Exam Bank No.: 2561 **Source:** Bank **Modified from**

K/A Catalog Number: APE 025 AK1.01 Knowledge of the operational implications of the following concepts as they apply to Loss of Residual Heat Removal System: Loss of RHRS during all modes of operation.

RO Importance: 3.9 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(5)

STP Lesson: LOT 505.01 **Objective Number:** 92109

Given a plant condition, describe and/or interpret the requirements and/or limits of a precaution or step of a referenced procedure.

Reference: 0POP04-RH-0001 step 28

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible because heat removal with the SGs is the preferred method. However, due to the loss of the switchyard the condenser would not be available.

B: CORRECT: Heat removal with the SGs is the preferred method. Because of the loss of the switchyard, the crew would have to dump steam to the atmosphere.

C: INCORRECT: RCS feed and bleed is not the preferred method since the SGs are available. Plausible because it is a method used in this procedure.

D: INCORRECT: Plausible because this would remove heat but is not described in this procedure.

Question Level: H **Question Difficulty** 3

Justification:

The student must analyze the given conditions and know the preferred method for cooling down.

Exam Bank No.: 2813 **Last used on an NRC exam:** Never

RO Sequence Number: 31

With the unit at 100%, a loss of Class 1E 120VAC DP-1201 occurs.

The Primary RO's top priority is to _____(1)_____.

The Secondary RO's top priority is to _____(2)_____.

A. (1) raise charging flow
(2) lower feed flow to ALL SGs

B. (1) raise charging flow
(2) lower feed flow to SGs 1A and 1B

C. (1) lower charging flow
(2) lower feed flow to ALL SGs

D. (1) lower charging flow
(2) lower feed flow to SGs 1A and 1B

Answer: D (1) lower charging flow (2) lower feed flow to SGs 1A and 1B

Exam Bank No.: 2813 **Source:** New **Modified from**

K/A Catalog Number: APE 057 AA1.06 Ability to operate and/or monitor the following as they apply to the Loss of Vital AC Instrument Bus: Manual control of components for which automatic control is lost.

RO Importance: 3.5 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.38 **Objective Number:** 97935

Given a change in plant or system condition, explain the operation of the Class 1E Vital 120 VAC System.

Reference: 0POP04-VA-0001, Addendum 11, page 1

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible if the student confuses failure modes for FCV-0205 and if the student misunderstands the effect of DP-1201 on the plant in a full power lineup.

B: INCORRECT: Plausible if the student confuses failure modes for FCV-0205 and this is the correct action for SGs 1A and 1B

C: INCORRECT: Plausible as charging flow must be lowered, and if the student misunderstands the effect of DP-1201 on the plant in a full power lineup.

D: CORRECT: With a loss of DP-1201, FCV-0205 goes full open and must be taken to manual and controlled. SGs A and B have their feed flow channels selected to Channel 1 channels and must have their level control valve taken to manual and controlled

Question Level: H **Question Difficulty** 3

Justification:

The student must determine actions to take upon the failure of 120VAC vital power.

Exam Bank No.: 2834 **Last used on an NRC exam:** Never

RO Sequence Number: 32

The unit is in MODE 1.

- A ground on 125VDC Bus E1B11 causes it to be deenergized.

The crew should respond to this situation using _____(1)_____. An action to be taken is to _____(2)_____.

A. (1) 0POP05-EO-EO00, Reactor Trip or Safety Injection
(2) place excess letdown in service

B. (1) 0POP05-EO-EO00, Reactor Trip or Safety Injection
(2) place auxiliary spray in service

C. (1) 0POP04-DJ-0001, Loss of Class 1E 125 VDC Power
(2) place excess letdown in service

D. (1) 0POP04-DJ-0001, Loss of Class 1E 125 VDC Power
(2) place auxiliary spray in service

Answer: C (1) 0POP04-DJ-0001, Loss of Class 1E 125 VDC Power (2) place excess letdown in service

Exam Bank No.: 2834 **Source:** New **Modified from**

K/A Catalog Number: 063 A2.01 Ability to (a) predict the impacts of the following malfunctions or operations on the DC electrical systems; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Grounds.

RO Importance: 2.5 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 201.37 **Objective Number:** 92048

State the meaning of the Class 1E 125VDC System Alarms.

Reference: 0POP04-DJ-0001, page 107

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as solenoids on the MSIVs and FWIVs are affected as are Reactor Trip Breaker control power but none of these failures cause a reactor trip. Excess letdown does need to be placed in service.

B: INCORRECT: Plausible as solenoids on the MSIVs and FWIVs are affected as are Reactor Trip Breaker control power but none of these failures cause a reactor trip. IA to the RCB is lost which affects normal spray but auxiliary spray is not placed in service.

C: CORRECT: A loss of "B" Train 125VDC power will not trip the reactor but will cause system perturbations. Since letdown is isolated, excess letdown will have to be placed in service.

D: INCORRECT: Plausible as IA to the RCB is lost which affects normal spray but auxiliary spray is not placed in service.

Question Level: H **Question Difficulty** 3

Justification:

The student must determine the impact of a failure of a DC bus and select the procedure with which to respond.

Exam Bank No.: 2832 **Last used on an NRC exam:** Never

RO Sequence Number: 33

A plant operator is transferring DP-1201 to the Voltage Regulating Transformer (VRT):

- When he pushes the "BYPASS SOURCE TO LOAD" pushbutton, the VRT and inverter are OUT of synchronization.

As a result, DP-1201 will _____(1)_____. The crew should respond by using _____(2)_____.

A. (1) momentarily lose power then regain power from the inverter
(2) 0POP04-VA-0001, Loss of Vital 120VAC Power

B. (1) momentarily lose power then regain power from the inverter
(2) 0POP05-EO-EO00, Reactor Trip or Safety Injection

C. (1) deenergize
(2) 0POP04-VA-0001, Loss of Vital 120VAC Power

D. (1) deenergize
(2) 0POP05-EO-EO00, Reactor Trip or Safety Injection

Answer: C (1) deenergize (2) 0POP04-VA-0001, Loss of Vital 120VAC Power

Exam Bank No.: 2832 **Source:** New **Modified from**

K/A Catalog Number: 062 A2.03 Ability to (a) predict the impacts of the following malfunctions or operations on the AC distribution system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Consequences of improper sequencing when transferring to or from an inverter.

RO Importance: 2.9 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 201.34 **Objective Number:** 91526

Given a change in plant or system conditions, explain the operation of the Class 1E Vital 120VAC System.

Reference: 0POP02-AE-0004, Section 5.2

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Returning to the original source is plausible but the momentary loss of power would result in a transient addressed by this procedure.

B: INCORRECT: Returning to the original source is plausible and if the student believes the momentary loss of power would trip the reactor.

C: CORRECT: Since the two sources are out of synch, the associated panel DP-1201 will deenergize. The crew will respond by performing 0POP04-VA-0001 and the reactor stays at power.

D: INCORRECT: Plausible as the panel does deenergize, and if the student believes the reactor will trip as a result of the loss of power.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess the condition given and predict what happens and what procedure would be used to address the condition.

Exam Bank No.: 2818 **Last used on an NRC exam:** Never

RO Sequence Number: 34

With the unit at 45%, a condenser vacuum leak occurs.

- The crew enters 0POP04-CR-0001, Loss of Condenser Vacuum.
- While attempting to isolate the leak, the RO reports that condenser vacuum has lowered to 21 inches Hg.

Per 0POP04-CR-0001, the crew ensures the _____(1)_____ is(are) tripped because _____(2)_____ are not available.

A. (1) turbine ONLY
(2) SGFPTs

B. (1) turbine ONLY
(2) steam dumps

C. (1) reactor and turbine
(2) SGFPTs

D. (1) reactor and turbine
(2) steam dumps

Answer: D (1) reactor and turbine (2) steam dumps

Exam Bank No.: 2818 **Source:** New **Modified from**

K/A Catalog Number: APE 051 G2.1.32 Loss of Condenser Vacuum: Ability to explain and apply system limits and precautions.

RO Importance: 4.0 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(5)

STP Lesson: LOT 505.01 **Objective Number:** 32443

Given a plant condition, describe and/or interpret the requirements and/or limits of a precaution or step of a referenced procedure.

Reference: 0POP04-CR-0001, Step 6 and basis

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as the turbine is tripped to protect the blades, but the reactor is also included.

B: INCORRECT: Plausible as the turbine is tripped to protect the blades, but the reactor is also included.

C: INCORRECT: Plausible as the reactor and turbine are included, and SGFPTs are also affected by a loss of vacuum, but not the issue here.

D: CORRECT: At 21", the turbine should have tripped, but below P-9 the reactor will still be on line. In any case, the procedure directs the crew to ensure both the reactor and turbine are tripped. The reactor is included because steam dumps are not available since C-9 is not satisfied.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess plant conditions and determine the impact on the system.

Exam Bank No.: 2606 **Last used on an NRC exam:** Never

RO Sequence Number: 35

The Unit is in Mode 4 with the following conditions:

- RHR Train 'A' is in service
- Instrument Air pressure is 60 psig and decreasing due to an unisolable system leak.

The Train 'A' RHR Bypass flow control valve will __(1)__ and the RHR outlet temperature will __(2)__.

A. (1) open
(2) rise

B. (1) open
(2) lower

C. (1) close
(2) rise

D. (1) close
(2) lower

Answer: D (1) close (2) lower

Exam Bank No.: 2606 **Source:** Bank **Modified from**

K/A Catalog Number: APE 065 AA2.08 Ability to determine and interpret the following as they apply to the Loss of Instrument Air: Failure modes of air-operated equipment.

RO Importance: 2.9 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.09 **Objective Number:** 4245

Given a plant or system condition, predict the operation of the Residual Heat Removal system.

Reference: LOT 201.09 Powerpoint Presentation, slides 34-37

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as the bypass flow control valve fails closed upon loss of IA and if the bypass flow control valve did fail open then less flow would go through the HX causing a rise in outlet temperature.

B: INCORRECT: Plausible because the RHR HX flow control valve fails open and temperature does lower.

C: INCORRECT: Plausible as the bypass flow control valve does fail closed upon loss of IA. However, this will cause the outlet temperature to lower.

D: CORRECT: Upon loss of IA, the RHR valves fail to full cooling. Therefore, the bypass flow control valve closes causing all flow to go through the HX and resulting in a lower RHR temperature.

Question Level: H **Question Difficulty** 3

Justification:

Student must analyze the effects of loss of IA on the RHR system and how it effects the components in the RHR system.

Exam Bank No.: 2173 **Last used on an NRC exam:** 2013

RO Sequence Number: 36

At 100%, a loss of containment integrity would occur if…

A. the Supplementary Containment Purge exhaust OCIV and ICIV are opened to reduce containment pressure.

B. both doors of the Auxiliary Airlock are opened for material passage.

C. a normally closed air operated containment isolation valve for RCS sampling is opened for chemistry to grab a sample.

D. an automatic containment isolation valve is closed and de-energized for maintenance on the control circuit.

Answer: B both doors of the Auxiliary Airlock are opened for material passage.

Exam Bank No.: 2173 **Source:** Bank **Modified from**

K/A Catalog Number: APE 069 AK2.03 Knowledge of the interrelations between the Loss of Containment Integrity and the following: Personnel access hatch and emergency access hatch

RO Importance: 2.8 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 503.01 **Objective Number:** 92101

From memory, DEFINE terms used in the Technical Specifications and the Technical Requirements Manual (TRM).

Reference: Tech Spec definition 1.7, Containment Integrity

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible because normal containment purge valves cannot be opened at power but the supplemental purge system valves automatically close when required.

B: CORRECT: Each airlock must be operable (no more than 1 door open at a time).

C: INCORRECT: Plausible because manual containment isolation valves cannot be opened without affecting containment integrity but air operated isolation valves will automatically close when required.

D: INCORRECT: Plausible because working on containment isolation valves can affect containment integrity but if an MOV is in its required position and de-energized then containment integrity would still be satisfied.

Question Level: F **Question Difficulty** 3

Justification:

The applicant must have a working knowledge of the definition of containment integrity.

Exam Bank No.: 2254 **Last used on an NRC exam:** 2014

RO Sequence Number: 37

The unit was at 100% when a reactor trip occurred.

- A plant cooldown is in progress using the AFW System and the SG PORVs.
- The plant cooldown started at 0900 with AFW Storage Tank level at 521,000 gallons and total AFW flow at 600 gpm.

Which of the following would be the FIRST time listed that the AFW Storage Tank MINIMUM Technical Specification volume would NOT be met?

A. 0955

B. 1015

C. 1055

D. 1115

Answer: B 1015

Exam Bank No.: 2254 **Source:** Bank **Modified from**

K/A Catalog Number: 061 A1.04 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the AFW controls including: AFW source tank level.

RO Importance: 3.9 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(8)

STP Lesson: LOT 202.28 **Objective Number:** 43808

STATE the function and design bases of the AFWS including major components instrumentation, and sources of water.

Reference: TS 3.7.1.3

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible because it repesents the FIRST time listed at which the low level alarm would come in. About 489,000 gallons.

B: CORRECT: TS level for the AFWST is 485000 gallons. At 600 gpm it would take 60 minutes to reach the TS level if starting at an AFWST level of 521000 gallons. 1015 hours would be the FIRST time listed that would exceed the minimum TS limit at the given rate.

C: INCORRECT: Plausible because it repesents the FIRST time listed at which the TS limit for the RWST would be exceeded. 458,000 gallons.

D: INCORRECT: Plausible because it repesents a miscalculation of the rate of water being used in the AFWST and the distractor is symetrical with the other distractors.

Question Level: H **Question Difficulty** 3

Justification:

This student must be able to predict the use of AFW and then determine when TS level would be exceeded.

Exam Bank No.: 2477 **Last used on an NRC exam:** 2016

RO Sequence Number: 38

The reactor will trip at a specified Reactor Coolant Pump frequency setpoint.

If Reactor Coolant Pump frequency became an issue and the reactor trip setpoint had drifted _____(1)_____, the reactor would be more likely to exceed _____(2)_____ limits.

A. (1) high (2) DNB

B. (1) high (2) Fuel Integrity

C. (1) low (2) DNB

D. (1) low (2) Fuel Integrity

Answer: C (1) low (2) DNB

Exam Bank No.: 2477 **Source:** Bank **Modified from**

K/A Catalog Number: 012 A1.01 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RPS controls including: Trip setpoint adjustment.

RO Importance: 2.9 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 202.20 **Objective Number:** 3832

DESCRIBE the reactor protection system control and permissive interlocks including inputs, setpoints, coincidences, and functions.

Reference: LOT 201.20 Handout, page 41

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible because it is reasonable to believe the Reactor Trip setpoint could drift high and cause the reactor to be more likely to exceed DNB limits.

B: INCORRECT: Plausible because it is reasonable to believe the Reactor Trip setpoint could drift high and plausible because Fuel Integrity is a concern for the reactor but Fuel Integrity is protected by the OPDT Reactor Trip.

C: CORRECT: The Reactor will trip on low Reactor Coolant Pump frequency. If the setpoint were to drift low then the reactor would be more likely to exceed DNB limits.

D: INCORRECT: Plausible because Fuel Integrity is a concern for the reactor but Fuel Integrity is protected by the OPDT Reactor Trip.

Question Level: H **Question Difficulty** 3

Justification:

The student must have fundamental knowledge of Reactor Trip setpoints and the reason for the trips.

Exam Bank No.: 2817 **Last used on an NRC exam:** Never

RO Sequence Number: 39

The crew is conducting a reactor startup.

- Source range instruments are reading 50 cps.

Source Range N31 fails LOW.

With this occurrence, the crew should _____(1)_____ because protection against _____(2)_____ is affected.

A. (1) open the reactor trip breakers
(2) an uncontrolled bank withdrawal

B. (1) open the reactor trip breakers
(2) DNB

C. (1) suspend the startup
(2) an uncontrolled bank withdrawal

D. (1) suspend the startup
(2) DNB

Answer: C (1) suspend the startup (2) an uncontrolled bank withdrawal

Exam Bank No.: 2817 **Source:** New **Modified from**

K/A Catalog Number: APE 032 AK3.01 Knowledge of the reasons for the following responses as they apply to the Loss of Source Range Nuclear Instrumentation: Startup termination on source-range loss.

RO Importance: 3.2 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 501.19 **Objective Number:** 32667

Given a set of conditions or event description, determine which reactor trip signals are available to provide an automatic response for accidents involving reactivity and power distribution anomalies.

Reference: TS 2.0 bases, TS 3.3.1, Table 3.3-1, Function 6

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as this is an action in TS for other conditions, and if the student believes this is necessary to make the reactor safe. This is the correct basis.

B: INCORRECT: Plausible as this is an action in TS for other conditions and this is the basis for other reactor trips.

C: CORRECT: With the plant in the Source Range, and a SR NI inoperable, the startup must be suspended until the repair is made. The SR Reactor Trip is in place to protect against an uncontrolled rod withdrawal.

D: INCORRECT: Plausible as this is the correct action, and this is the basis for other reactor trips.

Question Level: H **Question Difficulty** 3

Justification:

The student must recall actions required in case of a SR failure and the reason why.

Exam Bank No.: 2844 **Last used on an NRC exam:** Never

RO Sequence Number: 40

Ths unit is in MODE 3.

- The RO reports that RT-8011, RCB Atmosphere Radiation Monitor, has an ALERT alarm on the Particulate and Iodine channels.
- Chemistry sampling confirms this condition.

_____(1)_____ is the cause of the alarm on RT-8011. As a result of this alarm, _____(2)_____.

A. (1) RCS Leakage
(2) all trains of RCFCs must be placed in service

B. (1) RCS leakage
(2) purging of containment will not be allowed

C. (1) Failed fuel
(2) all trains of RCFCs must be placed in service

D. (1) Failed fuel
(2) purging of containment will not be allowed

Answer: B (1) RCS leakage (2) purging of containment will not be allowed

Exam Bank No.: 2844 **Source:** New **Modified from**

K/A Catalog Number: 072 G2.2.44 Area Radiation Monitoring: 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.

RO Importance: 4.2 **Tier:** 2 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(11)

STP Lesson: LOT 505.01 **Objective Number:** 92109

Given a plant condition, describe and/or interpret the requirements and/or limits of a precaution or step of a referenced procedure.

Reference: 0POP04-RA-0001, Addendum 2

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as this is the correct cause and if the student believes that the RCFCs have a filtering property.

B: CORRECT: RT-8011 is a sensitive containment monitor that is able to detect small leaks. With an RCS leak, purging the containment atmosphere is possible but not allowed.

