

Exam Bank No.: 18**Last used on an NRC exam:** 2003**RO Sequence Number:** 50

The following have occurred:

- LOCA outside containment
- Auto Swapover to Cold Leg Recirculation
- Transition to 0POP05-EO-EC11, Loss of Emergency Coolant Recirculation

0POP05-EO-EC11 provides instructions to stop backflow from the RWST to the containment sump to conserve RWST inventory.

Per 0POP05-EO-EC11 which one of the following is the correct SEQUENCE to stop the backflow?

Stop the LHSI, HHSI and CS Pumps, then

- A.
 - 1. Close the Containment Sump Suction Valves
 - 2. Open the RWST to SI Suction Header Valves
 - 3. Open the SI Pump Mini Flow Valves
 - 4. Start the LHSI, HHSI and CS Pumps as necessary
- B.
 - 1. Open the RWST to SI Suction Header Valves
 - 2. Open the SI Pump Mini Flow Valves
 - 3. Close the Containment Sump Suction Valves
 - 4. Start the LHSI, HHSI and CS Pumps as necessary
- C.
 - 1. Open the RWST to SI Suction Header Valves
 - 2. Close the Containment Sump Suction Valves
 - 3. Open the SI Pump Mini Flow Valves
 - 4. Start the LHSI, HHSI and CS Pumps as necessary
- D.
 - 1. Open the SI Pump Mini Flow Valves
 - 2. Close the Containment Sump Suction Valves
 - 3. Open the RWST to SI Suction Header Valves
 - 4. Start the LHSI, HHSI and CS Pumps as necessary

Answer: A 1. Close the Containment Sump Suction Valves; 2. Open the RWST to SI Suction Header Valves; 3. Open the SI Pump Mini Flow Valves; 4. Start the LHSI, HHSI and CS Pumps as necessary

Exam Bank No.: 18

K/A Catalog Number: W/E11 EA1.2

Tier: 1

Group/Category: 1

RO Importance: 3.5

10CFR Reference: 55.41(b)(7)

Ability to operate and / or monitor the following as they apply to the (Loss of Emergency Coolant Recirculation): Operating behavior characteristics of the facility.

STP Lesson: LOT 504.27

Objective Number: 82598

DESCRIBE the indications and anticipated readings used to determine that there is no backflow from the RWST to the emergency sump.

Reference: OPOP05-EO-EC11 Rev 16, LOT 201.10

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank

Modified from

Distractor Justification

- A: CORRECT - The containment sump valves must be closed before the RWST or mini flow valves can be opened
- B: INCORRECT - The containment sump valves must be closed before the RWST or mini flow valves can be opened
- C: INCORRECT - The containment sump valves must be closed before the RWST or mini flow valves can be opened
- D: INCORRECT - The containment sump valves must be closed before the RWST or mini flow valves can be opened

Question Level: H

Question Difficulty 3

Justification:

Applicant must apply his knowledge of systems interlocks to determine the proper sequence for this valve re-alignment.

Exam Bank No.: 59**Last used on an NRC exam:** 1999**RO Sequence Number:** 70

A Plant Operator is required to perform an extensive valve lineup in an area where the radiation level is 200 mrem/hour. The Plant Operator's current annual Total Effective Dose Equivalent (TEDE) is 1100 mrem.

How long can the Plant Operator work in this area and not exceed STP's Administrative Action Level (AAL) for annual TEDE?

- A. 2 hours
- B. 5 hours
- C. 12 hours
- D. 17 hours

Answer: A 2 hours

Exam Bank No.: 59**K/A Catalog Number:** G2.3.4**Tier:** 3 **Group/Category:** 3**RO Importance:** 3.2 **10CFR Reference:** 55.41(b)(12)

Knowledge of radiation exposure limits under normal or emergency conditions.

STP Lesson: LOT 103.04 **Objective Number:** 91817

State the 10CFR20 and STP exposure limitations including extensions for the whole body, skin, and extremities for adults or minors.