C: INCORRECT: Plausible as failed fuel coupled with an RCS leak would result in rising RT-8011 levels but not failed fuel alone and if the student believes that the RCFCs have a filtering property.

D: INCORRECT: Plausible as failed fuel coupled with an RCS leak would result in rising RT-8011 levels but not failed fuel alone. This is the correct action.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess conditions and determine the impact on the plant

Exam Bank No.: 2843 **Last used on an NRC exam:** Never

RO Sequence Number: 41

The Unit is in MODE 3.

- Steam Dumps are in the Steam Pressure mode in Automatic

If PK-0557, HDR PRESS CONT setpoint is set at **7.75 turns**, the system will maintain a header pressure of ___(1)___ psig.

The RO can verify that C9 (COND AVAILABLE FOR STEAM DUMP) is in the proper state on __(2)__.

A. (1) 1185
(2) CP-005

B. (1) 1185
(2) CP-007

C. (1) 1085
(2) CP-005

D. (1) 1085
(2) CP-007

Answer: C (1) 1085 (2) CP-005

Exam Bank No.: 2843 **Source:** New **Modified from**

K/A Catalog Number: 041 A4.04 Ability to manually operate and/or monitor in the control room: Pressure mode

RO Importance: 2.7 **Tier:** 2 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(4)

STP Lesson: LOT 202.09 **Objective Number:** 32749

Describe the instrumentation and controls available to monitor and operate the Steam Dumps.

Reference: LOT 202.09 Powerpoint Presentation, slide 49, 111

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as 1185 psig is the no load pressure that is maintained during startup. This is the correct panel.

B: INCORRECT: Plausible as 1185 psig is the no load pressure that is maintained during startup and the steam dump controls are on CP-007.

C: CORRECT: 7.75 turns in pressure is .775 x 1400 = 1085 psig.The CONDENSER AVAILABLE light is on CP-005.

D: INCORRECT: Plausible as this is the correct pressure and the steam dump controls are on CP-007

Question Level: H **Question Difficulty** 3

Justification:

The student must perform a calculation to figure steam pressure and then recall which panel to check condenser availability.

Exam Bank No.: 2831 **Last used on an NRC exam:** Never

RO Sequence Number: 42

Auxiliary Feedwater enters the Steam Generator through _____(1)_____ and water is introduced to the downcomer _____(2)_____.

A. (1) the same nozzle used by main feedwater
(2) via the feed ring

B. (1) the same nozzle used by main feedwater
(2) bypassing the feed ring

C. (1) a unique auxiliary feedwater nozzle
(2) via the feed ring

D. (1) a unique auxiliary feedwater nozzle
(2) bypassing the feed ring

Answer: D (1) a unique auxiliary feedwater nozzle (2) bypassing the feed ring

Exam Bank No.: 2831 **Source:** New **Modified from**

K/A Catalog Number: 061 K1.01 Knowledge of the physical connections and/or cause-effect relationships between the AFW and the following systems: S/G system.

RO Importance: 4.1 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(4)

STP Lesson: LOT 202.01 **Objective Number:** 29291

Describe the steam generator flowpaths

Reference: LOT 202.01 Powerpoint Presentation, Slide 55

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible if the student does not recall the unique auxiliary feedwater nozzle (was a combined nozzle on the old SGs) and the feed ring layout.

B: INCORRECT: Plausible if the student does not recall the unique auxiliary feedwater nozzle (was a combined nozzle on the old SGs) and the feed ring layout.

C: INCORRECT: Plausible if the student does not recall the unique auxiliary feedwater nozzle (was a combined nozzle on the old SGs) and the feed ring layout.

D: CORRECT: Auxiliary feedwater enters the steam generator at a unique nozzle and byapsses the feed ring.

Question Level: F **Question Difficulty** 3

Justification:

The student must know the physical layout of the auxiliary feedwater system as it enters the steam generator.

Exam Bank No.: 2823 **Last used on an NRC exam:** Never

RO Sequence Number: 43

The unit is in MODE 4.

- RCS temperature is 215°.
- RCS pressure is 350 psig.

A HHSI pump inadvertently starts and injects into the RCS.

The RO can ensure COMS is ARMED by checking switch positions on _____(1)_____.

COMS will open PORVs as required based upon a signal from ____(2)____ .

A. (1) CP-004
(2) Pressurizer Pressure

B. (1) CP-005
(2) Pressurizer Pressure

C. (1) CP-004
(2) RCS Wide Range Pressure

D. (1) CP-005
(2) RCS Wide Range Pressure

Answer: C (1) CP-004 (2) RCS Wide Range Pressure

Exam Bank No.: 2823 **Source:** New **Modified from**

K/A Catalog Number: 006 A4.11 Ability to manually operate and/or monitor in the control room: Overpressure protection system

RO Importance: 4.2 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(3)

STP Lesson: LOT 201.14 **Objective Number:** 81700

State the indications and controls available to monitor and operate the pressurizer pressure and level control system.

Reference: 0POP04-RP-005, Addendum 1

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as this is the right location and Pressurizer PORVs do open to relieve pressure.

B: INCORRECT: Plausible as CP-005 also has COMS related alarms and Pressurizer PORVS do open to relieve pressure.

C: CORRECT: The COMS switches are on CP-004 and the signal originates from RCS Wide Range Pressure.

D: INCORRECT: Plausible as CP-005 also has COMS related alarms and this is the correct signal.

Question Level: F **Question Difficulty** 3

Justification:

The student must recall knowledge of the operation and locations of the COMS.

Exam Bank No.: 2824 **Last used on an NRC exam:** Never

RO Sequence Number: 44

If a relief lifts on an RCP Number 1 Seal Leakoff line inside containment, then level in the ____(1)____ would rise. This level can be viewed on _____(2)_____.

A. (1) RCDT
(2) QDPS

B. (1) RCDT
(2) CP-004

C. (1) PRT
(2) QDPS

D. (1) PRT
(2) CP-004

Answer: D (1) PRT (2) CP-004

Exam Bank No.: 2824 **Source:** New **Modified from**

K/A Catalog Number: 007 A3.01 Ability to monitor automatic operation of the PRTS, including: Components which discharge to the PRT.

RO Importance: 2.7 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(3)

STP Lesson: LOT 201.04 **Objective Number:** 32335

List all the reliefs which discharge into the PRT.

Reference: LOT201.06 Student Handout, page 28 of 50

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as this tank is inside containment and does receive valve leakoffs and many indications are on QDPS.

B: INCORRECT: Plausible as this tank is inside containment and does receive valve leakoffs . This is the correct location.

C: INCORRECT: Plausible as this is the correct destination and many indications are on QDPS.

D: CORRECT: This relief is routed to the PRT and there is a control board gauge on CP-004.

Question Level: F **Question Difficulty** 3

Justification:

The student musknow the inputs to the PRT and where to monitor level.

Exam Bank No.: 2833 **Last used on an NRC exam:** Never

RO Sequence Number: 45

Completing the following regarding the Main Generator synchroscope:

- If the needle is rotating, then there is a _____(1)____ difference between the Main Generator and the switchyard.
- When the needle rotates in the "FAST" direction, then the _____(2)_____.

A. (1) frequency
(2) Main Generator frequency is higher than switchyard frequency

B. (1) frequency
(2) switchyard frequency is higher than Main Generator frequency

C. (1) voltage
(2) Main Generator voltage is higher than switchyard voltage

D. (1) voltage
(2) switchyard voltage is higher than Main Generator voltage.

Answer: A (1) frequency (2) Main Generator frequency is higher than switchyard frequency

Exam Bank No.: 2833 **Source:** New **Modified from**

K/A Catalog Number: 062 K4.05 Knowledge of AC distribution design features(s) and/or interlock(s) which provide for the following: Parallelling of AC sources (synchroscoope).

RO Importance: 2.7 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 107.03 **Objective Number:** 18

List the three conditions reuqired for parallelling AC sources.

Reference: Generic Fundamentals Chapter 5 Powerpoint Presentation, slide 267

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: With a rotating needle, this means that frequency (phase angle) is not matched. With clockwise (FAST) rotation, the incoming (Main Generator) is higher than running (Switchyard) frequency.

B: INCORRECT: Plausible as rotation does indicate a frequency difference and if the student confuses direction of rotation.

C: INCORRECT: Plausible since voltage is displayed next to the synchroscope.

D: INCORRECT: Plausible since voltage is displayed next to the synchroscope.

Question Level: H **Question Difficulty** 3

Justification:

The student must recall how a synchroscope works.

Exam Bank No.: 2828 **Last used on an NRC exam:** Never

RO Sequence Number: 46

Following a Safety Injection signal, the RCFCs will receive cooling water from ____(1)____ and this alignment may be verified on ____(2)____.

A. (1) Component Cooling Water
(2) CP-002

B. (1) Component Cooling Water
(2) CP-022

C. (1) RCB Chilled Water
(2) CP-002

D. (1) RCB Chilled Water
(2) CP-022

Answer: A (1) Component Cooling Water (2) CP-002

Exam Bank No.: 2828 **Source:** New **Modified from**

K/A Catalog Number: 022 A3.01 Ability to monitor automatic operation of the CCS, including: Initiation of safeguards mode of operation.

RO Importance: 4.1 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 202.33 **Objective Number:** 30783

STATE the sources of cooling water to the RCFCs and when each is used.

Reference: LOT 201.12 Powerpoint Presentation, Slide 39

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: Following a SI signal, RCB Chilled Water is isolated, and CCW is placed in service. The controls for the RCFCs are on CP-002.

B: INCORRECT: Plausible as this is the correct water source and most of the HVAC systems are located on CP-022.

C: INCORRECT: Plausible as RCB Chilled Water is a water source to the RCFCs and is actually at a colder temperature, but not a safety related system. CP-002 is the correct panel.

D: INCORRECT: Plausible as RCB Chilled Water is a water source to the RCFCs and is actually at a colder temperature, but not a safety related system. CP-022 has most of the HVAC systems.

Question Level: F **Question Difficulty** 3

Justification:

The student must know the SI operation of the RCFCs and CCW and the panel the controls are operated from.

Exam Bank No.: 2845 **Last used on an NRC exam:** Never

RO Sequence Number: 47

Complete the following regarding the Fire Water Storage Tanks (FWST):

The Diesel Driven Fire Pump can take suction from _____(1)_____

Automatic makeup to the Fire Water Storage Tank is provided from the _____(2)_____.

A. (1) only one FWST
(2) Demineralized Water System

B. (1) only one FWST
(2) Fresh Water System

C. (1) either FWST
(2) Demineralized Water System

D. (1) either FWST
(2) Fresh Water System

Answer: D (1) either FWST (2) Fresh Water System

Exam Bank No.: 2845 **Source:** New **Modified from**

K/A Catalog Number: 086 K4.01 Knowledge of design features and/or interlocks which provide for the following: Adequate supply of water for FPS

RO Importance: 3.1 **Tier:** 2 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(4)

STP Lesson: LOT 201.29 **Objective Number:** 31247

State what the normal and backup sources of FWST makeup water are and how makeup is controlled.

Reference: LOT201.29 Student Handout, page 2

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible if the student believes that splitting out the tanks would prevent a common leak. The Demineralized Water System provided makeup for other tanks.

B: INCORRECT: Plausible if the student believes that splitting out the tanks would prevent a common leak. This is the correct source.

C: INCORRECT: Plausible as either FWST can supply the suction header. The Demineralized Water System provides makeup for other tanks.

D: CORRECT: The FWSTs provide suction to a common header with locked open isolation valves. The Fresh Water System provides automatic makeup to the system.

Question Level: F **Question Difficulty** 3

Justification:

The student must recall information about the Fire Water Storage Tanks

Exam Bank No.: 2814 **Last used on an NRC exam:** Never

RO Sequence Number: 48

The unit is at 100%.

- ECW Pump 1C is in service.
- Simultaneously, a Large Break LOCA and a loss of 4160V Bus E1C occurs.
- All systems function normally with the exception of the ECW Pump 1B Discharge Valve which travels 50% open and stops.

Based on this information, ECW Pump 1B _____(1)_____ in order to _____(2)_____.

A. (1) is running
(2) provide cooling water to the CCW Pump 1B Supplementary Cooler

B. (1) is running
(2) provide cooling water flow to RCB Chiller 11B

C. (1) trips
(2) prevent pump casing overpressure

D. (1) trips
(2) prevent pump bearing overheating

Answer: A (1) is running (2) provide cooling water flow to the CCW Pump 1B Supplementary Cooler

Exam Bank No.: 2814 **Source:** New **Modified from**

K/A Catalog Number: APE 062 AK3.01 Knowledge of the reasons for the following responses as they apply to the Loss of Nuclear Service Water: The conditions that will initiate the automatic opening and closing of the SWS isolation valves to the nuclear service water coolers.

RO Importance: 3.2 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)()

STP Lesson: LOT 201.13 **Objective Number:**

List all automatic functions, switch locations, switch positions, annunciators (and where indicated) local/remote functions, interlocks and permissives for the following: E. ECW Pumps and Motors.

Reference: LOT 201.13 Powerpoint Presentation, slide 21, 72

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: During a Large Break LOCA, an automatic SI signal would be developed. Normally, the ECW Pump Discharge Valve begins to open 10 seconds after pump start and the pump will trip if the valve is not full open in 25 seconds. This interlock is not active during an SI. The ESF equipment that is cooled by ECW includes the CCW Pump Supplementary Coolers.

B: INCORRECT: Plausible as the ECW Pump is running and the RCB Chillers are used for containment cooling but are cooled by OL-ACW.

C: INCORRECT: Plausible if the student believe that pump protection is required and pump dishcarge pressure would rise but not the issue here.

D: INCORRECT: Plausible if the student believe that pump protection is required and bearing condition is impportant but not the issue here.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess plant conditions and conclude what actions occur.

Exam Bank No.: 2842 **Last used on an NRC exam:** Never

RO Sequence Number: 49

The unit is at 100% when a small steam leak occurs downstream of an MSIV.

- Tavg is lowering.
- Steam flow and feed flow are rising.
- Reactor power is 100.3% and rising.

Based on this information, complete the following statements:

The time in core life that should result in the SMALLEST reactivity excursion is ___(1)___.

The crew will respond to this event by _____(2)_____.

A. (1) BOL
(2) reducing turbine load with the valve limiter

B. (1) BOL
(2) closing the MSIV

C. (1) EOL
(2) reducing turbine load with the valve limiter

D. (1) EOL
(2) closing the MSIV

Answer: A (1) BOL (2) reducing turbine load with the valve limiter

Exam Bank No.: 2842 **Source:** New **Modified from**

K/A Catalog Number: 035 K5.01 Knowledge of operational implications of the following concepts as they apply to the SGs: Effect of secondary parameters, pressure, and temperature on reactivity.

RO Importance: 3.4 **Tier:** 2 **Group/Category:** 2 **10CFR Reference:** 55.41(b)()

STP Lesson: LOT 501.16 **Objective Number:** 501165

Predict the sequence of events and trends of plant parameters for an increased heat removal accident.

Reference: LOT501.16 Student Handout, Page 34-35

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: The magnitude of the Moderator Temperature Coefficient is significantly smaller at BOL. With a steam leak of this size, the limiter is used to reduce turbine load and reactor power.

B: INCORRECT: Plausible as BOL is correct and closing the MSIV would isolate the steam leak, but cannot be performed at power.

C: INCORRECT: Plausible with confusion over MTC. This is the correct action.

D: INCORRECT: Plausible with confusion over MTC and closing the MSIV would isolate the steam leak, but cannot be performed at power.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess plant conditions and determine the impact on the RCS and core.

Exam Bank No.: 1245 **Last used on an NRC exam:** Never

RO Sequence Number: 50

The unit is operating at 100%.

- The Pressurizer Pressure Control Selector Switch is in the 455/458 position.
- Pressurizer Pressure Channel PT-0455 fails high.

With these plant conditions, PORV…

A. PCV-**0655A** will open and reclose at 2185 psig.

B. PCV-**0656A** will open and reclose at 2185 psig.

C. PCV-**0655A** will open and NOT reclose.

D. PCV-**0656A** will open and NOT reclose.

Answer: A PCV-0655A will open and re-close at 2185 psig.

Exam Bank No.: 1245 **Source:** Bank **Modified from**

K/A Catalog Number: 010 K6.01 010 K6.01: Knowledge of the effect of a loss or malfunction of the following will have on the PZR PCS: Pressure detection systems.

RO Importance: 2.7 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.14 **Objective Number:** 92779

Given plant conditions, determine their effects on the Pressurizer pressure and level control system.

Reference: LOT 201.14 Powerpoint Presentation, slide 37

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: When PT-0455 fails HIGH, the master controller output will go to 100% which will open PORV PCV-0655A. It will remain open until its interlock channel (PT-0458) reaches 2185 psig.

B: INCORRECT: Plausible if the student confuses which PORV comes from the controller.

C: INCORRECT: Plausible if the student does not recall the interlock channel. Controller output would force the PORV to stay open absent an interlock.

D: INCORRECT: Plausible if the student does not recall the interlock channel and confuses which PORV comes from the controller. Controller output would force the PORV to stay open absent an interlock.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess a control system failure and determine the effect on the plant.

Exam Bank No.: 1980 **Last used on an NRC exam:** Never

RO Sequence Number: 51

The unit is at 100% power.

- The running CCW pump trips.
- The Standby CCW pump does NOT start.
- Letdown Heat Exchanger Outlet temperature is rising.

The normal operating range of Letdown Heat Exchanger Outlet temperature is ____(1)____

The system response to a high temperature condition is _____(2)_____.

A. (1) 105-120°F
(2) letdown **ISOLATING**

B. (1) 105-120°F
(2) letdown **BYPASSING DEMINERALIZERS**

C. (1) 85-100°F
(2) letdown **ISOLATING**

D. (1) 85-100°F
(2) letdown **BYPASSING DEMINERALIZERS**

Answer: B (1) 105-120 °F (2) BYPASSING DEMINERALIZERS

Exam Bank No.: 1980 **Source:** New **Modified from**

K/A Catalog Number: APE 026 AA2.04 Ability to determine and interpret the following as they apply to the Loss of Component Cooling Water: The normal values and upper limits for the temperatures of the components cooled by CCW.

RO Importance: 2.5 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(5)

STP Lesson: LOT 201.12 **Objective Number:** 5213

GIVEN a plant or system condition, predict the operation of the Component Cooling Water System.

Reference: LOT 201.06 Student Handout, page 18

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: This is the expected range of letdown temperature by the control board meter. TCV-0143 will bypass demins if temperature reaches 137F, not isolate letdown.

B: CORRECT: This is the expected range of letdown temperature by the control board meter. TCV-0143 will divert letdown flow if temperature reaches 137F.

C: INCORRECT: This range is too low for letdown temperature but correct for other water systems. TCV-0143 will bypass demins if temperature reaches 137F, not isolate letdown.

D: INCORRECT: This range is too low for letdown temperature but correct for other water systems. TCV-0143 will divert letdown flow if temperature reaches 137F, as stated.

Question Level: F **Question Difficulty** 3

Justification:

The student must recall the normal letdown temperature range and the high temperature control feature for the CVCS letdown.

Exam Bank No.: 2000 **Last used on an NRC exam:** Never

RO Sequence Number: 52

Unit 1 is at 100%.

- 125VDC Bus E1D11 has de-energized due to an electrical fault.

What effect will this have on the availability of AFW Pump #14 and its ability to feed Steam Generator 1D?

AFW Pump #14 will...

A. NOT be capable of an auto start, but CAN be started manually and aligned to feed Steam Generator 1D from the control room.

B. be capable of an auto start but CANNOT be manually aligned to feed Steam Generator 1D from the control room.

C. NOT be capable of an auto start and CANNOT be manually started and aligned to feed Steam Generator 1D from the control room.

D. be capable of an auto start and CAN be manually aligned to feed Steam Generator 1D from the control room.

Answer: C NOT be capable of an auto start and CANNOT be manually started and aligned to feed Steam Generator 1D from the control room.

Exam Bank No.: 2000 **Source:** New **Modified from**

K/A Catalog Number: APE 058 G2.2.37 Equipment Control: Ability to determine operability and/or availability of safety related equipment.

RO Importance: 3.5 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(4)

STP Lesson: LOT 201.37 **Objective Number:** 92049

LIST the typical loads on the Class 1E 125 VDC System.

Reference: LOT202.28 Powerpoint Presentation, page 32

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible with confusion over power supplies and the effect on control room operations.

B: INCORRECT: Plausible with confusion over power supplies and the effect on control room operations.

C: CORRECT: 125VDC Bus E1D11 provides power to the 'D' Train AFW equipment and valves including the pump steam inlet valve, trip/throttle valve, and OCIV. Without power, none of this equipment can respond to automatic actuation and cannot be manually controlled from the control room. All other trains of AFW use Class 1E 120V Vital AC supply and this lends to the plausibility of the distractors.

D: INCORRECT: Plausible with confusion over power supplies and the effect on control room operations.

Question Level: F **Question Difficulty** 3

Justification:

The student must know the power sources for the 'D' Train AFW system and be able to determine how the components are affected for automatic or manual actuation.

Exam Bank No.: 674 **Last used on an NRC exam:** 2017

RO Sequence Number: 53

The Unit is at 100% power. The Pressurizer Master Pressure Controller fails to zero output while in AUTO.

With NO operator action, _____.

A. pressurizer pressure will rise and cycle at the PORV open setpoint.

B. pressurizer pressure will lower and cycle at the PORV blocked setpoint.

C. the reactor will trip.

D. safety injection will actuate.

Answer: A pressurizer pressure will rise and cycle at the PORV open setpoint.

Exam Bank No.: 674 **Source:** Bank **Modified from**

K/A Catalog Number: APE 027 AK2.03 Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following: Controllers and positioners.

RO Importance: 2.6 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.14 **Objective Number:** 92779

Given plant conditions, determine their effects on the pressurizer pressure and level control system.

Reference: LOT 201.14 Powerpoint presentation, slide 36

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: The master controller will close both spray valves and turn on all heaters, causing pressurizer pressure to rise. PORV PCV-656A is controlled by a bistable not the master controller so that when pressure reaches 2335 psig it will open and control pressure.

B: INCORRECT: Plausible the student would think the pressure would lower with the output lowering and that it would lower until the PORV block setpoint is reached.

C: INCORRECT: Plausible the student may think the PORV will not operate with the given malfunction and therefore pressure would rise until the reactor trip setpoint is reached.

D: INCORRECT: Plausible the student would think the pressure would lower with the output lowering and that with the given malfunction the pressure would continue to lower until a low pressure reactor trip and SI occurred.

Question Level: H **Question Difficulty** 3

Justification:

Student must analyze the given malfunction and predict the operation of the controller and the pressurizer pressure.

Exam Bank No.: 792 **Last used on an NRC exam:** Never

RO Sequence Number: 54

The unit is at 100%.

- TV-4494, CCW TO LTDN HX TEMP CONT VLV, fails OPEN.
- Assume NO automatic actions occur in the CVCS, and NO operator actions are taken.

Reactor power will ____(1)____ because _____(2)_____.

A. (1) LOWER
(2) the CVCS Mixed Bed Demineralizers are releasing more boron into the letdown flow

B. (1) RISE
(2) the CVCS Mixed Bed Demineralizers are absorbing more boron from the letdown flow

C. (1) LOWER
(2) RCS temperature is being raised by hotter CVCS charging flow

D. (1) RISE
(2) RCS temperature is being lowered by colder CVCS charging flow

Answer: B (1) RISE (2) the CVCS Mixed Bed Demineralizers are absorbing more boron from the letdown flow.

Exam Bank No.: 792 **Source:** Bank **Modified from**

K/A Catalog Number: 008 K3.01 Knowledge of the effect that a loss or malfunction of the CCWS will have on the following: Loads cooled by CCWS.

RO Importance: 3.4 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(5)

STP Lesson: LOT 201.06 **Objective Number:** 507266

Given a description of plant conditions, ANALYZE the conditions and PREDICT how the Chemical and Volume Control System will respond.

Reference: 0POP02-CV-0004. Section 27.10

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible with a misunderstanding of the mechanism here.

B: CORRECT: The increased CCW flow to the Letdown Heat Exchanger caused by the failed open TCV results in decreased letdown temperature which in turn results in a positive reactivity addition due to the absorption of boron from the RCS.

C: INCORRECT: Plausible with a misunderstanding of the mechanism here and what causes a power change.

D: INCORRECT: Plausible with a misunderstanding of the mechanism here and what causes a power change.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess an equipment failure and determine the effect on reactor power and the reason why.

Exam Bank No.: 863 **Last used on an NRC exam:** Never

RO Sequence Number: 55

Complete the following regarding the Reactor Vessel Water Level (RVWL) Instrumentation System:

There are ____(1)____ RVWL probes in the Reactor Vessel Plenum

If the LOWEST RVWL probe is uncovered, then the reactor core is ____(2)____.

A. (1) 6
(2) still completely covered with water

B. (1) 6
(2) is partially uncovered

C. (1) 8
(2) still completely covered with water

D. (1) 8
(2) is partially uncovered

Answer: A (1) 6 (2) still completely covered with water

Exam Bank No.: 863 **Source:** New **Modified from**

K/A Catalog Number: 002 K1.07 Knowledge of the physical connections and/or cause-effect relationships between the RCS and the following systems: Reactor vessel level indication system

RO Importance: 3.5 **Tier:** 2 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(2)

STP Lesson: LOT 201.03 **Objective Number:** 98215

Given a plant condition, predict the operation of the Reactor Vessel and Internals to include the effects on the reactor core.

Reference: LOT 201.03 Powerpoint Presentation, Slide 102

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: There are 6 probes in the reactor vessel plenum. The core is still covered when RVWL #8 uncovers.

B: INCORRECT: This is the correct number of probes and if the student believes RVWL is designed to show core uncovery.

C: INCORRECT: Plausible as there are 8 total probes and there core is covered.

D: INCORRECT: Plausible as there are 8 total probes and if the student believes RVWL is designed to show core uncovery.

Question Level: F **Question Difficulty** 3

Justification:

The student must recall informaton about the RVWL system.

Exam Bank No.: 1833 **Last used on an NRC exam:** 2016

RO Sequence Number: 56

Unit 1 is at 100% with the following conditions:

- A compressor malfunction caused one Starting Air Receiver on ESF DG #12 to completely depressurize.
- The second Starting Air Receiver is unaffected and at normal operating pressure.

Subsequently:

- A Unit 1 Standby Transformer lockout occurs.

ESF DG #12 will...

A. NOT receive a start signal, but IS capable of starting if needed.

B. NOT receive a start signal and is NOT capable of starting.

C. receive a start signal and WILL start and run.

D. receive a start signal, but is NOT capable of starting.

Answer: C receive a start signal and WILL start and run.

Exam Bank No.: 1833 **Source:** Bank **Modified from**

K/A Catalog Number: 064 K6.07 Knowledge of the effect of a loss or malfunction of the following will have on the ED/G System: Air Receivers

RO Importance: 2.7 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.39 **Objective Number:** 98476

Given a plant condition and/or various diesel modes of operation, PREDICT the response of the emergency diesels.

Reference: 0POP02-DG-0001, page 18

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible because in a normal Unit 1 lineup if the affected ESF D/G was 11 or 13 then they would NOT receive a start signal. With ONLY one receiver out of service the ESF DG is capable of starting.

B: INCORRECT: Plausible because in a normal Unit 1 lineup if the affected ESF D/G was 11 or 13 then they would NOT receive a start signal. With ONLY one receiver out of service the ESF DG is capable of starting.

C: CORRECT: In a normal electrical lineup 13.8 KV Standby BUS 1G feeds ESF 4.16 KV BUS Train B. If the Unit 1 Standby Transformer is lost then ESF D/G #12 will receive a start signal and start as long as at least one Starting Air Receiver is available.

D: INCORRECT: Plausible if the student believes that both Starting Air Recivers are needed to start the ESF D/G.

Question Level: H **Question Difficulty** 3

Justification:

The student must analyze the effect of the loss on the transformer on the diesel and then determine the effect of the depressurized receiver on the start capability.

Exam Bank No.: 1865 **Last used on an NRC exam:** 2009

RO Sequence Number: 57

The unit is at 75%.

- Turbine EHC is in IMP IN.
- Generator Voltage Regulator is ON (Auto).
- Severe Thunderstorms have caused a grid disturbance.

7M01-C-4, GEN MAX EXCT, alarms.

Based on this information, grid _____(1)_____ and the crew should _____(2)_____.

A. (1) voltage has INCREASED causing the generator voltage regulator to raise excitation
(2) LOWER excitation using the Voltage Adjuster control

B. (1) voltage has DECREASED causing the generator voltage regulator to raise excitation
(2) LOWER excitation using the Voltage Adjuster control

C. (1) frequency has INCREASED causing the Main Turbine to take more MW load
(2) LOWER Turbine MW load by using the Turbine EHC controls

D. (1) frequency has DECREASED causing the Main Turbine to take more MW load.
(2) LOWER Turbine MW load by using the Turbine EHC controls

Answer: B (1) voltage has DECREASED causing the generator voltage regulator to raise excitation (2) LOWER excitation using the VOLTAGE ADJUSTER control

Exam Bank No.: 1865 **Source:** Bank **Modified from**

K/A Catalog Number: APE 077 AK2.07 Knowledge of the interrelations between Generator Voltage and Electric Grid Disturbances and the following: Turbine/Generator Control

RO Importance: 3.6 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(4)

STP Lesson: LOT 202.17 **Objective Number:** 91615

Given a plant or system condition, predict the operation of the Main Generator and Exciter System.

Reference: 0POP09-AN-07M1

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible if the student confuses grid changes and voltage regulator controls This will result in lower excitation field current that would not cause the alarm.

B: CORRECT: Decreased grid voltage would cause the voltage regulator to attempt to raise voltage thereby increasing excitation field current and causing the alarm. Alarm response is to lower excitation field current using the voltage regulator.

C: INCORRECT: Plausible if the student confuses the voltage-frequency characteristics of the main generator.

D: INCORRECT: Plausible if the student confuses the voltage-frequency characteristics of the main generator.

Question Level: H **Question Difficulty** 3

Justification:

Must be able to determine which direction grid voltage changed in order for the voltage regulator to raise excitation automatically.

Exam Bank No.: 2183 **Last used on an NRC exam:** Never

RO Sequence Number: 58

With the unit at 100%, a total loss of offsite power occurs. All systems function properly.

Complete the following regarding this event:

The ESF 480V Load Center breakers on CP-003 will _____(1)_____.

The RO reports that 3M03-A-4, DG 11 TRBL, is alarming due to RAW WATER LO PRESSURE. This alarm is _____(2)_____.

A. (1) always have indication
(2) valid but will clear within a minute of the loss of offsite power

B. (1) always have indication
(2) invalid

C. (1) not have indication until the ESF Diesel Generator Output Breaker closes
(2) valid but will clear within a minute of the loss of offsite power

D. (1) not have indication until the ESF Diesel Generator Output Breaker closes
(2) invalid

Answer: A (1) always have indication (2) valid but will clear within a minute of the loss of offsite power

Exam Bank No.: 2183 **Source:** Bank **Modified from**

K/A Catalog Number: APE 056 AA2.45 Ability to determine and interpret the following as they apply to the Loss of Offsite Power: Indicators to assess status of ESF breakers (tripped/not-tripped) and validity of alarms (false/not-false).

RO Importance: 3.6 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.36 **Objective Number:** 84110

State the instrumentation and controls available to operate and monitor the 4.16KV, 480V ESF Buses.

Reference: Drawing 9E0PK02#2, 0POP04-AN-03M3, LOT201.41.HO.01

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: The ESF 480V LC breakers have DC control power and will always have indication regardless of the status of power to the load center. Raw Water Low Pressure would alarm when the ECW pump supplying cooling water to the ESF DG trips, but the ECW pump would sequence on 25 seconds after diesel generator output breaker closure and the alarm would clear.

B: INCORRECT: Plausible as these breakers would always have indication but the alarm is valid.

C: INCORRECT: Plausible as 480V MCC breakers have control power supplied from bus power. The alarm is valid.

D: INCORRECT: Plausible as 480V MCC breakers have control power supplied from bus power. The alarm is valid.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess plant information and determine the validity of alarms and the status of breaker indications.

Exam Bank No.: 2305 **Last used on an NRC exam:** 2016

RO Sequence Number: 59

Unit 1 was at 100% power when a Main Steam Line Break occurred in the IVC upstream of MSIV 1A.

- A single Steam Pressure Transmitter on SG 1A was damaged causing it to read off-scale HIGH on Control Board and QDPS indications.
- The damaged Steam Pressure Transmitter is selected with the associated Steam Flow Transmitter for SG Water Level Control.

The Controlling Channel of Steam Flow should indicate _____(1)_____ than actual steam flow.

AND

If required, an automatic Main Steam Isolation (MSI) ___(2)___ occur.

A. (1) lower
(2) should NOT

B. (1) lower
(2) should

C. (1) higher
(2) should NOT

D. (1) higher
(2) should

Answer: D (1) higher (2) will

Exam Bank No.: 2305 **Source:** Bank **Modified from**

K/A Catalog Number: APE 040 AK2.02 Knowledge of the interrelations between the Steam Line Rupture and the following: Sensors and detectors.

RO Importance: 2.6 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 202.02 **Objective Number:** 12768

Given a plant or system condition, PREDICT the operation of the Main Steam System.

Reference: LOT202.15 Student Handout Page 10, LOT 202.02 Powerpoint Presentation page 157

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible if the student misunderstands density compensation and if they believe the failure will prevent an actuation.

B: INCORRECT: Plausible if the student misunderstands density compensation. An actuation will occur.

C: INCORRECT: Plausible as steam flow is indicating higher and if the student believes that this failure will prevent an actuation.

D: CORRECT: With a high failure of a controlling steam pressure channel, the controlling steam flow channel will indicate higher than actual steam flow due to the pressure compensation. One of the three channels of Steam Pressure feeding the MSI actuation will not affect the ability for an automatic actuation on 2 of the remaining 3 Steam Pressure Channels.

Question Level: H **Question Difficulty** 3

Justification:

The student must be able to evaluate the given conditions to determine the affects on indicated steam flow and MSI actuation.

Exam Bank No.: 2414 **Last used on an NRC exam:** 2015

RO Sequence Number: 60

The unit is operating at 48%.

- An electrical malfunction causes the Generator Field Breaker (41M) to trip.

With this occurrence, the…

A. Main Generator Output Breaker will open; the turbine will continue to operate with no load. The reactor will continue to operate.

B. Main Generator Output Breaker will remain closed, a turbine trip will occur, resulting in a reactor trip.

C. Main Generator Output Breaker will open, a turbine trip will occur. The reactor will continue to operate.

D. Main Generator Output Breaker will remain closed; the turbine will continue to operate with no load. The reactor will remain on line.

Answer: C Main Generator Output Breaker will open, a turbine trip will occur. The reactor will continue to operate.

Exam Bank No.: 2414 **Source:** Bank **Modified from**

K/A Catalog Number: 045 K3.01 Knowledge of the effect that a loss or malfunction of the MT/G system will have on the following: Remainder of the plant

RO Importance: 2.9 **Tier:** 2 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 202.17 **Objective Number:** 15360

DESCRIBE the consequences of a loss of the Main Generator Voltage Regulator.

Reference: LOT202.17 Powerpoint Presentation, slide 87

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as the output breaker will open.

B: INCORRECT: Plausible with a misunderstanding of the 41M breaker and reactor trip setpoints.

C: CORRECT: Opening the Generator Field breaker will cause an 86 lock out relay opening the Main Generator Breaker. The Reactor will NOT trip because power is below 50%.

D: INCORRECT: Plausible with a misunderstanding of the 41M breaker and other setpoints.

Question Level: H **Question Difficulty** 3

Justification:

The student must be able to analyze the given conditons to determine the response of the Main Generator.

Exam Bank No.: 2478 **Last used on an NRC exam:** 2016

RO Sequence Number: 61

Unit 1 is at 28% when the following occurs:

- RCP 1C shaft shears.

What automatic response will occur?

A. SG 1C MFRV will open to restore level in SG 1C.

B. SG 1C MFRV will close to restore level in SG 1C.

C. Auxiliary Feedwater starts due to an automatic Reactor Trip signal.

D. Main Feedwater isolates due to an automatic Reactor Trip signal.

Answer: A SG 1C MFRV will open to restore level in SG 1C.

Exam Bank No.: 2478 **Source:** Bank **Modified from**

K/A Catalog Number: 059 K4.13 Knowledge of the MFW design feature(s) and/or interlocks which provide for the following: Feedwater fill of S/G upon loss of RCP.

RO Importance: 2.9 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 202.13 **Objective Number:** 20359

GIVEN plant/system conditions, PREDICT the operation of the Feedwater System.

Reference: LOT 201.05 Student Handout, pages 17-18

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: A loss of RCP flow will cause a loss of load in the affected loop. SG level will quickly lower and the SG MFRV will open to restore level. An automatic reactor trip will not immediately occur on the loss of one RCS loop flow because reactor power is below 40% power. (P-8)

B: INCORRECT: Plausible because the student has to remember that on a loss of RCS loop flow without a reactor trip that SG level in the affected loop will lower. If the student thought the level would rise then they would chose that the MFRV would close.