Reference: OPGP03-ZR-0050 Rev 10**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** Bank**Modified from****Distractor Justification**

- A: CORRECT - The STP AAL is 1500 mrem/year. $1500 - 1100 = 400$ mrem remaining. $400/200$ mrem/hr = 2 hours.
- B: INCORRECT - Answer based from calculations using an incorrect AAL of 2000 mrem/year which is the old AAL.
- C: INCORRECT - Answer based from calculations using an incorrect AAL of 4000 mrem/year which is a fictional limit between the other limits listed.
- D: INCORRECT - Answer based from calculations using an incorrect AAL of 5000 mrem/year which is the 10CFR20 annual occupational dose limit.

Question Level: H **Question Difficulty** 2**Justification:**

The applicant must apply STP's AAL to determine the annual dose remaining and then divide that dose by the radiation level to calculate the hours left before exceeding the AAL. Other related dose limits were used to calculate the incorrect distractors thereby enhancing their credibility.

Exam Bank No.: 160**Last used on an NRC exam:** 2003**RO Sequence Number:** 42

Given the following Unit 2 conditions:

- A faulted Steam Generator (outside Containment) resulted in a Reactor trip and Safety Injection.
- Operators have isolated the faulted Steam Generator.
- RCS pressure is currently 1800 psig and rising.
- Annunciator PRT PRESS HI alarms.
- PRT level and pressure are RISING slowly.

Which one of the following correctly describes the cause of the PRT level and pressure rise?

- A. Reactor Coolant Pump seal leakoff flow is returning to the PRT.
- B. A Pressurizer Power Operated Relief Valve (PORV) is open.
- C. Normal letdown flow is diverted to the PRT.
- D. Loss of instrument air to Containment fails open the Reactor Make Up Water valve SPRAY ISOL FV-3650 to the PRT.

Answer: A Reactor Coolant Pump seal leakoff flow is returning to the PRT.

Exam Bank No.: 160**K/A Catalog Number:** 007 K1.03**Tier:** 2 **Group/Category:** 1**RO Importance:** 3.0 **10CFR Reference:** 55.41(b)(5)

Knowledge of the physical connections and/or cause-effect relationships between the PRTS and the following systems: RCS

STP Lesson: LOT 201.04 **Objective Number:** 91017

LIST all the reliefs which discharge into the PRT.

Reference: LOT 201.04**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** Bank**Modified from****Distractor Justification**

- A: CORRECT: The RCP Seal Return Isolation valves will close on a SI actuation. This will result in the Seal Return Header relief lifting and discharging to the PRT.
- B: INCORRECT: The Pzr. PORV's can discharge to the PRT. With a faulted SG condition, the RCS has cooled down and de-pressurized. Current RCS pressure is 1800 psig which is below the PORV lift settings and Pzr pressure is rising.
- C: INCORRECT: Normal Letdown has been isolated by the Safety Injection actuation. There is a Letdown line relief that discharges to the PRT if Letdown line pressure gets too high, but that will not occur in this case because letdown is isolated..
- D: INCORRECT: Instrument air has been isolated to Containment due to a Phase 'A' Isolation condition, but FV-3650 fails close on loss of air, not open.

Question Level: H **Question Difficulty** 3**Justification:**

Must be able to determine the cause of PRT response based on given plant conditions and the automatic action and plant responses that occur due to them.

Exam Bank No.: 303**Last used on an NRC exam:** Never**RO Sequence Number:** 46

Unit 1 is in the process of performing a plant heatup with the following conditions:

- RCS Pressure is 1500 psig
- RCS Temperature 400 °F
- 0PSP03-SI-0004, HHSI Pump 1A(2A) Inservice Test in progress
- HHSI Pump 1A Discharge Valve, SI-MOV-0004A, is closed

Which one of the following correctly describes the status of HHSI Pump 1A if an SI actuation was to occur?

HHSI Pump 1A would:

- A. continue to run on recirc flow. MOV-0004A will not automatically open.
- B. continue to run; MOV-0004A would automatically open allowing injection into the RCS.
- C. trip on a bus strip signal, then sequence on and run on recirc flow. MOV-0004A will not automatically open.
- D. trip on a bus strip signal, then sequence on; MOV-0004A would automatically open allowing injection into the RCS.

Answer: A continue to run on recirc flow. MOV-0004A will not automatically open.