C: INCORRECT: Plausible because on a Reactor Trip, AFW will eventually start if SG levels get below 20% and the student has to remember that the reactor will not automatically trip on loss of one RCS loop flow when below 40% power. (P-8)

D: INCORRECT: Plausible because on a Reactor Trip, Main Feedwater will isolate but only when RCS temperature lowers below 574 F and the student has to remember that the unit will not automatically trip on loss of one RCS loop flow when below 40% power. (P-8)

Question Level: H **Question Difficulty** 3

Justification:

The student must analyze the given condition to determine how MFW will respond.

Exam Bank No.: 2808 **Last used on an NRC exam:** Never

RO Sequence Number: 62

Due to equipment malfunctions, the crew is unable to makeup to the VCT.

Without the ability to makeup to the VCT, VCT level will lower approximately ____(1)___.

The crew will monitor the change in VCT level at CP-004 on level indicator LT- __(2)__.

A. (1) 21% per hour
(2) 112

B. (1) 21% per hour
(2) 113

C. (1) 4% per 12 hour shift
(2) 112

D. (1) 4% per 12 hour shift
(2) 113

Answer: C (1) 4% per 12 hour shift (2) 112

Exam Bank No.: 2808 **Source:** New **Modified from**

K/A Catalog Number: APE 022 AA1.08 Ability to operate and/or monitor the following as they apply to the Loss of Reactor Coolant Makeup: VCT level

RO Importance: 3.4 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.07 **Objective Number:** 91057

Describe the operations, controls, indications, associated alarms, and flowpaths used (including valve positioning) for each of the following modes of operation of the Reactor Makeup System: Automatic

Reference: LOT 201.06 Powerpoint presentation, slide 53, LOT 201.05 Powerpoint presentation slide 16

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible if the student mistakenly believes that RCP #1 seal leakoff is lost to the system. AT 3 gpm per pump, this would be a total of 720 gallons per hour or 21%. This is the correct indicator.

B: INCORRECT: Plausible if the student mistakenly believes that RCP #1 seal leakoff is lost to the system. AT 3 gpm per pump, this would be a total of 720 gallons per hour or 21% and LT-113 is another VCT level transmitter, but it does not appear on the control boards.

C: CORRECT: With no makeup, the RCS with makeup and letdown loses approximately 3 gph per RCP to the RCDT as #2 Seal leakoff. 12 gph over a 12 hour shift is 144 gallons. With the VCT being 34 gallons/%, the VCT would lose approximately 4% per hour. LT-112 is the only VCT level indicator on the control boards.

D: INCORRECT: Plausible as this is the correct level loss, and LT-113 is another VCT level transmitter, but it does not appear on the control panels.

Question Level: H **Question Difficulty** 3

Justification:

This question requires the student to calculate VCT level change for a situation in which no makeup capacity exists. Additionally, the student must identify how VCT level must be monitored in the control room.

Exam Bank No.: 2295 **Last used on an NRC exam:** 2014

RO Sequence Number: 63

Unit 1 is in Mode 6 with refueling in progress.

- In the RCB, an irradiated fuel assembly was damaged and small gas bubbles are seen rising to water surface.

_____(1)_____ will alert the Fuel Handlers of the rising radiation levels and _____(2)____ is the primary radiation hazard .

A. (1) DLR (Dosimeter of Legal Record)
(2) Krypton

B. (1) DLR (Dosimeter of Legal Record)
(2) Cobalt

C. (1) EPD (Electronic Personal Dosimeter)
(2) Krypton

D, (1) EPD (Electronic Personal Dosimeter)
(2) Cobalt

Answer: C (1) EPD (Electronic Personal Dosimter) (2) Krypton

Exam Bank No.: 2295 **Source:** Bank **Modified from**

K/A Catalog Number: G2.3.15 Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personal monitoring equipment, etc.

RO Importance: 2.9 **Tier:** **Group/Category:** **10CFR Reference:** 55.41(b)()

STP Lesson: LOT 507.01 **Objective Number:** 92186

Given the title of an administrative procedure, DISCUSS the requirements associated with the referenced procedure.

Reference: 0PGP03-ZR-0051, page 4; LOT 502.10, Slide 14

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible because a DLR is required to be worn but it does not give an alarm or any other indication of a high dose or dose rate.

B: INCORRECT: Plausible because a DLR is required to be worn but it does not give an alarm or any other indication of a high dose or dose rate. Also, Cobalt 60 is a fission product that could be released by a damaged fuel assembly but it would be in the form of a particle that would not float to the surface of the water like a gas would.

C: CORRECT: The SRD will give an audible alarm on a set dose and a set dose rate. Krypton Gas rising to the surface of the water form the damaged fuel assembly would be the radiological hazard.

D: INCORRECT: Plausible because Cobalt 60 is a fission product that could be released by a damaged fuel assembly but it would be in the form of a particle that would not float to the surface of the water like a gas would.

Question Level: F **Question Difficulty** 3

Justification:

This student must have knowledge of personal radiation monitoring devices work and knowledge of potential radiation hazards.

Exam Bank No.: 2816 **Last used on an NRC exam:** Never

RO Sequence Number: 64

With the unit at 60%, control rods begin withdrawing from the core and can NOT be stopped.

During this event, feedback from Power Defect would _____(1)_____.

The value of the Power Defect is _____(1)_____ at the end of core life.

A. (1) oppose the power increase
(2) more negative

B. (1) oppose the power increase
(2) less negative

C. (1) add to the power increase
(2) more negative

D. (1) add to the power increase
(2) less negative

Answer: A (1) oppose the power increase (2) more negative

Exam Bank No.: 2816 **Source:** New **Modified from**

K/A Catalog Number: APE 001 AK1.18 Knowledge of the operational implications of the following concepts as they apply to Continuous Rod Withdrawal: Fuel temperature coefficient.

RO Importance: 3.4 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(1)

STP Lesson: LOT 501.19 **Objective Number:** 32668

Given a set of conditions or event description, predict the sequence of events and trends of plants parameters for accidents involving reactivity and power distribution anomalies.

Reference: LOT501.19 Handout, page 14-15

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: As power begins rising due to the rod withdrawal, the fuel and cladding temperature would rise and the negative FTC would feed into power defect and would oppose the power increase. AT EOL, the coefficient is more negative.

B: INCORRECT: Plausible as this is the correct power change and if the student does not remember the changes in FTC over core life.

C: INCORRECT: Plausible if the student confuses the type and sign of the coefficient.

D: INCORRECT: Plausible if the student confuses the type and sign of the coefficient.

Question Level: H **Question Difficulty** 3

Justification:

The student is required to understand the nature of the fuel temperature coefficient and apply it to a continuous rod withdrawal accident.

Exam Bank No.: 2830 **Last used on an NRC exam:** Never

RO Sequence Number: 65

The unit is at 100% power, end of life conditions.

- A single steam dump fails open.

With this occurrence, reactor power will ____(1)___ and RCS pressure will___(2)___.

A. (1) lower
(2) rise

B. (1) lower
(2) lower

C. (1) rise
(2) rise

D. (1) rise
(2) lower

Answer: D (1) rise (2) lower

Exam Bank No.: 2830 **Source:** New **Modified from**

K/A Catalog Number: 039 K3.05 Knowledge of the effect that a loss or malfunction of the MRSS will have on the following: RCS

RO Importance: 3.6 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(5)

STP Lesson: LOT 202.09 **Objective Number:** 29267

State how the Steam Dump System interfaces with other plant systems.

Reference: LOT 501.16 Student Handout, page 35

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible with confusion about the MTC value at EOL 100% power conditions and pressure response with more steam flow.

B: INCORRECT: Plausible with confusion about the MTC value at EOL 100% power conditions. Pressure does lower.

C: INCORRECT: Plausible as power does rise and if the student equates more steam flow with a greater RCS pressure.

D: CORRECT: With a steam dump failing open, additional steam load causes an RCS Tave drop, causing an insertion of positive reactivity at 100% power EOL conditions. RCS pressure drops since the primary fluid contracts with a temperature drop.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess plant response to a failed open steam dump.

Exam Bank No.: 2840 **Last used on an NRC exam:** Never

RO Sequence Number: 66

Unit 1 is at 100% (Cycle 22). Axial Flux Deviation is +3.4%

- Feedwater system issues require the crew to perform a rapid downpower to 30%.

During the downpower, PRIOR to any control rod motion, the crew will observe Axial Flux Deviation (AFD) becoming _____(1)____.

AFD (in %) may be monitored on _____(2)_____.

A. (1) less positive
(2) CP-005 ONLY

B. (1) less positive
(2) CP-005 and CP-011

C. (1) more positive
(2) CP-005 ONLY

D. (1) more positive
(2) CP-005 and CP-011

Answer: C (1) more positive (2) CP-005 ONLY

Exam Bank No.: 2840 **Source:** New **Modified from**

K/A Catalog Number: 015 A1.05 Ability to predict and/or monitor changes in parameters to prevent exceeding design limits associated with operating the NIS controls including: Imbalance (axial shape)

RO Importance: 3.7 **Tier:** 2 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(6)

STP Lesson: LOT 201.16 **Objective Number:** 31034

Analyze changes to plant conditions, instrument calibrations, and plant systems to detemine effects on Excore Nuclear Instrumentation.

Reference: LOT 201.16 Powerpoint Presentation, slide 119

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible if the student associates a downpower with AFD going down. This is the correct location.

B: INCORRECT: Plausible if the student associates a downpower with AFD going down. CP-011 does have the PR instruments but not a direct indication of percent flux.

C: CORRECT: With a downpower, Tave will reduce, however Thot will go down significantly while Tcold stays nearly constant. This will cause more power production in the top half of the core. AFD in % can be monitored only on CP-005.

D: INCORRECT: Plausilbe as AFD becomes more positive and CP-011 does have the PR instruments but not a direct indication of percent flux difference.

Question Level: H **Question Difficulty** 3

Justification:

The student must determine the response of AFD with a downpower and the associated alarms.

Exam Bank No.: 2826 **Last used on an NRC exam:** Never

RO Sequence Number: 67

The unit is at 100%.

If extraction steam to the #11 Feedwater Heaters isolates, then…

Reactor power and Tave will ____(1)____ and the OPΔT setpoint will ___(2)___.

A. (1) rise
(2) lower

B. (1) rise
(2) rise

C. (1) lower
(2) lower

D. (1) lower
(2) rise

Answer: A (1) rise (2) lower

Exam Bank No.: 2826 **Source:** New **Modified from**

K/A Catalog Number: 012 K5.02 Knowledge of the operational implications of the following concepts as they apply to the RPS: Power density

RO Importance: 3.1 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(2)

STP Lesson: LOT 201.20 **Objective Number:** 507127

Given a description of plant conditions, predict how the Solid State Protection System will respond.

Reference: LOT 201.20 Powerpoint Presentation, slide 166

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: With extraction isolation to FWH 11A/B, feed flow will cool, causing a positve reactivity insertion and reactor power and temperature to rise. The OPdeltaT setpoint lowers when Tave rises.

B: INCORRECT: Plausible as reactor power does rise and if the student confuses the inputs to the OPdeltaT setpoint.

C: INCORRECT: Plausible if the student misunderstands the effect on feed flow and the OPdeltaT setpoint does lower.

D: INCORRECT: Plausible if the student misunderstands the effect on feed flow and the inputs to the OPdeltaT setpoint.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess the effect of extraction steam isolating to feedwater heaters and assess the effect on reactor power and temperature and also the effect on the OPdeltaT setpoint.

Exam Bank No.: 2825 **Last used on an NRC exam:** Never

RO Sequence Number: 68

The unit is at 100% power.

- CCW Pump 1B is in service.
- CCW Pump 1A Mode Selector Switch is in OFF
- CCW Pump 1C Mode Selector Switch is in STANDBY

A North Bus lockout occurs.

Following completion of all automatic actions,…

A. CCW Pumps 1B and 1C are running.

B. CCW Pumps 1A and 1C are running

C. ONLY CCW Pump 1C is running

D. ONLY CCW Pump 1B is running.

Answer: A CCW Pumps 1B and 1C are running.

Exam Bank No.: 2825 **Source:** New **Modified from**

K/A Catalog Number: 008 K2.02 Knowledge of bus power supplies to the following: CCW pump, including emergency backup.

RO Importance: 3.0 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.12 **Objective Number:** 32919

Describe the instrumentation and controls availabe to monitor and operate the CCW System.

Reference: LOT 201.14 Powerpoint presentation, slide 22

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: A North Bus lockout will cause the loss of Standby Bus G and 4.16KV Bus E1B. CCW Pump 1B will strip from the bus, and CCW pressure will degrade below 76 psig and CCW pump 1C will start as its Mode Selector Switch is in Standby. The "B" Train ESF Load Sequencer will start ESF Diesel Gernator 12 and load the CCW Pump back onto ESF Bus E1B.

B: INCORRECT: Plausible with confusion over sequencer loads and automatic start signals.

C: INCORRECT: Plausible with confusion over sequencer loads and automatic start signals.

D: INCORRECT: Plausible with confusion over sequencer loads and automatic start signals.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess plant conditions and deterrmine the effect on the CCW system.

Exam Bank No.: 2839 **Last used on an NRC exam:** Never

RO Sequence Number: 69

The unit is at 100% power. Rod Control System Full Out Position (FOP) is 258 steps.

If 5M03-D-5, ROD SUPV MNTR ROD POSITION TRBL, alarms, then the reason is…

(consider each choice separately from the others)

A. Shutdown Bank **A** Rod D2 is at 257 steps.

B. Shutdown Bank **B** Rod C3 is at 246 steps, Shutdown Bank **C** Rod E3 is at 258 steps.

C. Control Bank **D** has been inserted to 6 steps from rod bottom.

D. All Control Bank **D** Rods except for D4 are at 258 steps, Control Bank **D** Rod D4 is at 240 steps.

Answer: D All Control Bank D Rods except for D4 are at 258 steps. Control Bank D Rod D4 is at 240 steps.

Exam Bank No.: 2839 **Source:** New **Modified from**

K/A Catalog Number: 014 K4.06 Knowledge of RPIS design features and/or interlocks which provide for the following: Individual and group misalignment.

RO Importance: 3.4 **Tier:** 2 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(2)

STP Lesson: LOT 201.19 **Objective Number:** 6

Given a plant or system condition, predict the operation of the Rod Position Indication System.

Reference: 0POP09-AN-5M03 (D-5)

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as all shutdown bank rods are required to be fully withdrawn or TS is not met.

B: INCORRECT: Plausible as the rods are 12 steps apart, but they are in different banks.

C: INCORRECT: Plausible as a rod bottom light and the ROD BOTTOM annunciator would light, but not this alarm

D: CORRECT: If two rods in any bank are separated by more than 12 steps, then the alarm is in.

Question Level: F **Question Difficulty** 3

Justification:

The student must recall the indications on the DRPI panel for rapid refueling

Exam Bank No.: 2822 **Last used on an NRC exam:** Never

RO Sequence Number: 70

The unit is cooling down for a refueling outage. A mechanical degas is required.

During the mechanical degas, _____(1)_____ Reactor Coolant Pump(s) is(are) required to be running.

As part of preparation for the degas, the operator will ensure that there is sufficient room in the ____(2)____ to receive water.

A. (1) at least one
(2) RHUT

B. (1) at least one
(2) PRT

C. (1) no
(2) RHUT

D. (1) no
(2) PRT

Answer: A (1) at least one (2) RHUT

Exam Bank No.: 2822 **Source:** New **Modified from**

K/A Catalog Number: 004 K5.14 Knowledge of the operational implications of the following concepts as they apply to the CVCS: Reduction process of gas concentration in RCS: vent accumulated non-condensable gases from PZR bubble space, depressurized during cooldown or by alternately heating and cooling (spray) within allowed pressure band (drive more gas out of solution).

RO Importance: 2.5 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(10)

STP Lesson: LOT 506.01 **Objective Number:** 92159

Discuss requirements from any addendum from the referenced procedure.

Reference: 0POP03-ZG-0007, Plant Cooldown, page 79 and Addendum 5

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: During the degas, 0POP03-ZG-0007 requires a RCP in service in order to have spray flow available. After the VCT is filled, the subsequent draining can be to the in-service RHUT or back to the RCS if the Pressurizer needs to be filled for cooldown.

B: INCORRECT: Plausible as an RCP does have to be in service and if the student believes the draining of the system would be from the Pressurizer to the connected PRT.

C: INCORRECT: Plausible since all RCPs are secured during cooldown but not at this point. The RHUT is the correct tank.

D: INCORRECT: Plausible since all RCPs are secured during cooldown but not at this point and if the student believes the draining of the system would be from the Pressurizer to the connected PRT.

Question Level: F **Question Difficulty** 3

Justification:

The student must recall requirements to conduct a mechanical degas during a plant cooldown.

Exam Bank No.: 2837 **Last used on an NRC exam:** Never

RO Sequence Number: 71

A reactor trip and safety injection just occurred in the unit. Complete the following:

If the operator needs to report Instrument Air pressure, he will read the gauge on ____(1)____.

The Instrument Air OCIV will be _____(2)_____.

A. (1) CP-008
(2) verified open on CP-008

B. (1) CP-008
(2) verified closed on CP-002

C. (1) CP-002
(2) verified open on CP-008

D. (1) CP-002
(2) verified closed on CP-002

Answer: B (1) CP-008 (2) verified closed on CP-002

STP LOT-23 NRC RO EXAM

Exam Bank No.: 2837 **Source:** New **Modified from**

K/A Catalog Number: 078 A3.01 Ability to monitor automatic operation of the IAS, including: Air pressure.

RO Importance: 3.1 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 202.26 **Objective Number:** 32856

Describe the instrumentation and controls available to monitor and operate the Instrument Air and Service Air System.

Reference: LOT 202.26 Powerpoint Presentation, Slide 17, 39

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible with confusion over locations.

B: CORRECT: The IA pressure gauge is on CP-008 and the IA OCIV is on CP-002 and it closes on a CI Phase A signal which comes from a SI.

C: INCORRECT: Plausible with confusion over locations.

D: INCORRECT: Plausible with confusion over locations.

Question Level: F **Question Difficulty** 3

Justification:

The student must recall the location of instrumentation and controls in the control room.

Exam Bank No.: 2651 **Last used on an NRC exam:** 2017

RO Sequence Number: 72

Which train(s) of RHR can supply low pressure letdown?

A. A ONLY

B. A and B ONLY

C. B and C ONLY

D. A, B, and C

Answer: B A and B ONLY

Exam Bank No.: 2651 **Source:** Bank **Modified from**

K/A Catalog Number: 005 K1.04 Knowledge of the physical connections and/or cause - effect relationships between the RHRS and the following systems: CVCS

RO Importance: 2.9 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.09 **Objective Number:** 3422

DESCRIBE the flowpath of the RHR system including all valves and components in the main flowpath.

Reference: LOT 201.09 Powerpoint Presentation, Slide 13

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Low pressure letdown is supplied by A and B trains of RHR. Plausible because the CVCS letdown return is ONLY to Train A.

B: CORRECT: Low pressure letdown is supplied by A and B trains of RHR.

C: INCORRECT: Low pressure letdown is supplied by A and B trains of RHR. Plausible because the function of RHR to drain the refueling cavity to the RWST is ONLY on Trains B AND C.

D: INCORRECT: Low pressure letdown is supplied by A and B trains of RHR. Plausible because several functions of RHR are capable by ALL 3 trains of RHR such as decay heat removal.

Question Level: F **Question Difficulty** 2

Justification:

Student must recall the flowpath of all 3 trains of RHR.

Exam Bank No.: 2367 **Last used on an NRC exam:** 2014

RO Sequence Number: 73

Reactor Coolant Pump design seal injection flow is ____(1)___ gpm and the design feature that ensures seal function if normal seal injection is lost is _____(2)_____.

A. (1) 5
(2) a thermal barrier heat exchanger that cools water from the RCS

B. (1) 8
(2) a thermal barrier heat exchanger that cools water from the RCS

C. (1) 5
(2) the #1 seal leakoff is isolated and the #2 seal converts to a film-riding seal

D. (1) 8
(2) the #1 seal leakoff is isolated and the #2 seal converts to a film-riding seal

Answer: B (1) 8 (2) A thermal barrier heat exchanger that cools water from the RCS.

Exam Bank No.: 2367 **Source:** Bank **Modified from**

K/A Catalog Number: 003 K4.04 Knowledge of RCPS design feature(s) and/or interlock(s) which provide for the following: Adequate cooling of RCP motor and seals.

RO Importance: 2.8 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.05 **Objective Number:** 50805

Describe the operation of the RCP seals and seal water supply including all design limits and their bases.

Reference: LOT 201.05 Lesson Plan Handout on Reactor Coolant Pumps.

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible because 5 gpm is part of the design seal injection flow but it is a part of the total flow from CVCS that flows past the thermal barrier and into the RCS. If seal injection flow were 5 gpm then a seal injecton flow low alarm would annunciate.

B: CORRECT: The design seal injection flow from CVCS to the RCP seal is 8 gpm and the thermal barrier heat exchanger acts as a backup in the event of a loss of seal injection flow by cooling the water from the RCS that would be flowing in reverse direction through the thermal barrier and into the seal package.

C: INCORRECT: Plausilble because 5 gpm is part of the design seal injection flow but it is a part of the total flow from CVCS that flows past the thermal barrier and into the RCS. If seal injection flow were 5 gpm then a seal injecton flow low alarm would annunciate. Also, the number 2 seal converting to a film-riding seal is a design feature of the RCP seal package but it is for a failure of the number 1 seal.

D: INCORRECT: Plausible because the number 2 seal converting to a film-riding seal is a design feature of the RCP seal package but it is for a failure of the number 1 seal.

Question Level: F **Question Difficulty** 3

Justification:

The student must have knowledge of RCP design including the RCP seal package.

Exam Bank No.: 1488 **Last used on an NRC exam:** 2010

RO Sequence Number: 74

If RT-8032, GWPS Outlet, reaches the HIGH alarm setpoint then…

A. WG-FV-4657, GWPS INLET HEADER VALVE, closes.

B. WG-FV-4671, GWPS DISCHARGE FLOW VALVE, goes to recirculation mode.

C. GWPS BELLOWS COMPRESSOR, receives a start signal.

D. WG-FIC-4653, VOLUME CONTROL TANK FLOW, closes.

Answer: A WG-FV-4657, GWPS INLET HEADER VALVE, closes

Exam Bank No.: 1488 **Source:** Bank **Modified from**

K/A Catalog Number: 073 K1.01 Knowledge of the physical connections and/or cause-effect relationships between the PRM system and the following systems: Those systems served by PRMs

RO Importance: 3.6 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(13)

STP Lesson: LOT 202.41 **Objective Number:** 92122

LIST the initiating condition and resultant automatic action for the PERMS radiation monitors associated with the following systems:
A. Boron Recycle System
B. Gaseous Waste Processing System
C. Liquid Waste Processing System
D. Turbine Generator Building Sump and Drain System
E. Condensate Polishing System
F. Steam Generator Blowdown System
G. Containment Building
H. Electrical Auxiliary Building and Control Room Envelope HVAC
I. Fuel Handling Building Ventilation System

Reference: LOT202.41, handout #1, page 26

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: One of the auto actions for this monitor is to close the inlet valve.
B: INCORRECT: Plausible as a liquid waste discharge valve recircs on a high rad signal.
C: INCORRECT: Plausible as the bellows compressor is affected but it trips instead of starts.
D: INCORRECT: Plausible as the VCT is a significant input to the system, but individual valves do not close.

Question Level: F **Question Difficulty** 2

Justification:

The applicant must have a knowledge of the protection afforded by the PRMs to the waste gas system.

Exam Bank No.: 2835 **Last used on an NRC exam:** Never

RO Sequence Number: 75

An RO is loading Standby Diesel Generator 11 for a surveillance test.

Which of the following signals would trip the diesel generator while loading?

A. Raw Water Low Pressure

B. Jacket Water High Temperature

C. DG Low Air Pressure

D. High Voltage Cubicle High Temperature

Answer: B Jacket Water High Temperature

STP LOT-23 NRC RO EXAM

Exam Bank No.: 2835 **Source:** New **Modified from**

K/A Catalog Number: 064 K4.01 Knowledge of ED/G system design features and/or interlocks which provide for the following: Trips while loading the ED/G (frequency, voltage, speed).

RO Importance: 3.8 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.39 **Objective Number:** 45057

State the Emergency Diesel Generator trips in the emergency mode and in the test mode.

Reference: LOT 201.39 Powerpoint Presentation

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as a loss of cooling water is a serious condition but not a trip signal
B: CORRECT: This condition will trip the diesel in the non-emergency mode.
C: INCORRECT: Plausible as trip circuits are affected but does not cause a trip.
D: INCORRECT: Plausible as this could affect generator operation, but not a diesel engine trip.

Question Level: F **Question Difficulty** 2

Justification:

The student must recall the non-emergency trips of the Standby Diesel Generators.

Exam Bank No.: 2857 **Last used on an NRC exam:** Never

SRO Sequence Number: 76

The Technical Specification Basis for the Ultimate Heat Sink places limits on _____(1)_____ in order to respond to a design basis accident for at least ___(2)___ days.

A. (1) maximum temperature and minimum level
(2) 30 days

B. (1) maximum temperature and minimum level
(2) 7 days

C. (1) maximum temperature ONLY
(2) 30 days

D. (1) maximum temperature ONLY
(2) 7 days

Answer: A (1) maximum temperature and minimum level (2) 30 days

Exam Bank No.: 2857 **Source:** New **Modified From**

K/A Catalog Number: 076 G2.2.25 Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits: Service Water

SRO Importance: 4.2 **Tier:** 3 **Group/Category:**

10CFR Reference or SRO Objective: 55.43(b)(2)

SRO Justification:

Knowledge of TS bases that is required to analyze TS-required actions and terminology.

STP Lesson: LOT 503.01 **Objective Number:** 92102

Describe the general requirements of the Technical Specifications or the Technical Requirements Manual (TRM) to include components or administrative requirements affected, limitations, major time frames involved, major surveillances in order to comply, and the bases for the specifications/requirement.

Reference: Technical Specification 3.7.5 and basis

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: TS 3.7.5 requires a maximum temperature and a minimum water level in order to provide a 30 day supply.

B: INCORRECT: TS 3.7.5 requires a maximum temperature and a minimum water level and 7-days is used in Technical Specifications in the Accident Monitoring section.

C: INCORRECT: Plausible as maximum temperature is required.

D: INCORRECT: Plausible as maximum temperature is required.

Question Level: F **Question Difficulty** 3

Justification:

The student must recall information about Technical Specifications and their basis.

Exam Bank No.: 2856 **Last used on an NRC exam:** Never

SRO Sequence Number: 77

With Unit 1 at 100%, the reactor trips and 4.16KV ESF Bus E1B LOCKS OUT.

Based on this occurrence, the Unit Supervisor will direct the crew to perform…

A. 0POP05-EO-EO00, Reactor Trip or Safety Injection. When complete, enter 0POP04-AE-0001, First Response to Loss Of Any Or All 13.8 KV Or 4.16 KV Bus.

B. 0POP05-EO-EO00, Reactor Trip or Safety Injection, AND take required actions of 0POP04-AE-0001, First Response to Loss Of Any Or All 13.8 KV Or 4.16 KV Bus, when resources are available.

C. 0POP05-EO-EO00, Reactor Trip or Safety Injection, AND 0POP04-AE-0001, First Response to Loss Of Any Or All 13.8 KV Or 4.16 KV Bus CONCURRENTLY.

D. 0POP04-AE-0001, First Response to Loss Of Any Or All 13.8 KV Or 4.16 KV Bus and when actions regarding 4.16KV ESF Bus E1B are complete THEN enter 0POP05-EO-EO00, Loss of Reactor Trip or Safety Injection.

Answer: B 0POP05-EO-EO00, Reactor Trip or Safety Injection, AND take required actions of 0POP04-AE-0001, First Response to Loss Of Any Or All 13.8 KV Or 4.16 KV Bus, when resources are available.

Exam Bank No.: 2856 **Source:** New **Modified From**

K/A Catalog Number: G2.4.5 Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions.

SRO Importance: 4.3 **Tier:** 3 **Group/Category:**

10CFR Reference or SRO Objective: 55.43(b)(5)

SRO Justification:

Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergeny situations. Specifically, the knowledge of administrative procedures that specify hierarchy, implementation, and/or coordination of plant normal, abnormal, and emergency procedures.

STP Lesson: LOT 504.04 **Objective Number:** Terminal

From memory, the student will be able to explain the basic contents of the Emergency Operating Procedures, in accordance with station procedures, drawings, and basis documents.

Reference: 0POP01-ZA-0018, step 4.26.4

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible with confusion over the procedure hierarchy.

B: CORRECT: Per 0POP01-ZA-0018

C: INCORRECT: Plausible with confusion over the procedure hierarchy.

D: INCORRECT: Plausible with confusion over the procedure hierarchy.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess plant conditions and select procedures to use and a hierarchy with which to implement.

Exam Bank No.: 2782 **Last used on an NRC exam:** 2018

SRO Sequence Number: 78

The unit is at 50% with the following feedwater configuration:

- SGFPs 12 and 13 are in service.
- SGFP 11 is idling at 3300 rpm.
- SUFP 14 is tagged out for corrective maintenance.

The SGFP Master Speed Controller output fails low and does NOT respond when the controller is placed in MANUAL.

The crew performs the immediate actions of 0POP04-FW-0002, Steam Generator Feed Pump Trip.

In accordance with 0POP04-FW-0002, the Unit Supervisor will next direct…

A. a Turbine Load Reduction AND also raise SGFPT 11 speed to match feedwater flow to steam flow.

B. a Turbine Load Reduction AND ensure Feed/Steam Header differential pressure adjusted per Addendum 3, Required Feed/Steam DP For SGFP Operation.

C. controlling SGFPTs 11 and 12 individually in MANUAL AND also raise SGFPT 11 speed to match feedwater flow to steam flow.

D. controlling SGFPTs 12 and 13 individually in MANUAL AND ensure Feed/Steam Header differential pressure adjusted per Addendum 3, Required Feed/Steam DP For SGFP Operation.

Answer: D controlling SGFPTs 12 and 13 individually in MANUAL AND ensure Feed/Steam Header differential pressure adjusted per Addendum 3, Required Feed/Steam DP For SGFP Operation.

Exam Bank No.: 2782 **Source:** Bank **Modified From**

K/A Catalog Number: APE 054 G2.1.23 Ability to perform specific system and integrated plant procedures during all modes of plant operation: Loss of Main Feedwater

SRO Importance: 4.4 **Tier:** 1 **Group/Category:** 1

10CFR Reference or SRO Objective: 55.43(b)(5)

SRO Justification:

This question requires knowledge of when to implement attachments or appendices, including how to coordinate these items with procedure steps.

STP Lesson: LOT 505.01 **Objective Number:** 92108

Given a plant condition, state the actions required to be performed per the applicable Off-Normal procedure.

Reference: 0POP04-FW-0002, Steam Generator Feed Pump Trip

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible because the need for a load reduction is still checked after the immediate actions are completed if there is not adequate feedwater flow to match steam flow. However, in the given conditions there is adequate feedwater. Plausible because raising speed on an idle SGFPT would be an option to raise feedwater flow, however, for this condition this action would not have been performed and procedural steps are not given after the immediate actions.

B: INCORRECT: Plausible because the need for a load reduction is still checked after the immediate actions are completed if there is not adequate feedwater flow to match steam flow. However, in the given conditions there is adequate feedwater.

C: INCORRECT: Plausible because raising speed on an idle SGFPT would be an option to raise feedwater flow, however, for this condition this action would not have been performed and procedural steps are not given after the immediate actions.

D: CORRECT: Following the immediate actions, the Unit Supervisor will direct the operators to control SGFPTs 11 and 12 individually in MANUAL to establish the correct feed/steam header D/P per the requirements of Addendum 3. (Step 7 RNO)

Question Level: H **Question Difficulty** 3

Justification:

The student must assess conditions and implement the abnormal condition procedure correctly including selection of the appropriate procedural path and addendum.

Exam Bank No.: 2718 **Last used on an NRC exam:** Never

SRO Sequence Number: 79

Both units are at 100%.

- It is 18:00 and the day shift crew members have all been relieved except for the STA.
- The on-coming crew is at MINIMUM shift complement.
- The on-coming STA calls and reports he will be approximately one hour late.
- The off-going STA has worked five 12-hour day shifts and is scheduled to be off the next day.

The Shift Manager will determine that shift composition may…

A. NOT drop below the minimum due to a relief being late. The off-going STA shall stay over and requires a fatigue rule waiver.

B. NOT drop below the minimum due to a relief being late. The off-going STA shall stay over and does NOT require a fatigue rule waiver.

C. drop below the minimum for up to one hour due to a relief being late.

D. drop below the minimum for up to two hours due to a relief being late.

Answer: B NOT drop below the minimum due to a relief being late. The off-going STA shall stay over and does NOT require a fatigue rule waiver.

Exam Bank No.: 2718 **Source:** Bank **Modified From**

K/A Catalog Number: G2.1.5 Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.

SRO Importance: 3.9 **Tier:** 3 **Group/Category:**

10CFR Reference or SRO Objective: 55.43(b)(2)

SRO Justification:

Unique to the SRO position

STP Lesson: LOT 507.01 **Objective Number:** 92186

Given the title of an administrative procedure, DISCUSS the requirements associated with the referenced procedure.

Reference: TS 6.2.2, 0PGP03-ZA-0114, step 4.3.1.1, Conduct of Operations, Chapter 2

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: A waiver is not required. Plausible, because if the STA had previously worked 6 - 12 hour shifts then a work hour rule violation would occur.

B: CORRECT: In this situation the STA shall stay. Also, there is no work hour rule violation so a waiver is not required.

C: INCORRECT: Plausible because TS 6.2.2 states that a shift composition may be one less than the minimum for a period not to exceed 2 hours in order to accodate an unexpected absence of an on-duty shift member. However, this is not correct for the given situation because the absence is not of an on-shift crew member.

D: INCORRECT: Plausible because TS 6.2.2 states that a shift composition may be one less than the minimum for a period not to exceed 2 hours in order to accodate an unexpected absence of an on-duty shift member. However, this is not correct for the given situation because the absence is not of an on-shift crew member.

Question Level: H **Question Difficulty** 3

Justification:

The student must know the working hour rules and the requirements of the administrative requirements of TS section 6.

Exam Bank No.: 1713 **Last used on an NRC exam:** Never

SRO Sequence Number: 80

Given the following:

- The crew is releasing Waste Monitor Tank (WMT) 1E per 0POP02-WL-0100, Liquid Waste Release.
- Prior to the release, WMT 1E was in Short Path Recirculation for 20 minutes.

Which of the following is correct concerning this situation? Tank recirculation was…

A. INADEQUATE. The Unit Supervisor will direct the operator to stop the WMT 1E Pump.

B. INADEQUATE. The Unit Supervisor will direct the operator to place WL-FV-4077, WMT Discharge Dirvert Valve, in the RECIRC position.

C. INADEQUATE. The Unit Supervisor will direct the operator to close WL-1347, LWPS Discharge Header to Open Loop Cooling Water Isolation Valve.

D. ADEQUATE. The Unit Supervisor will allow the crew to continue the release.

Answer: A A.(1) ODCM (2) MAB Operator to place WL-FV-4077, WMT Discharge Divert Valve, in the RECIRC position

Exam Bank No.: 1713 **Source:** Bank **Modified From**

K/A Catalog Number: 068 A2.02 Ability to (a) predict the impacts of the following malfunctions or operations on the Liquid Radwaste System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: lack of tank recirculation prior to release.

SRO Importance: 2.8 **Tier:** 2 **Group/Category:** 2

10CFR Reference or SRO Objective: 55.43(b)(1)

SRO Justification:

Unique to the SRO position.

STP Lesson: LOT 203.11 **Objective Number:** 92084

Given an abnormal plant condition concerning equipment associated with the Liquid Waste Processing System (LWPS), determine the probable cause of the condition and any corrective actions necessary (if applicable).

Reference: LOT 203.11 Powerpont Presentation Slide 91, 0PSP07-WL-0100, Step 5.12

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: Securing a release is the responsibility of the MAB operator, not the TGB operator or Chemistry Technician. This is an ODCM requirement.

B: INCORRECT: Plausible with confusion over requirements and responsibilities.

C: INCORRECT: Plausible with confusion over requirements and responsibilities.

D: INCORRECT: Plausible with confusion over requirements and responsibilities.

Question Level: F **Question Difficulty** 3

Justification:

The student must know the ramifications of not recirculating a WMT sufficiently before releasing it Additonally, they must know which document that contains the limits for liquid releases and who the proper person is to terminate a release if necessary.

Exam Bank No.: 2783 **Last used on an NRC exam:** 2018

SRO Sequence Number: 81

A reactor startup is in progress.