Exam Bank No.: 303**K/A Catalog Number:** 006 A3.05**Tier:** 2 **Group/Category:** 1**RO Importance:** 4.2 **10CFR Reference:** 55.41(b)(7)

Ability to monitor automatic operation of the ECCS, including: Safety Injection Pumps.

STP Lesson: LOT 201.10 **Objective Number:** 29419

GIVEN a plant condition, PREDICT the operation of the ECCS to include automatic actuations, interlocks and/or trips.

Reference: LOT 201.10**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** Bank**Modified from****Distractor Justification**

- A: CORRECT: MOV-0004A is a manual valve and therefore will not open on a Safety Injection. The SI actuation (Mode I) will not strip the bus before loading SI/ESF Equipment. That would only happen for a Mode II or Mode III.
- B: INCORRECT: The HHSI pump will continue to run, but MOV-0004A will not open as it's a manual valve.
- C: INCORRECT: The SI actuation (Mode I) will not strip the bus before loading SI/ESF Equipment. That would only happen for a Mode II or Mode III. The HHSI pump will run on recirc though.
- D: INCORRECT: A bus strip signal will not occur and the pump will run on recirc as MOV-0004A will not automatically open.

Question Level: H **Question Difficulty** 3**Justification:**

Must be able to determine the operating status of the HHSI pump given the plant conditions and knowledge of systems controls and interlocks.

Exam Bank No.: 329**Last used on an NRC exam:** Never**RO Sequence Number:** 45

Unit 1 is operating at 100% power. All systems are aligned for normal operations.

- ECW Pumps 'A' and 'C' are running
- CCW Pump 'A' is running
- ECW/CCW Train Mode Select switches are lined up as follows:
 - Train 'A' in RUN
 - Train 'B' in STANDBY
 - Train 'C' in OFF

An RCS leak results in the crew manually tripping the reactor and initiating SI.

- ◆ ECW Pump 'B' Discharge Valve sticks at 90% Open.

Assuming NO operator action, which one of the following combinations describes the status of Trains 'B' and 'C' CCW/ECW pumps 5 minutes after the SI?

	Train 'B'		Train 'C'	
	CCW	ECW	CCW	ECW
A.	Running	Running	Off	Running
B.	Running	Tripped	Off	Running
C.	Tripped	Tripped	Running	Running
D.	Running	Running	Running	Running

Answer: D Running; Running; Running; Running

Exam Bank No.: 329**K/A Catalog Number:** 076 K4.02**Tier:** 2 **Group/Category:** 1**RO Importance:** 2.9 **10CFR Reference:** 55.41(b)(7)

Knowledge of the SWS design feature(s) and/or interlock(s) which provide for the following: Automatic start features associated with SWS pump controls

STP Lesson: LOT 201.13 **Objective Number:** 91193

LIST all automatic functions, switch locations, switch positions, annunciators (and where indicated), local/remote functions, interlocks and permissive for the following:

- A. ECW Traveling Screens
- B. ECW Screen Wash Booster Pumps
- C. ECW Screen Wash Valves
- D. ECW Strainers
- E. ECW Pumps and Motors
- F. ECW Discharge Valves
- G. ECW Sump
- H. ECW Blowdown Valve
- I. ECW Sump Pump and Motor

Reference: LOT 201.13, handout page 11**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** Bank**Modified from****Distractor Justification**

- A: INCORRECT: The CCW pump will start on SI even with Mode Select Switch in OFF.
- B: INCORRECT: The CCW pump will start on SI even with Mode Select Switch in OFF, and trip of ECW pump with discharge valve not full open is bypassed with an SI (pump will not trip).
- C: INCORRECT: Trip of ECW pump with discharge valve not full open is bypassed with an SI (pump will not trip) and the CCW pump will start on SI regardless of ECW pump status.
- D: CORRECT: All pumps will be running. Trip of ECW pump with discharge valve not full open is bypassed with an SI and pumps will start regardless of Mode Select Switch position.

Question Level: H **Question Difficulty** 3**Justification:**

The applicant must understand system automatic starts and trips and be able to apply this knowledge to the conditions given.