- Source range channel N31 indicates 5.0 E+4 cps.
- Source range channel N32 indicates 4.0 E+4 cps.
- Intermediate range channel N35 indicates 1.3 E-10 amps.
- Intermediate range channel N36 indicates 3.0 E-11 amps.

Complete the following statements:

Based on the indications shown above, _____(1)_____.

Technical Specifications will require the Unit Supervisor to maintain power below a MAXIMUM of _____(2)_____.

A. (1) N35 is undercompensated
(2) P-6

B. (1) N35 is undercompensated
(2) 10%

C. (1) N36 is overcompensated
(2) P-6

D. (1) N36 is overcompensated
(2) 10%

Answer: D (1) N36 is overcompensated (2) 10%

Exam Bank No.: 2783 **Source:** Bank **Modified From**

K/A Catalog Number: APE 033 AA2.04 Ability to determine and interpret the following as they apply to the Loss of Intermediate Range Nuclear Instrumentation: Satisfactory overlap between source-range, intermediate-range and power-range instrumentation.

SRO Importance: 3.2 **Tier:** 1 **Group/Category:** 2

10CFR Reference or SRO Objective: 55.43(b)(2)

SRO Justification:

Knowledge of TS bases that are required to analyze TS-required actions and terminology.

STP Lesson: LOT 503.01 **Objective Number:** 80056

Determine the applicable Technical Specification and/or Technical Requirements Manual (TRM) Limiting Conditions for Operation (LCOs) and the required actions to be taken.

Reference: Technical Specification 3.3.1, Functional Unit 5, Action 3, 0PSP03-ZQ-0028, page 27.

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible if the student confuses the effect of compensating voltage and also if the student believes that moving power below P-6 is the correct action per TS.

B: INCORRECT: Plausible if the student confuses the effect of compensating voltage. This is the correct action for a failed IR instrument.

C: INCORRECT:Plausible as this is the correct failure and if the student believes that moving power below P-6 is the correct action per TS.

D: CORRECT: IR 35 is reading correctly for the given SR readings. Since IR 36 is reading over a decade lower, it is overcompensated and does not meet the channel check of less than or equal to a factor of 3 between readings. With an inoperable IR instrument doing a reactor startup, power must be maintained below 10%.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess the conditions presented regarding SR and IR instruments and determine the failure. Then, the student must apply TS to the situation.

Exam Bank No.: 2855 **Last used on an NRC exam:** Never

SRO Sequence Number: 82

Both units are at 100%. A disturbance on the grid is in progress.

- The STP Coordinator calls and informs the crew that if BOTH units were to trip, grid voltage could drop to 337 KV.

With this information, the Shift Manager will declare ___(1)___required offsite source(s) INOPERABLE.

Within __(2)__ hours, restore the (at least one) offsite source to an OPERABLE status.

A. (1) both
(2) 1

B. (1) both
(2) 24

C. (1) 1
(2) 1

D. (1) 1
(2) 24

Answer: B (1) both (2) 24

Exam Bank No.: 2855 **Source:** New **Modified From**

K/A Catalog Number: APE 077 AA2.05 Ability to determine and interpret the following as they apply to Generator Voltage And Electric Grid Disturbances: Operational status of offsite circuit.

SRO Importance: 3.8 **Tier:** 1 **Group/Category:** 1

10CFR Reference or SRO Objective: 55.43(b)(2)

SRO Justification:

Application of required actions (TS Section 3) and surveillance requirements (SR) (TS Section 4) in accordance with rules of application requirements (TS, Section 1)

STP Lesson: **Objective Number:** 32443

Given a plant condition, describe and/or interpret the requirements and/or limits of a precaution or step of a referenced procedure.

Reference: 0POP04-AE-0005, step 7, 21 and basis. Technical Specificaton. 3.8.1

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as both sources are inoperable and there are several one hour actions in this specification.

B: CORRECT: With this condition, the grid must be considered already in a degraded voltage condition, and both offsite sources credited for Technical Specifications inoperable. This is a 24 hour action.

C: INCORRECT: Plausible with confusion about the sources available and the action times.

D: INCORRECT: Plausible with confusion about the sources available. This is the correct time.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess the grid and switchyard conditions and apply technical specifications.

Exam Bank No.: 2859 **Last used on an NRC exam:** Never

SRO Sequence Number: 83

The Unit is at 100% when the following occurs:

- Loss of Class 1E 125 VDC power to E1A11

In addition to the Electrical System Technical Specifications, the Unit Supervisor should also declare PRZR PORV __(1)__ inoperable and isolate the PORV by closing _____(1)_____ the associated block valve.

A. (1) PCV-0655A
(2) and removing power from

B. (1) PCV-0655A
(2) but maintaining power to

C. (1) PCV-0656A
(2) and removing power from

D. (1) PCV-0656A
(2) but maintaining power to

Answer: A (1) PCV-0655A (2) and removing power from

Exam Bank No.: 2859 **Source:** New **Modified From**

K/A Catalog Number: APE 058 AA2.03 Ability to determine and interpret the following as they apply to the Loss of DC Power: DC loads lost; impact on ability to operate and monitor plant systems.

SRO Importance: 3.9 **Tier:** 1 **Group/Category:** 1

10CFR Reference or SRO Objective: 55.43(b)(2)

SRO Justification:

Application of required actions (TS Section 3) and surveillance requirements (SR) (TS Section 4) in accordance with rules of application requirements (TS, Section 1)

STP Lesson: LOT 201.37 **Objective Number:** 63901

GIVEN a loss of power, PREDICT the operation of the class 1E DC Electrical Distribution System to include automatic actions and interlocks.

Reference: 0POP04-DJ-0001 Addendum 5, page 1, Technical Specification 3.4.4

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: E1A11 provides power to PORV PCV-0655A. The valve must be declared inoperable and isolated with power removed from the block valve within 1 hour

B: INCORRECT: Plausible as this is the correct failure and this is the action for seat leakage.

C: INCORRECT: Plausible as the valve nomenclature (A for a B train valve) can cause confusion. This is the right action.

D: INCORRECT: Plausible as the valve nomenclaturre (A for a B train valve) can cause confusion. This is the right action.

Question Level: H **Question Difficulty** 3

Justification:

The student must know what valves are powered from E1A11 and apply Tech Specs.

Exam Bank No.: 2865 **Last used on an NRC exam:** Never

SRO Sequence Number: 84

Complete the following concerning RT-8010B, Unit Vent Noble Gas Radiation Monitor.

Per the Offsite Dose Calculation Manual

RT-8010B is required to be OPERABLE _____(1)_____.

If RT-8010B loses power, then gaseous releases _____(2)_____.

A. (1) at all times
(2) can NOT continue

B. (1) at all times
(2) may continue with regular sampling and analysis

C. (1) in MODES 1-4 ONLY
(2) can NOT continue

D. (1) in MODES 1-4 ONLY
(2) may continue with regular sampling and analysis

Answer: B (1) while moving spent fuel in the FHB (2) fuel movement may continue if an acceptable alternate radiation monitor is functional

Exam Bank No.: 2865 **Source:** New **Modified From**

K/A Catalog Number: 073 G2.1.32 Ability to explain and apply system limits and precautions: Process Radiation Monitoring

SRO Importance: 4.0 **Tier:** 2 **Group/Category:** 1

10CFR Reference or SRO Objective: 55.43(b)(4)

SRO Justification:

Application of required actions (TS Section 3) and surveillance requirements (SR) (TS Section 4) in accordance with rules of application requirements (TS, Section 1)

STP Lesson: LOT 202.41 **Objective Number:** 37872

State which radiation monitors are coverd by Technical Specifications, the Technical Requirements Manual (TRM), or the Offsite Dose Calculation Manual (ODCM), and describe general requirements of the specificaton to include components or administrative requirements, time frames, and the bases.

Reference: ODCM 3.3.11

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as this is the correct TRM usage and if the student does not recognize releases can occur with additional sampling.

B: CORRECT: RT-8010B is required to be operable per the ODCM for radioactive effluent releases. In the ODCM, if RT-8010B is not operable, releases may continue for up to 30 days but only with additional sampling.

C: INCORRECT: Plausible as this is a common applicability in TS and if the student does not recognize releases can occur with additional sampling.

D: INCORRECT: PPlausible as this is a common applicability in TS and releases are allowed.

Question Level: F **Question Difficulty** 3

Justification:

The student must recall ODCM requirements for RT-8010B

Exam Bank No.: 1099 **Last used on an NRC exam:** 2015

SRO Sequence Number: 85

A Large Break LOCA has occurred in Unit 1. The crew is performing 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.

- RWST Level = 175,000 gallons
- Containment pressure = 6.2 psig
- Containment water level = 62 inches
- Containment radiation level = 3000 R/hr

Based on this information, the Unit Supervisor will direct an entry into…

A. 0POP05-EO-ES13, Transfer to Cold Leg Recirculation.

B. 0POP05-EO-FRZ1, Response to High Containment Pressure.

C. 0POP05-EO-FRZ2, Response to Containment Flooding.

D. 0POP05-EO-FRZ3, Response to High Containment Radiation Level.

Answer: D 0POP05-EO-FRZ3, Response to High Containment Radiation Level

Exam Bank No.: 1099 **Source:** Bank **Modified From**

K/A Catalog Number: E16 G2.4.2 High Containment Radiation: Knowledge of system setpoints, interlocks, and automatic actions associated with EOP entry conditions.

SRO Importance: 4.6 **Tier:** 1 **Group/Category:** 2

10CFR Reference or SRO Objective: 55.43(b)(5)

SRO Justification:

Assessment of plant conditions and then selection of a procedure or section of a procedure to mitigate or recover, or with which to proceed.

STP Lesson: LOT 504.42 **Objective Number:** 92271

STATE/IDENTIFY the condition(s) under which 0POP05-EO-FRZ3 is entered.

Reference: 0POP05-EO-F005, Containment Critical Safety Function Status Tree; 0POP05-EO-E010, Loss of Reactor or Secondary Coolant

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Entry into 0POP05-EO-ES13 occurs at RWST level < 75,000 gallons

B: INCORRECT: Entry into 0POP05-EO-FRZ1 occurs at containment pressure > 9.5 psi

C: INCORRECT: Entry into 0POP05-EO-FRZ2 occurs at containment water level > 69 in

D: CORRECT: Entry into 0POP05-EO-FRZ3 occurs at containment radiation level > 2000 R/h

Question Level: H **Question Difficulty** 3

Justification:

Must be able to analyze the given conditions to determine the correct procedure to enter.

Exam Bank No.: 2852 **Last used on an NRC exam:** Never

SRO Sequence Number: 86

A Design Basis Small Break LOCA has occurred in the unit.

- While performing 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant, the steam generators were unable to be depressurized below 1000 psig.

The consequence of this event will be _____(1)_____ . The Unit Supervisor will respond by entering _____(2)_____.

A. (1) a longer core uncovery
(2) 0POP05-EO-FRH2, Response to Steam Generator Overpressure

B. (1) a longer core uncovery
(2) 0POP05-EO-FRC3, Response to Saturated Core Cooling

C. (1) the inability to establish a heat sink
(2) 0POP05-EO-FRH2, Response to Steam Generator Overpressure

D. (1) the inability to establish a heat sink
(2) 0POP05-EO-FRC3, Response to Saturated Core Cooling

Answer: B (1) a longer core uncovery (2) 0POP05-EO-FRC3, Response to Saturated Core Cooling

Exam Bank No.: 2852 **Source:** New **Modified From**

K/A Catalog Number: EPE009 G2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation: Small Break LOCA

SRO Importance: 4.7 **Tier:** 1 **Group/Category:** 1

10CFR Reference or SRO Objective: 55.43(b)(5)

SRO Justification:

Assessment of plant conditions and then selection of a procedure or section of a procedure to mitigate or recover, or with which to proceed.

STP Lesson: LOT 504.09 **Objective Number:** 81187

Discuss the indications available to determine plant status during a loss of primary or secondary coolant accident.

Reference: LOT504.09 Powerpoint Presentation, slide 22; LOT504.31 Powerpoint Presentation, slide 6

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as this is the correct outcome, and the steam generator pressures are higher than desired but less than 1325 psig, which is the entry condition for FRH2.

B: CORRECT: With the inability to depressurize steam generators, the length of time to blow the loop seal increases, leading to a longer core uncovery. With the core voided, CET temperatures will rise and FRC3 may be used with core uncovery but CET temperatures still less than 708F.

C: INCORRECT:

D: INCORRECT:

Question Level: H **Question Difficulty** 3

Justification:

The student must assess plant conditions and determine the effect on the plant and the correct procedure to use.

Exam Bank No.: 2853 **Last used on an NRC exam:** Never

SRO Sequence Number: 87

With the unit at 100%, Boric Acid Transfer Pump 1B is removed from service.

- A loss of offsite power then occurs.
- The reactor does NOT trip.
- Emergency Diesel Generator 12 and 13 cannot be started.

While performing 0POP05-EO-FRS1, Step 1, VERIFY Reactor Trip, will be performed using _____(1)_____. Emergency boration will be performed using _____(2)_____.

A. (1) Step Counters
(2) Addendum 1, Emergency Boration Using Alternate and Gravity Feed Methods

B. (1) Step Counters
(2) the Alternate Boration Isolation Valve, MOV-0218

C. (1) DRPI
(2) Addendum 1, Emergency Boration Using Alternate and Gravity Feed Methods

D. (1) DRPI
(2) the Alternate Boration Isolation Valve, MOV-0218

Answer: C (1) DRPI (2) Addendum 1, Emergency Boration Using Alternate and Gravity Feed Methods

Exam Bank No.: 2853 **Source:** New **Modified From**

K/A Catalog Number: EPE 029 EA2.08 Ability to determine or interpret the following as they apply to a ATWS: Rod bank step counters and RPI.

SRO Importance: 3.5 **Tier:** 1 **Group/Category:** 1

10CFR Reference or SRO Objective: 55.43(b)(5)

SRO Justification:

Knowledge of when to implement attachments and appendices, including how to coordinate these items with procedure steps.

STP Lesson: LOT 504.28 **Objective Number:** 30134

Given a step, note, or caution from 0POP05-EO-FRS1, state its basis.

Reference: 0POP05-EO-FRS1, 0POP04-CV-0003, Basis document

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible if the student believes DRPI is deenergized and the step counters may be used to determine rod position in FRS1. Addendum 1 is the correct course of action.

B: INCORRECT: Plausible if the student believes DRPI is deenergized and the step counters may be used to determine rod position in FRS1. and if the student confuses power supplies and courses of action.

C: CORRECT: With a loss of offsite power, DRPI would momentarily deenergize but would be restored by the TSC Diesel Generator providing power to MCC 1G8 to DP-003. Step counters do not count down to 0 steps on a reactor trip and are not used. Since EDGs 12 and 13 do not start, buses E1B and E1C are not powered. With Boric Acid Transfer Pump 1B OOS, there are no Boric Acid Transfer Pumps, and the VCT and RWST isolation valves have no power. With this condition, performing a gravity feed emergency boration in Addendum 1 is the proper course of action.

D: INCORRECT: Plausible as DRPI is correct and if the student confuses power supplies and courses of action.

Question Level: H **Question Difficulty** 4

Justification:

The student must assess plant conditions and determine how to implement FRS1 properly.

Exam Bank No.: 2854 **Last used on an NRC exam:** Never

SRO Sequence Number: 88

With the unit at 100%, the following occurs:

- Pressurizer level begins lowering.
- Charging flow is rising.
- Letdown flow is oscillating.
- Floor Drain Tank level is rising.

Based on this information, the leak is in the _____(1)_____.

The Unit Supervisor will direct the performance of 0POP04-RC-0003, Excessive RCS Leakage, _____(2)_____.

A. (1) letdown line
(2) Addendum 3, RCS Leakage To Containment

B. (1) letdown line
(2) Addendum 1, RCS Leakage To The MAB

C. (1) charging line
(2) Addendum 3, RCS Leakage to Containment

D. (1) charging line
(2) Addendum 1, RCS Leakage To The MAB

Answer: D (1) charging line (2) Addendum 1, RCS Leakage To The MAB.

Exam Bank No.: 2854 **Source:** New **Modified From**

K/A Catalog Number: APE 022 G2.4.11 Knowledge of abnormal condition procedures: Loss of Rx Coolant Makeup.

SRO Importance: 4.2 **Tier:** 1 **Group/Category:** 1

10CFR Reference or SRO Objective: 55.43(b)(5)

SRO Justification:

Knowledge of when to implement attachments and appendices, including how to coordinate these items with procedure steps.

STP Lesson: LOT 505.01 **Objective Number:** 32443

Given a plant condition, describe and/or interpret the requirements and/or limits of a precuation or step of a referenced procedure.

Reference: 0POP04-RC-0003,

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as letdown flow is affected but not because of a leak and if the student confuses the location and guidance.

B: INCORRECT: Plausible as letdown flow is affected but not because of a leak. This is the correct addendum.

C: INCORRECT: Plausible as this is the correct source and if the student confuses location.

D: CORRECT: With these symptoms, a charging leak has occurred. Charging is rising but pressurizer level is lowering which indicates the charging flow is escaping from the normal flowpath. Letdown flow oscillating indicates that charging flow is not reaching the regenerative heat excahnger, and letdown flow there is being inadequately cooled causing flow oscillations. Floor Drain Tank rising would only occur if the leak was in the MAB.. The proper addendum follows from these symptoms.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess the conditions and determine the proper course of action.

Exam Bank No.: 2863 **Last used on an NRC exam:** Never

SRO Sequence Number: 89

With the unit at 100%, a Steam Generator Tube Leak occurs.

- The crew enters 0POP04-RC-0004, Steam Generator Tube Leakage.
- The RO reports that leakage is 155 gpd and rising at 42 gpd/hr.

With this leakage, Technical Specifications requires the plant to be in MODE 3 within ____(1)____ hours.

To comply with 0POP04-RC-0004, the Unit Supervisor will direct the plant to be shutdown using _____(2)_____

A. (1) 6
(2) 0POP04-TM-0005, Fast Load Reduction

B. (1) 6
(2) 0POP03-ZG-0006, Plant Shutdown from 100% to Hot Standby

C. (1) 10
(2) 0POP04-TM-0005, Fast Load Reduction

D. (1) 10
(2) 0POP03-ZG-0006, Plant Shutdown from 100% to Hot Standby

Answer: A (1) 6 (2) 0POP04-TM-0005, Fast Load Reduction

Exam Bank No.: 2863 **Source:** New **Modified From**

K/A Catalog Number: APE 037 G2.2.22 Knowledge of limiting conditions for operations and safety limits.