Exam Bank No.: 465**Last used on an NRC exam:** 1997**RO Sequence Number:** 11

Given the following:

- Unit 1 is in Mode 3.
- Unidentified RCS leakage is 0.5 gpm and rising.
- Some personnel have already entered Containment to investigate the cause of the leakage.
- A second group of individuals is in the process of entering Containment.
- During this second entry, the Primary Reactor Operator notes rising Containment Building pressure and radiation level due to a rise in RCS leakage.

Which of the following:

(1) correctly describes the effect on Containment as the entry is made,

AND

(2) is a required action for the Control room staff in accordance with 0PSP03-XC-0002A, Containment Entry and Partial Inspection (Containment Integrity Established) based on the above conditions?

- A. (1) Containment pressure will substantially lower.
(2) Initiate a Phase 'A' Containment Isolation and direct personnel in containment to exit via the Auxiliary Airlock.
- B. (1) Containment pressure will substantially lower.
(2) Direct a Plant Operator to enter containment to notify personnel in containment of the rising leakage.
- C. (1) Annunciator PERS AIRLOCK DOOR TRBL will alarm.
(2) Monitor containment pressure, if it approaches 0.5 psig, then notify personnel in containment to exit immediately.
- D. (1) Annunciator PERS AIRLOCK DOOR TRBL will alarm.
(2) Immediately notify personnel in containment of the rising leakage by sounding the Containment Evacuation Alarm.

Answer: D (1) Annunciator PERS AIRLOCK DOOR TRBL will alarm.
(2) Immediately notify personnel in containment of the rising leakage by sounding the Containment Evacuation Alarm.

Exam Bank No.: 465**K/A Catalog Number:** 103 A2.05**Tier:** 2 **Group/Category:** 1**RO Importance:** 2.9 **10CFR Reference:** 55.41(b)(10)

Ability to predict impact of emergency containment entry on the containment system and use procedures to control the consequences of emergency containment entry.

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: 0PSP03-XC-0002A, Rev 37, step 3.5**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** Bank**Modified from****Distractor Justification**

- A: INCORRECT: Containment pressure should not change appreciably because entry and exit is made through one door at a time so containment integrity always exists. If a Phase A isolation occurs, the procedure directs use of the the aux airlock, but does not require initiation of Phase A..
- B: INCORRECT: Containment pressure should not change appreciably because entry and exit is made through one door at a time so containment integrity always exists. The action is not a procedural requirement. Sending additional personnel in containment under these conditions would not be desirable.
- C: INCORRECT: The PERS AIRLOCK DOOR TRBL annunciator alarms whenever the door operating handwheel is rotated so this annunciator will alarm upon entry. 0.5 psid is the maximum operating pressure for the airlocks. The procedural requirement is to notify personnel as soon as containment conditions change.
- D: CORRECT: The PERS AIRLOCK DOOR TRBL annunciator alarms whenever the door operating handwheel is rotated so this annunciator will alarm upon entry. Changes that affect containment must be communicated to personnel in containment. The primary method is by using the evacuation alarm.

Question Level: F **Question Difficulty** 3**Justification:**

Knowledge of the RCB entry procedure is required.

Exam Bank No.: 534**Last used on an NRC exam:** 1995**RO Sequence Number:** 21

Which of the following operational considerations is used to minimize the spread of certain Class 'B' fires at STP?

- A. Ventilation system carbon filters are protected by a fixed spray deluge system.
- B. An oil collection system is installed to collect and contain the oil for each RCP in the event of a leak.
- C. A Halon suppression system is used in the Technical Support Center.
- D. An automatic sprinkler system is supplied to protect the open cable trays above the suspended ceiling in the Health Physics Office Area in the MAB.

Answer: B An oil collection system is installed to collect and contain the oil for each RCP in the event of a leak

Exam Bank No.: 534

K/A Catalog Number: APE 067 AK1.01 **Tier:** 1 **Group/Category:** 2

RO Importance: 2.9 **10CFR Reference:** 55.41(b)(7)

Knowledge of the operational implications of the following concepts as they apply to Plant Fire on Site:
Fire classifications, by type

STP Lesson: LOT 201.29 **Objective Number:** 53715

State the function of the Fire Protection System and major components.

Reference: LOT201.29, Fire Protection System Student Handout

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - Class A fires (ordinary combustibles)
- B: CORRECT - The only choice that contains a Class B combustible material (oil).
- C: INCORRECT - Class A or C fires (ordinary combustibles or electrical)
- D: INCORRECT - Class C fires (electrical)

Question Level: F **Question Difficulty** 3

Justification:

Must know the difference in classes of fires and how this relates to STP systems.

Exam Bank No.: 650

Last used on an NRC exam: 2001

RO Sequence Number: 9

Given the following:

- Unit 1 is operating at 100% power with all systems in a normal alignment.
- Feedwater Pump discharge pressure instrument PT-558 fails off scale high.

Which one of the following would be the INITIAL response to this failure?

- A. SGFPT speeds rise.
- B. SGFPT speeds lower.
- C. Main Feedwater Regulating Valves move in the open direction.
- D. Main Feedwater Regulating Valves move in the close direction.

Answer: B SGFPT speeds lower.

Exam Bank No.: 650

K/A Catalog Number: 059 A1.07

Tier: 2 **Group/Category:** 1

RO Importance: 2.5 **10CFR Reference:** 55.41(b)(7)

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MFW controls including: Feed Pump speed, including normal control speed for ICS.

STP Lesson: LOT 202.14 **Objective Number:** 91949

GIVEN a plant or system condition, PREDICT the operation of the Steam Generator Feed Pump Turbines.

Reference: LOT 202.14

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank

Modified from

Distractor Justification

- A: INCORRECT: - PT-558 failing high will cause SG delta-P to be higher than program which will result in pump speed to lower. SGFPT speeds rising would be indicative of PT-558 failing low or PT-557 failing high.
- B: CORRECT: - PT-558 failing high will cause delta-P to be higher than program which will result in pump speeds lowering.
- C: INCORRECT: - The MFW Reg Valves will initially open AFTER the feedpump speed lowers.
- D: INCORRECT: - The MFW Reg Valves will close only AFTER feedpump speed goes up.

Question Level: H **Question Difficulty** 3

Justification:

Must be able to determine the effect on SGFPT speed based on the instrument and failure mode provided.

Exam Bank No.: 664**Last used on an NRC exam:** Never**RO Sequence Number:** 41

Given the following Unit 1 plant conditions:

- Reactor Trip and Safety Injection have occurred due to a Large Break LOCA.
- Operators have transitioned to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant
- RCS temperature is 445°F and stable.
- RCS Pressure is 450 psig and slowly rising.
- Containment pressure is 4 psig and stable.
- Safety Injection has NOT been reset.

Which one of the following describes the operation of the LHSI pumps?

The LHSI Pumps will...

- A. automatically trip after the RWST LO-LO/EMPTY alarm is received.
- B. maintain a lowering rate of injection flow until RCS pressure reaches shutoff head.
- C. continue to run on mini-flow recirculation until manually secured.
- D. automatically take suction from the Emergency Sumps when the RWST LEVEL HI/LO alarm is received.

Answer: C continue to run on mini-flow recirculation until manually secured.

Exam Bank No.: 664

K/A Catalog Number: EPE 011 EK2.02 **Tier:** 1 **Group/Category:** 1

RO Importance: 2.6 **10CFR Reference:** 55.41(b)(7)

Knowledge of the interrelations between the Large Break LOCA and the following: Pumps

STP Lesson: LOT 201.10 **Objective Number:** 29419

GIVEN a plant condition, PREDICT the operation of the ECCS to include automatic actuations, interlocks and/or trips.

Reference: LOT 201.10

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT: The LHSI pump suctions will automatically swapover to the Containment Emergency Sumps under the stated condition instead of tripping.
- B: INCORRECT: Under the current plant conditions, the LHSI pumps are at shutoff head and will have no injection flow.
- C: CORRECT: RCS pressure is above the shutoff head of the LHSI Pumps. Providing the RWST has not reached the LO-LO level setting where swapover occurs (including mini-flow valves closing), the LHSI pumps will continue to run and recirculate to the RWST via mini-flow lines.
- D: INCORRECT: The LHSI Pumps will automatically take a suction from the Emergency Sumps upon receipt of a RWST Lo-Lo level, not Lo level.

Question Level: H **Question Difficulty** 3

Justification:

Must evaluate plant conditions relative to LHSI pump characteristics to determine how the pumps will operate.