SRO Importance: 4.7 **Tier:** 1 **Group/Category:** 2

10CFR Reference or SRO Objective: 55.43(b)(2)

SRO Justification:

Application of required actions (TS Section 3) and surveillance requirements (SR) (TS Section 4) in accordance with rules of application requirements (TS, Section 1)

STP Lesson: LOT 503.01 **Objective Number:** 80056

Determine the applicable Technical Specification and/or Technical Requirements Manual (TRM) Limiting Conditions For Operation (LCOs) and the required action(s) to be taken.

Reference: TS 3.4.6.2, 0POP04-RC-0004, Addendum 6

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: TS 3.4.6.2 requires for greater than 150 gpd tube leakage that the plant be in MODE 3 within 6 hours. In 0POP04-RC-0004, with tube leakage greater than or equal to 75 gpd and rising at a rate of greater than or equal to 30 gpd/hr, the plant must be below 50% within 1 hour and in MODE 3 in the following 2 hours. This would require a fast load reduction.

B: INCORRECT: Plausible as this is the correct TS time and ZG-0006 is used for some cases in POP04-RC-0004

C: INCORRECT: Plausible as for other types of RCS leakage, the user is given 4 hours to correct the leakage, or be in MODE 3 within the next 6 hours. This is the correct procedure.

D: INCORRECT: Plausible as for other types of RCS leakage, the user is given 4 hours to correct the leakage, or be in MODE 3 within the next 6 hours and ZG-0006 is used for some cases in POP04-RC-0004

Question Level: H **Question Difficulty** 3

Justification:

The student must assess plant conditions and determine a course of action and also apply Technical Specifications.

Exam Bank No.: 2864 **Last used on an NRC exam:** Never

SRO Sequence Number: 90

With Unit 1 at 100% power, C1-CV-TSH-0023F, Radioactive Pipe Penetration Area Temperature Switch, fails HIGH.

- I&C is notified but cannot respond for 4 hours.

With this failure, _____(1)_____ has isolated and the Unit Supervisor will direct the crew to perform _____(2)_____.

A. (1) RCP seal injection
(2) 0POP04-RC-0002, Reactor Coolant Pump Off-Normal, Addendum 1, Establishing Normal RCP Seal Cooling

B. (1) RCP seal injection
(2) 0POP04-RC-0002, Reactor Coolant Pump Off-Normal, Addendum 4, RCP Number 2 Seal Leakoff Flow High

C. (1) letdown
(2) 0POP04-CV-0004, Loss of Normal Letdown, Addendum 5, Placing Excess Letdown in Service

D. (1) letdown
(2) 0POP04-CV-0004, Loss of Normal Letdown, Addendum 3, Letdown Pressure Control Valve Malfunction

Answer: C (1) letdown (2) 0POP04-CV-0004, Loss of Normal Letdown, Addendum 5, Placing Excess Letdown in Service

Exam Bank No.: 2864 **Source:** New **Modified From**

K/A Catalog Number: 016 A2.01 Ability to (a) predict the impacts of the following malfunctions or operations on the NNIS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Detector failure.

SRO Importance: 3.1 **Tier:** 2 **Group/Category:** 2

10CFR Reference or SRO Objective: 55.43(b)(5)

SRO Justification:

Knowledge of when to implement attachments and appendices, including how to coordinate these items with procedure steps.

STP Lesson: LOT 505.01 **Objective Number:** 5

Given a plant condition, describe the applicable requirements and limits of a precaution or step of a referenced POP04.

Reference: 0POP04-CV-0004

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as seal injection is supplied from charging which has lines that run through this area and if the student believes that a HELBA actuation would isolate charging and thus seal injection.

B: INCORRECT: Plausible as seal injection is supplied from charging which has lines that run through this area and if the student believes that with seal injection isolated, the #2 seal would have increased leakage.

C: CORRECT: This is one of a series of temperature switches that cause a HELBA actuation and a loss of letdown. Since the switch is failed high, letdown is not able to be placed back in service, and excess letdown must be placed in service.

D: INCORRECT: Plausible as this is the correct procedure, and if the student thinks that the PCV-135 is affected.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess the plant condition and determine a course of action.

Exam Bank No.: 2519 **Last used on an NRC exam:** Never

SRO Sequence Number: 91

The unit is in Mode 6 with Core Offload in progress.
The following occurs:

- A spent fuel assembly is damaged while removing it from the reactor vessel.
- Area radiation monitors in the RCB are alarming.

For the damaged spent fuel assembly, the potential for a radiological release is _____(1)_____ compared to if the incident occurred Core Reload.

The Unit Supervisor will direct the performance of _____(2)_____ per 0POP04-FH-0001, Fuel Handling Accident.

A. (1) GREATER
(2) Addendum 1, Establishing CRE HVAC in Emergency Mode

B. (1) GREATER
(2) Addendum 2, Establishing FHB HVAC in Emergency Mode

C. (1) LESS
(2) Addendum 1, Establishing CRE HVAC in Emergency Mode

D. (1) LESS
(2) Addendum 2, Establishing FHB HVAC in Emergency Mode

Answer: A (1) GREATER (2) Addendum 1, Establishing CRE HVAC in Emergency Mode

Exam Bank No.: 2519 **Source:** Bank **Modified From**

K/A Catalog Number: APE 036 AA2.03 Ability to determine and interpret the following as they apply to the Fuel Handling Incidents:
Magnitude of potential radioactive release.

SRO Importance: 4.2 **Tier:** 1 **Group/Category:** 2

10CFR Reference or SRO Objective: 55.43(b)(5)

SRO Justification:

Knowledge of when to implement attachments and appendices, including how to coordinate these items with procedure steps.

STP Lesson: LOT 501.22 **Objective Number:** 501226

Given a set of conditions or event description, be able to CATEGORIZE projected radiological consequences as either minimal or potentially significant for a transient or accident involving a radioactive release from a subsystem or component.

Reference: LOT 501.22 Lesson Plan on Transient and Accident Analysis and 0POP04-FH-0001, Fuel Handling Accident.

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: In comparison, a damaged Spent Fuel Assembly that has just been removed from the reactor vessel has a greater potential for a radiological release than one having spent time in the SFP and being placed back in the reactor vessel.. The correct action listed is to perform Addendum 1.

B: INCORRECT: Plausible as the radiological release is greater and the FHB and RCB are connected during refueling.

C: INCORRECT: Plausible with confusion over offload and reload. This is the correct action.

D: INCORRECT: Plausible with confusion over offload and reload and the FHB and RCB are connected during refueling.

Question Level: H **Question Difficulty** 3

Justification:

The student must be able to analyze the given conditions to determine the correct procedure steps to perform and have fundamental knowledge of the magnitude of potential radiological releases.

Exam Bank No.: 2860 **Last used on an NRC exam:** Never

SRO Sequence Number: 92

Before performing a liquid waste release, the ___(1)___ authorizes the discharge by signing 0PSP07-WL-LDP1, Liquid Effluent Permit.

AND

During the liquid waste release, the Open Loop Auxiliary Cooling Water System must be in service and properly aligned in order to prevent_____(2)_____.

A. (1) Chemical Technician Supervisor
(2) the existence of areas of no flow where contaminated liquid can accumulate

B. (1) Chemical Technician Supervisor
(2) contaminated water leaking from the Circulating Water Pump seal

C. (1) Shift Manager
(2) the existence of areas of no flow where contaminated liquid can accumulate

D. (1) Shift Manager
(2) contaminated water leaking from the Circulating Water Pump seal

Answer: C (1) Shift Manager (2) areas of no flow where contaminated liquid can accumulate

Exam Bank No.: 2860 **Source:** New **Modified From**

K/A Catalog Number: G2.3.6 Ability to approve release permits.

SRO Importance: 3.8 **Tier:** 3 **Group/Category:**

10CFR Reference or SRO Objective: 55.43(b)(4)

SRO Justification:

Unique to the SRO position

STP Lesson: LOT 203.11 **Objective Number:** 92084

Given an abnormal plant condition concerning equipment associated with the LWPS, determine the probable cause of the condition and any corrective actions necessary.

Reference: 0POP02-WL-0100

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: The Chemistry Manager and technicians do have a role in the discharge but not approval. This is the reason for OLACW alignment.

B: INCORRECT: The Chemistry Manager and technicians do have a role in the discharge but not approval. This is a function of OLACW.

C: CORRECT: The Shift Manager approves the discharge and this is the reason for OLACW alignment.

D: INCORRECT: Plausible as this is the correct approval and this is a function of OLACW.

Question Level: F **Question Difficulty** 3

Justification:

The student must recall informaton about radwaste discharges.

Exam Bank No.: 2456 **Last used on an NRC exam:** Never

SRO Sequence Number: 93

The unit is at 100% power. A Pressurizer PORV fails OPEN.

As a result of this occurrence, PRT pressure will rise until _____(1)_____.

The Unit Supervisor will respond to this event by directing the performance of _____(2)_____.

A. (1) a relief valve lifts
(2) 0POP04-RC-0003, Excessive RCS Leakage, then
0POP03-ZG-0006, Plant Shutdown From 100% to Hot Standby, then
0POP03-ZG-0007, Plant Cooldown

B. (1) a relief valve lifts
(2) 0POP05-EO-EO00, Reactor Trip or Safety Injection, then
0POP05-EO-EO10, Loss of Reactor or Secondary Coolant, then
0POP05-EO-ES12, Post LOCA Cooldown and Depressurization

C. (1) a rupture disc blows
(2) 0POP04-RC-0003, Excessive RCS Leakage, then
0POP03-ZG-0006, Plant Shutdown From 100% to Hot Standby, then
0POP03-ZG-0007, Plant Cooldown

D. (1) a rupture disc blows
(2) 0POP05-EO-EO00, Reactor Trip or Safety Injection, then
0POP05-EO-EO10, Loss of Reactor or Secondary Coolant, then
0POP05-EO-ES12, Post LOCA Cooldown and Depressurization

Answer: D (1) a rupture disc blows (2) 0POP05-EO-EO00, Reactor Trip or Safety Injection, then 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant, then 0POP05-EO-ES12, Post LOCA Cooldown and Depressurization

Exam Bank No.: 2456 **Source:** Bank **Modified From**

K/A Catalog Number: 007 A2.02 Ability to (a) predict the impacts of the following malfunctions or operations on the PRTS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:
Abnormal pressure in the PRT.

SRO Importance: 3.2 **Tier:** 2 **Group/Category:** 1

10CFR Reference or SRO Objective: 55.43(b)(5)

SRO Justification:

Assessing an abnormal condition and then selecting a section of a procedure to mitigate or recover, or with which to proceed.

STP Lesson: LOT 201.04 **Objective Number:** 32629

State the procedural requirements of the PRT System operating procedure.

Reference: LOT 201.04 Lesson Plan on the PRT and RCDT and 0POP02-RC-0001, PRT and RCDT System Operation

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as the RCDT has a relief valve and if the student does not understand the magnitude of leakage and the proper way to respond.

B: INCORRECT: Plausible as the RCDT has a relief valve and this is the correct procedural flow path.

C: INCORRECT: Plausible as a rupture disc does blow, and if the student does not understand the magnitude of leakage and the proper way to respond.

D: CORRECT: With a Pressurizer PORV open, the installed rupture discs will blow at 100 psig and drain to containment. The PORV is large enough that RCS pressure will drop and cause a reactor trip and safety injection. The crew will respond with the EOPs eventually cooling down and depressurizing the plant.

Question Level: H **Question Difficulty** 3

Justification:

The student must understand the consequence of a stuck open PORV on the PRT and how to direct a response to this situation.

Exam Bank No.: 2862 **Last used on an NRC exam:** Never

SRO Sequence Number: 94

Per 0POP08-FH-0009, Core Refueling, the Core Loading Supervisor is responsible for…

A. making changes to a Fuel Transfer Form (FTF).

B. providing appropriate radiological coverage on the refueling machine.

C. assigning refueling crews to operate the refueling machine.

D. granting approval to the Refueling Machine Operator to disengage from a fuel assembly.

Answer: D suspending core alterations when required.

Exam Bank No.: 2862 **Source:** New **Modified From**

K/A Catalog Number: G2.1.35 Knowledge of the fuel-handling responsibilities of SROs.

SRO Importance: 3.9 **Tier:** 3 **Group/Category:**

10CFR Reference or SRO Objective: 55.43(b)(6)

SRO Justification:

Unique to the SRO position

STP Lesson: LOT 801.01 **Objective Number:** 67635

Discuss the requirements of the Core Refueling, 0POP08-FH-0009, to include: A. Prerequisites, B. Notes and Precautions, C. Major Procedural Steps, D. Checklists

Reference: 0POP08-FH-0009, Step 5.5

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as the CLS must concur with changes to an approved FTF.

B: INCORRECT: Plausible as the CLS is directly involved with refueling but this is performed by the HP Manager.

C: INCORRECT: Plausible as the CLS supervises the refueling crews but the Unit Operations Manager assigns them.

D: CORRECT:The CLS is responsible for this per step 5.28.

Question Level: F **Question Difficulty** 3

Justification:

The student must recall the responsibilities of the Core Loading Supervisor.

Exam Bank No.: 1772 **Last used on an NRC exam:** 2011

SRO Sequence Number: 95

The unit is at 100% power.

- A Site Area Emergency has been declared due to high radioactivity levels on RT-8010B, Unit Vent Stack Rad Monitor, caused by an ongoing water leak in the MAB.
- The on-duty Shift Manager is the Emergency Director.

Per PGP03-ZA-0090, Work Process Program, maintenance can be directed to begin work without an approved work package after the…

A. Shift Manager declares the repair Emergent Work.

B. Shift Manager declares the repair Emergency Maintenance.

C. Plant Manager declares the repair Emergent Work.

D. Plant Manager declares the repair Emergency Maintenance.

Answer: B Shift Manager declares the repair Emergency Maintenance.

Exam Bank No.: 1772 **Source:** Bank **Modified From**

K/A Catalog Number: G2.2.17 Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, and coordination with the transmission system operator.

SRO Importance: 3.8 **Tier:** 3 **Group/Category:**

10CFR Reference or SRO Objective: 55.43(b)(4)

SRO Justification:

Unique to the SRO position

STP Lesson: LOT 802.33 **Objective Number:** SRO-50014

DESCRIBE the Work Process Priority classifications for condition reports.

Reference: PGP03-ZA-0090, Step 2.7

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible because of the similarity of terms.
B: CORRECT: In accordance with 0PGP03-ZA-0090.
C: INCORRECT: Plausible because of the similarity of terms.
D: INCORRECT: Plausible as it is emergency maintenance but the Shift Manager approves.

Question Level: F **Question Difficulty** 3

Justification:

The candidate must have a knowledge of the requirements for emergency maintenance under the work process program.

Exam Bank No.: 2858 **Last used on an NRC exam:** Never

SRO Sequence Number: 96

The RO has been directed to start ECW Pump 1A per 0POP02-EW-0001, Essential Cooling Water Operations.

- Upon review of the procedure, the RO determines the following:
  - Step 5.1.7, which requires the use of QDPS to record ECW flow to the CCW Heat Exchanger, cannot be accomplished because the QDPS reading is out of service.
  - The RO requests to use the local flow transmitter to complete the step.

The use of the local flow transmitter will be allowed by _____(1)_____ which is authorized by the _____(2)_____.

A. (1) Alternate Performance of Step 5.1.7
(2) Operations Manager

B. (1) Alternate Performance of Step 5.1.7
(2) Unit Supervisor

C. (1) a General Revision to 0POP02-EW-0001
(2) Operations Manager

D. (1) a General Revision to 0POP02-EW-0001
(2) Unit Supervisor

Answer: B (1) Alternate Performance of Step 5.1.7) (2) Unit Supervisor

Exam Bank No.: 2858 **Source:** New **Modified From**

K/A Catalog Number: G2.2.6 Knowledge of the process for making changes to procedures.

SRO Importance: 3.6 **Tier:** **Group/Category:**

10CFR Reference or SRO Objective: Objective

SRO Justification:

Unique to the SRO position

STP Lesson: LOT 507.01 **Objective Number:** 92183

Given the title of an administrative procedure, IDENTIFY the individuals (by job title) with specific responsibilities in the procedure.

Reference: 0PGP03-ZA-0010, Step 6.7

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: This is the correct method of changing the procedure for this use but it is approved by the Unit Supervisor

B: CORRECT: Alternate performance would be used in this instance and the Unit Supervisor authorizes this.

C: INCORRECT: A General Revision is a type of revision allowed by 0PAP01-ZA-0102, but not for this circumstance.

D: INCORRECT: A General Revision is a type of revision allowed by 0PAP01-ZA-0102, but not for this circumstance.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess the plant situation and deteremine which course of action to take.

Exam Bank No.: 2861 **Last used on an NRC exam:** Never

SRO Sequence Number: 97

With both units at 100% power, a hostile force gains entry into the Protected Area.

- The hostile force is able to damage fuel at the ISFSI.
- A General Emergency is declared (HG1 – HOSTILE ACTION resulting in loss of physical control of the FACILITY, EAL 1b(2) – Damage to spent fuel has occurred or is IMMINENT).

With the General Emergency, a Protective Action Recommendation will be ISSUED by the Emergency Director, who is the _____(1)_____. The Protective Action Recommendation will be IMPLEMENTED by _____(1)_____.

A. (1) Unit 1 Shift Manager
(2) STPNOC

B. (1) Unit 1 Shift Manager
(2) Matagorda County

C. (1) Unit 2 Shift Manager
(2) STPNOC

D. (1) Unit 2 Shift Manager
(2) Matagorda County

Answer: B (1) Unit 1 Shift Manager (2) Matagorda County

Exam Bank No.: 2861 **Source:** New **Modified From**

K/A Catalog Number: G2.4.37 Knowledge of the lines of authority during implementation of the emergency plan.

SRO Importance: 4.1 **Tier:** 3 **Group/Category:**

10CFR Reference or SRO Objective: 55.43(b)(5)

SRO Justification:

Unique to the SRO position

STP Lesson: EPT 001.00 **Objective Number:** 47030

Discuss the duties and responsibilities of the Shift Manager, TSC Manager, and EOF Director as delineated in EP procedures.

Reference: 0ERP01-ZV-SH01, Step 2.3; 0ERP01-ZV-IN07, Step 3.3

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible as the Unit 1 Shift Manager is correct, and STPNOC does have a role in the PAR process.

B: CORRECT: For an event that affects the entire site, the Unit 1 Shift Manager is the Emergency Director. The county implements recommendations from STPNOC.

C: INCORRECT: Plausible as the Unit 2 Shift Manager does assume the ED role for Unit 2 events, and handles events for Unit 1 in case of a fire and STPNOC does have a role in the PAR process.