Exam Bank No.: 688**Last used on an NRC exam:** Never**RO Sequence Number:** 69

Given the following:

- Unit 1 reactor has tripped from 100% power.
- The turbine does not trip after the operator actuates a MANUAL turbine trip signal.

In accordance with 0POP05-EO-EO00, Reactor Trip or Safety Injection, which one of the following is the NEXT required action by this operator?

- A. Dispatch operators to the turbine front standard to mechanically trip the turbine.
- B. Close the main turbine governor valves with the governor valve position limiter control.
- C. Place both Electro Hydraulic (EH) pumps in the Pull-To-Lock position.
- D. Close the MSIVs and ensure the MSIV bypass valves are closed.

Answer: C Place both Electro Hydraulic (EH) pumps in the Pull-To-Lock position.

Exam Bank No.: 688**K/A Catalog Number:** EPE 007 EA2.02**Tier:** 1**Group/Category:** 1**RO Importance:** **10CFR Reference:** 55.41(b)(10)

Ability to determine and interpret the following as they apply to a reactor trip: Proper actions to be taken if the automatic safety functions have not taken place.

STP Lesson: LOT 504.05 **Objective Number:** 80084

From memory STATE/IDENTIFY the immediate actions of POP05-EO-EO00 in their required sequence.

Reference: 0POP05-EO-EO00, Rev 20, Step 2 RNO**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** Bank**Modified from****Distractor Justification**

- A: INCORRECT: Although this action would trip the turbine, it is not in accordance with the procedure. The intent is to trip/isolate the turbine in a timely manner from the control room.
- B: INCORRECT: This action is performed AFTER the EH pumps are secured to aid in lowering EH pressure more quickly.
- C: CORRECT: If the turbine does not trip manually, the next action is for the operator to place EH pumps in pull to lock.
- D: INCORRECT: This action is only performed after securing EH pumps proves to be unsuccessful. It is desirable to have the MSIVs open for plant control.

Question Level: H**Question Difficulty** 3**Justification:**

The applicant must compare the given conditions to procedural requirements to determine the correct procedure flowpath and actions to take.

Exam Bank No.: 709**Last used on an NRC exam:** Never**RO Sequence Number:** 8

Given the following:

- Unit 1 reactor power is 100%.
- RCS Tavg is 592°F.
- Steam Generator (SG) water level control is in AUTOMATIC for all SGs.
- PT-0514, 'A' SG pressure channel, inputs to the CONTROLLING steam flow channel for 'A' SG level control.
- PT-0514 fails LOW.

Which one of the following correctly describes the effect on SG 'A' Feedflow and the resulting plant condition assuming no operator action?

	Feedwater Flow Trend	Resulting Plant Condition
A.	RISE	Rx trip on HI-HI SG Level ONLY
B.	RISE	Rx trip on HI-HI SG Level AND trip of all operating SGFPT's
C.	LOWER	Rx trip on LO-LO SG Level ONLY
D.	LOWER	Rx trip on LO-LO SG Level AND AFW Actuation

Answer: D Lower; Rx trip on LO-LO SG Level AND AFW Actuation

Exam Bank No.: 709**K/A Catalog Number:** 035 A3.01**Tier:** 2 **Group/Category:** 2**RO Importance:** 4.0 **10CFR Reference:** 55.41(b)(7)

Ability to monitor automatic operation of the S/G including: S/G water level control.

STP Lesson: LOT 202.15 **Objective Number:** 21005

IDENTIFY the level controller, the manual/auto station, all input signals to and all output signals from the SGWLCS. STATE how a change in each input signal will affect the position of the Main Feed Regulating Valves

Reference: LOT202.15**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** Bank**Modified from****Distractor Justification**

- A: INCORRECT - The steam pressure instrument failure will cause Feedflow to lower, not rise. If SG level were to rise, a reactor trip at the SG Hi-Hi level setpoint would occur along with a Feedwater Isolation which will trip the operating SGFPT's.
- B: INCORRECT - The steam pressure instrument failure will cause Feedflow to lower, not rise. If SG level were to rise, a reactor trip at the SG Hi-Hi level setpoint would occur along with a Feedwater Isolation which will trip the operating SGFPT's.
- C: INCORRECT - Feedflow will lower and a reactor trip will occur at the SG Lo-Lo setpoint, but an AFW actuation will also occur.
- D: CORRECT - The failure of the steam pressure channel will cause the controlling steamflow channel to be low. This will result in the MFW Reg Valves closing thereby reducing Feedflow. As Feedflow lowers, SG level will lower because the actual Steamflow has not changed. SG levels will continue to lower until the LO-LO setpoint is reached. At this setpoint a reactor trip and AFW actuation will occur.