D: INCORRECT: Plausible as the Unit 2 Shift Manager does assume the ED role for Unit 2 events, and handles events for Unit 1 in case of a fire. The county implements recommendations from STPNOC.

Question Level: F **Question Difficulty** 3

Justification:

The student must recall lines of responsibility for the Emergency Plan.

Exam Bank No.: 2866 **Last used on an NRC exam:** Never

SRO Sequence Number: 98

A loss of offsite power has occurred. All equipment functions as designed.

- The crew is progressing through 0POP05-EO-EO00, Reactor Trip or Safety Injection.

During the implementation of 0POP05-EO-EO00, the crew will notice containment pressure _____(1)____.

The Unit Supervisor will respond to this condition by directing the RO to _____(1)_____.

A. (1) rising
(2) restore CCW to the RCFC's within 30 minutes using 0POP04-AE-0001, First Response to Loss Of Any Or All 13.8KV or 4.16KV Bus.

B. (1) rising
(2) restore RCB Chilled Water to the RCFC's using 0POP04-AE-0001, First Response to Loss Of Any Or All 13.8KV or 4.16KV Bus.

C. (1) lowering
(2) restore CCW to the RCFC's within 30 minutes using 0POP05-EO-EO00, Reactor Trip or Safety Injection, Addendum 5, Verification of SI Equipment Operation.

D. (1) lowering
(2) restore RCB Chilled Water to the RCFC's using 0POP05-EO-EO00, Reactor Trip or Safety Injection, Addendum 5, Verification of SI Equipment Operation.

Answer: A (1) rising (2) restore CCW to the RCFC's within 30 minutes using 0POP04-AE-0001, First Response to Loss of any or all 13.8KV or 41.6KV Bus.

Exam Bank No.: 2866 **Source:** New **Modified From**

K/A Catalog Number: 022 G2.4.16 Knowledge of EOP implementation hierarchy and coordination with other support procedures or guidelines such as operating procedures, abnormal operating procedures, and severe accident management gudiellines.

SRO Importance: 4.4 **Tier:** 2 **Group/Category:** 1

10CFR Reference or SRO Objective: 55.43(b)(4)

SRO Justification:

Knowledge of when to implement attachments and appendices, including how to coordinate these itmnes with procedure steps.

STP Lesson: EPT 001.00 **Objective Number:** 74026

Reference: 0POP04-AE-0001, Conditional Information Page and Addendum 1,=

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: CORRECT: With a loss of offsite power, the RCFCs will be running with no cooling water after the sequencers complete their requirements. Even though the crew is performing 0POP05-EO-EO00, the US will direct an RO to restore CCW within 30 minutes within the requirements of AE-0001.

B: INCORRECT: Plausible as pressure is rising and if the student believes that an SI has occurred and the crew is going to use Addendum 5.

C: INCORRECT: Plausible with confusion over containment pressure response after a LOOP and if they believe that an SI has occurred and the crew is going to use Addendum 5.

D: INCORRECT: Plausible with confusion over containment pressure response after a LOOP and the availability of water supplies.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess conditions and determine the containment pressure trend and then direct actions to respond.

Exam Bank No.: 2867 **Last used on an NRC exam:** Never

SRO Sequence Number: 99

Unit 1 is at 100% power.

- The selected steam pressure channel for SG 1C fails LOW.
- The crew enters 0POP04-FW-0001, Loss of Steam Generator Level Control

Complete the following:

Feed flow to SG 1C will lower, feed flow to the other SGs will lower ____(1)____ than feed flow to SG 1C.

The Unit Supervisor will respond by _____(2)_____.

A. (1) more
(2) selecting the alternate steam pressure channel and starting the Startup Feed Pump

B. (1) more
(2) selecting the alternate steam flow channel and manually controlling Steam Generator Feed Pump speed per Addendum 1, Required Feed/Steam DP for SGFP Operation

C. (1) less
(2) selecting the alternate steam pressure channel and starting the Startup Feed Pump

D. (1) less
(2) selecting the alternate steam flow channel and manually controlling Steam Generator Feed Pump speed per Addendum 1, Required Feed/Steam DP for SGFP Operation

.

Answer: D (1) less (2) selecting the alternate steam flow channel and manually controlling Steam Generator Feed Pump speed per Addendum 1, Required Feed/Steam DP for SGFP Operation.

Exam Bank No.: 2867 **Source:** New **Modified From**

K/A Catalog Number: 035 A2.05 Ability to (a) predict the impacts of the following malfunctions or operations on the S/Gs; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Unbalanced flows to the S/Gs.

SRO Importance: 3.4 **Tier:** 2 **Group/Category:** 2

10CFR Reference or SRO Objective: 55.43(b)(5)

SRO Justification:

Knowledge of when to implement attachments and appendices, including how to coordinate these items with procedure steps.

STP Lesson: LOT 505.01 **Objective Number:** 32636

Given a plant condition, state the actions required to be performed per the applicable Off-Normal procedure.

Reference: 0POP04-FW-0001

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible if the student has confusion over density compensation and/or the effects of the failure and starting the SUFP is an immediate action for a SGFP trip but not in this case.

B: INCORRECT: Plausible if the student has confusion over density compensation and/or the effects of the failure. This is the right Addendum to implement.

C: CORRECT: With a steam pressure channel failed low, steam flow is no longer properly compensated for density, so steam flow will fail low. With steam flow failed low, the SG FRV will close to lower feed flow to match the lower steam flow. Additionally, the SGFP FP speed program is based upon total steam flow. With 1 of the 4 steam flow inputs failed low, feed pump speed will lower, thus lowering flow for this reason also. The affected steam generator feed flow lowers due to both of these effects, while the remaining 3 steam generators flow will lower as SGFP speed lowers. The Unit Supervisor will respond by selecting the alternate steam flow channel (steam pressure is not selectable) and also manually controlling SGFP speed using Addendum 1.

D: INCORRECT: Plausible as the drop in feed flow is less on the other 3 steam generators and starting a SUFP is an immediate action for a SGFP trip but not in this case.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess plant conditions and determine an appropriate course of action to take.

Exam Bank No.: 2868 **Last used on an NRC exam:** Never

SRO Sequence Number: 100

The unit is heating up following a refueling outage.

- RCP 1A is in service.
- RCS pressure is 415 psig and stable.

The RO then reports the following:

- VCT pressure is 5 psig.
- RCP Number 1 Seal Leakoff Flow is 2.1 gpm

Complete the following regarding these conditions:

With the change in VCT pressure, Number 1 Seal Leakoff Flow is ___(1)___ the normal operating range.

The Unit Supervisor should direct the RO to _____(2)_____.

A. (1) below
(2) perform Addendum 3, RCP Number 1 Seal Leakoff Flow Not Within Limits

B. (1) below
(2) stop RCP 1A

C. (1) above
(2) perform Addendum 3, RCP Number 1 Seal Leakoff Flow Not Within Limits

D. (1) above
(2) stop RCP 1A

Answer: C (1) above (2) perform Addendum 3, RCP Number 1 Seal Leakoff Flow Not Within Limits

Exam Bank No.: 2868 **Source:** New **Modified From**

K/A Catalog Number: 004 A2.26 Ability to (a) predict the impacts of the following malfunctions or operations on the CVCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Low VCT pressure.

SRO Importance: 3.0 **Tier:** 2 **Group/Category:** 1

10CFR Reference or SRO Objective: Objective

SRO Justification:

Knowledge of when to implement attachments or appendices, including how to coordinate those items with procedure steps.

STP Lesson: LOT 505.01 **Objective Number:** 32443

Given a plant condition, describe and/or interpret the requirements and/or limits of a precaution or step of a referenced procedure.

Reference: 0POP04-RC-0002, Step 8.0 and Addendums 2-4

Attached Reference ☑ **Attachment:** 0POP04-RC-0002, Addendum 2

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

A: INCORRECT: Plausible with misinterpretation of Addendum 1. This is the correct addendum.

B: INCORRECT: Plausible with misinterpretation of Addendum 1 and the RCP is stopped for high leakoff flow at 6 gpm during normal operations.

C: CORRECT: Using Addendum 1, the student will determine that Number 1 Seal Leakoff Flow is above the normal operating range due to low VCT pressure. The required action is to perform Addendum 3.

D: INCORRECT: Plausible as the leakoff is above the normal operating range and the RCP is tripped for high leakoff flow at 6 gpm during normal operations.

Question Level: H **Question Difficulty** 3

Justification:

The student must assess plant conditions and determine an appropriate course of action.

Table 3.4
Specifications and Guidelines for the Reactor Coolant System
When Reactor is Critical and During Power Operation (Modes 1, 2)

Control Parameters	Minimum Frequency	Alert Value		Control Value		Action Levels		
		Lower	Upper	Lower	Upper	1	2	3
Dissolved Oxygen, ppb (e) (b)	1/W		detectable			> 5		≥ 100 (k)
Chloride, ppb (e)	3/W		5		20*	> 50 (u)	≥ 150	> 1500
Fluoride, ppb (e)	3/W		5		15*	> 50 (u)	> 150	> 1500
Sulfate, ppb (f)	1/W		5		15*	> 50 (u)	> 150	> 1500
Boron, ppm	D			Use Li/B treatment as indicated in Table 3.7				
Lithium, ppm as Li^7	3/W (r)			Per Table 3.7* (g)(h)(j)(s)		Outside Control Band per Table 3.7		
Silica, ppb (c)	W				1000			
Specific Activity, µCi/gm (d)	3/W (d)		0.5		100/ E-Bar			
Hydrogen, cc(STP)/kg H_20 (a) (q)	3/W (t)	35	45	30*		< 25 or > 50*	< 15 (l)	< 5
I-131 Dose Equivalent, µCi/gm (d)	W		5 E-3		1.0			
Tritium, µCi/gm (i)	W				5			

* = CEI Threshold Value

Table 3.4 (cont'd)
Specifications and Guidelines for the Reactor Coolant System
When Reactor is Critical and During Power Operation (Modes 1, 2)

Diagnostic Parameters	Minimum Frequency	Alert Value		Control Value	
		Lower	Upper	Lower	Upper
Conductivity, µS/cm at 77 °F	D	Variable	Variable		
pH at 77 °F	3/W	Variable	Variable		
I-131/I-133	3/W	0.07	0.7		
Isotopic Filterable and Non-Filterable Activity, µCi/gm	W				
Suspended Solids, ppb [(m)]	M		50		
Aluminum, ppb	M		50		
Calcium + Magnesium, ppb [(n)]	M		50		
Magnesium, ppb	M		25		
Ammonia, ppm	W				
Nickel, ppb	3/W [(o)]		6 [(p)]		
Iron, ppb	3/W [(o)]				
Zinc, ppb	3/W [(o)]	5	15		40

Table 3.4 (cont'd.)
Specifications and Guidelines for the Reactor Coolant System
When Reactor is Critical and During Power Operation (Modes 1, 2)

(a) Hydrogen must be present in the reactor coolant during all plant modes where reactor power level is ≥ 1 MWT. It is recommended that a hydrogen concentration of at least 15 cc (STP) H_2/kg H_20 be established in the reactor coolant prior to achieving criticality. Corrective action is recommended but no plant shutdown is suggested should hydrogen concentration fall below 15 cc (STP) H_2/kg H_20 during plant startup. For CEI, all hours outside the specified control limits start to accumulate 24 hours after entering Mode-1. The Hydrogen concentration may be reduced to 15 cc (STP) H_2/kg H_20 24 hours prior to plant shutdown to expedite degasification without entry into Action Level 1.

(b) Maintaining the specified hydrogen concentration in the reactor coolant during power operation will keep the dissolved oxygen concentration below the LLD. Routine or on-line measurement of the dissolved hydrogen concentration may be considered an acceptable alternative to routine measurement of dissolved oxygen.

(c) Silica concentration may exceed 1000 ppb (up to 3000 ppb maximum) for up to 30 days following startup from a refueling outage. Silica should be returned to ≤ 1000 ppb as soon as possible after achieving 100% power and SHALL be ≤ 1 ppm prior to initiating zinc injection. (ref. ST-UB-NOC-15003460)

(d) Technical Specification 3.4.8. Minimum frequency per the Surveillance Frequency Control Program is weekly.

(e) TRM Section 3/4.4.7, Tables 3.4-2 and 4.4-3.

(f) Indication of possible resin intrusion from CVCS demineralizers or introduction of impurities from other sources (e.g. bulk chemical). (IEN 82-014) (SER 89-001)

(g) Lithium should be controlled to maintain pHt ≥ 7.0 while at full power xenon-equilibrium conditions. Obtain documented vendor concurrence for extended (> 1 week) operation with pHt below 7.0.

(h) For CEI, all hours outside the specified control limits start to accumulate 72 hours after entering Mode-1 or at Xenon equilibrium, whichever occurs first after a Unit start-up. The upper control value for lithium at Hot Zero Power reactor critical is 5.0 ppm. Once equilibrium xenon levels have been achieved at approximately 150 MWD/MTU burnup, lithium levels should not exceed 3.5 ppm ±5% during the cycle without prior Westinghouse approval. Take actions to establish and maintain lithium within the bands of Table 3.7 following entry into Mode 1.

Table 3.4 (cont'd.)
Specifications and Guidelines for the Reactor Coolant System
When Reactor is Critical and During Power Operation (Modes 1, 2)

(i) The RCS is sampled weekly for tritium. If tritium concentration exceeds 5 μCi/gm, the Unit Vent shall be sampled within 24 hours for tritium and weekly thereafter until it returns to within specification, in accordance with ODCM Table A4-1.

(j) If minimum lithium or lithium band specifications are calculated instead of using Table 3.7, use 592 °F as the Tave value in the calculation. Do not correct for actual Tave.

(k) Oxygen in the RCS > 100 ppb with hydrogen in specification and the reactor critical is highly unlikely and is indicative of a gross problem. A verified value of > 100 ppb is sufficient indication to take action per 0PGP03-ZO-0012 Action Level 3.

(l) Corrective action is recommended if this action level is reached but no plant shutdown is recommended.

(m) Suspended solids typically determined by filtration through a 0.45 micron filter and comparison to a Membrane Filter Comparison Chart (B&W Method).

(n) Typical values for calcium + magnesium are < 20 ppb and for magnesium <10 ppb.

(o) Increase sampling frequency during periods of plant transients (e.g., power change, shutdown, trip, startup). See Table 3.5. Contact supervision or Primary Chemist for additional guidance.

(p) Inform Primary Chemist if Nickel is > 6 ppb. IF average Ni is > 6 ppb for 2 weeks, THEN a core flux map should be performed.

(q) Starting with Unit 1 cycle 19 and Unit 2 cycle 17 hydrogen concentration should be maintained ≤ 40 cc (STP)H2/kg H20 for a cycle average while still operating as high as can reasonably be achieved below that target. (Ref. 5.56)

(r) Increased lithium sampling is recommended during operations that may significantly impact lithium concentration, i.e. power reductions of 10% or greater from full power lasting more than four hours. Sampling frequency for lithium should be increased to once every four to six hours. Normal sampling frequencies may resume when lithium concentration is stable or lithium additions or removals have been made.

(s) Minimum pHt of ≥ 6.9 is required prior to taking the reactor critical.

(t) Increased frequency of sampling is recommended during operations that may significantly impact hydrogen concentration (e.g., feed and bleed, purging of pressurizer vapor space, etc.) or known periods of hydrogen instability.

(u) Anion concentrations may be > 50 ppb for 24 hours after reactor critical without entering Action Level 1.

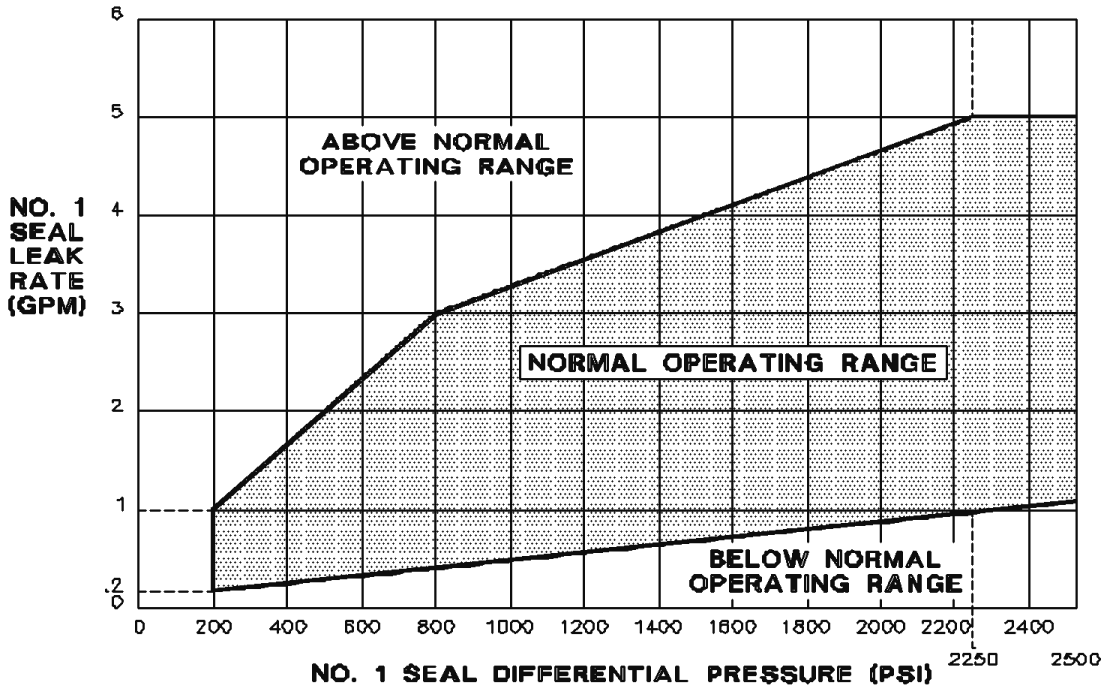
Addendum 2	RCP Number 1 Seal Leakoff Normal Operating Range	Addendum 2 Page 1 of 1

NOTE

- WHEN RCP Number 1 Seal DP indicator is off scale high, THEN Number 1 Seal DP SHALL be approximated to be RCS pressure minus VCT pressure.
- ICS Points for Number 1 Seal Leakoff:

CHANNEL	LOOP 1	LOOP 2	LOOP 3	LOOP 4
No. 1 Seal Leakoff Flow (HIGH)	F0156A	F0157A	F0158A	F0159A
No. 1 Seal Leakoff Flow (LOW)	F0156B	F0157B	F0158B	F0159B

NO. 1 SEAL NORMAL OPERATING RANGE



This Procedure is Applicable in ALL Modes