Question Level: H **Question Difficulty** 3**Justification:**

The applicant must analyze the given conditions and, using their knowledge of system design, determine what the system will automatically do and what the resultant plant condition will be.

Exam Bank No.: 726**Last used on an NRC exam:** Never**RO Sequence Number:** 62

Given the following:

- Unit 1 is operating at 60% power, steady state conditions.
- Rod Control is in automatic.
- Control Bank 'D' rods are at 220 steps.
- Main turbine EHC control is in IMP IN.

The following indications are observed:

- Tave lowers, then returns to approximately the original value.
- Steam Flow and Feed Flow fluctuate, then return to their original value.
- Reactor Power rises then returns to the original value.
- SG Levels rise then return to their original value.
- Control rods move out rapidly then step in to approximately their original position.

Which one of the following failures will produce ALL of these symptoms?

- A. A SG PORV fails open.
- B. Main Turbine Governor Valve #4 fails Open.
- C. HP Turbine Impulse Pressure Channel, PT-505, Fails High.
- D. Inadvertent dilution of the Reactor Coolant System occurs.

Answer: B Main Turbine Governor Valve #4 fails Open.

Exam Bank No.: 726**K/A Catalog Number:** 045 K3.01**Tier:** 2 **Group/Category:** 2**RO Importance:** 2.9 **10CFR Reference:** 55.41(b)(5)

Knowledge of the effect a loss or malfunction of the MT/G system will have on the following: Remainder of the plant

STP Lesson: LOT 204.01 **Objective Number:** 20401

Given plant or sytem conditions, PREDICT the response of the plant and/or sytems.

Reference: LOT 204.01**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** Bank**Modified from****Distractor Justification**

- A: INCORRECT: If a SG PORV were to fail open, the plant would see a rise in steam demand and respond with incications of a power increase. Power would not return to its original value, but would stay approx. 5% higher.
- B: CORRECT: The turbine GV's are sequenced open such that # 4 is the last one to open. At 60% power, GV # 4 will be closed. As it fails open, there is a rise in steam demand that will give all the indications of a power rise. However, the turbine EHC in the IMP IN mode will act to maintain a constant impulse pressure. As such, it will close down on the other GV's to offset the increase in impulse pressure caused by GV #4 opening. Steam demand goes back down to where it began and the plant responds with indications of power lowering.
- C: INCORRECT: PT-505 failing high would result in control rods withdrawing until they reached a rod stop or a reactor trip resulted. Tave and power would rise in response to the rod withdrawl. If rods stopped before a reactor trip occurred, Tave would remain high, but reactor power would return to its original value.
- D: INCORRECT: If an RCS dilution were to occur, the plant response would be similar to the withdrawing of control rods described in distracter 'C', but not on as large of a scale.

Question Level: H **Question Difficulty** 3**Justification:**

Must be able to evaluate how the plant responds for each failure event listed to determine which event will result in the given plant response.

Exam Bank No.: 759**Last used on an NRC exam:** Never**RO Sequence Number:** 20

In accordance with Conduct of Operations, which of the following NON-LICENSED individuals can manipulate the controls of the reactor?

- A. Any individual under the direct supervision of an active Licensed Operator provided that the individual is designated as a license candidate.
- B. Any Reactor Engineer under the direct supervision of the Reactor Operator during physics testing.
- C. Any on-shift Plant Operator under the direct supervision of an active Licensed Operator.
- D. Any individual under the direct supervision of the Shift Manager.

Answer: A Any individual under the direct supervision of an active Licensed Operator provided that the individual is designated as a license candidate.

Exam Bank No.: 759

K/A Catalog Number: G2.1.9

Tier: 3

Group/Category: 1

RO Importance: 2.9

10CFR Reference: 55.41(b)(10)

Ability to direct personnel activities inside the control room.

STP Lesson: LOT 507.01

Objective Number: 92186

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

Reference: Conduct of Operations, Chapter 2, page 30

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank

Modified from

Distractor Justification

- A: CORRECT: As required by the Conduct of Operations
- B: INCORRECT: These individuals may be in the control room and participating during physics test, however they cannot manipulate any controls per the Conduct of Operations
- C: INCORRECT: These individuals may work on shift with the control room staff, however they cannot manipulate any controls per the Conduct of Operations
- D: INCORRECT: Does not meet the requirements of the Conduct of Operations

Question Level: F

Question Difficulty 3

Justification:

Requires a basic knowledge of the Conduct of Operations requirements for control manipulation.

Exam Bank No.: 760**Last used on an NRC exam:** Never**RO Sequence Number:** 48

In accordance with OPGP03-ZO-0039, Operations Configuration Management, which one of the following statements correctly describes the use of Operator Aids associated with plant operations equipment?

Operator Aids

- A. do not have a specified 'life'. They are removed when no longer needed.
- B. are tracked by the Equipment Clearance Order database.
- C. are reviewed and approved by any Licensed Operator.
- D. may be used instead of a Deficiency Tag.

Answer: A do not have a specified 'life'. They are removed when no longer needed.

Exam Bank No.: 760

K/A Catalog Number: G2.2.14

Tier: 3 **Group/Category:** 2

RO Importance: 3.9 **10CFR Reference:** 55.41(b)(10)

Knowledge of the process for controlling equipment configuration or status.

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

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

Reference: OPGP03-ZG-0039, Rev. 25

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank

Modified from

Distractor Justification

- A: CORRECT: There is no specified life for an operator aid. They are removed when no longer needed.
- B: INCORRECT: Operator aids are tracked by an operator aid log, not the ECO database.
- C: INCORRECT: A unit supervisor or Shift Manager must review/approve an operator aid.
- D: INCORRECT: Operator aids are not to circumvent other plant processes. As such, they are not to be use in lieu of Deficiency Tags.

Question Level: F **Question Difficulty** 3

Justification:

Must know how the Operator Aid program is administrated.

Exam Bank No.: 854**Last used on an NRC exam:** 2003**RO Sequence Number:** 65

Given the following:

- Assume that today is January 15 of the current year.
- A Staff RO, maintaining an “active” license, has performed the functions of an RO during one 12 hour shift since January 1.

Which of the following actions will maintain the RO’s license in an “active” status in accordance with OPOP01-ZA-0014, Licensed Operator License Maintenance?

- A. Two more 12 hour shifts performing RO functions during January.
One more 12 hour shift performing RO functions during February.
- B. Two more 12 hour shifts performing RO functions during February.
Two more 12 hour shifts performing RO functions during March.
- C. Two more 12 hour shifts performing RO functions during March.
Four more 12 hour shifts performing RO functions during April.
- D. Two more 12 hour shifts performing RO functions during January.
One more 12 hour shift performing RO functions during March.
Four more 12 hour shifts performing RO functions during April.

Answer: B Two more 12 hour shifts performing RO functions during February, Two more 12 hour shifts performing RO functions during March.

Exam Bank No.: 854**K/A Catalog Number:** G2.1.4**Tier:** 3 **Group/Category:** 1**RO Importance:** 3.3 **10CFR Reference:** 55.41(b)(10)

Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, "no-solo" operation, maintenance of active license, 10CFR55, etc.

STP Lesson: LOT 507.01 **Objective Number:** 92184

Given the title of an administrative procedure, IDENTIFY the actions that are performed by the control room operator.

Reference: OPOP01-ZA-0014, Rev 24, Step 4.3.1**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** Bank**Modified from****Distractor Justification**

- A: INCORRECT: 5 12-hour watches in a calendar quarter are required to maintain a license. Performing this action will result in only four watches during the first quarter.
- B: CORRECT: Performing this action will result in five watches during the first quarter (meets the requirement).
- C: INCORRECT: 5 12-hour watches in a calendar quarter are required to maintain a license. Performing this action will result in only three watches during the first quarter (and two watches the second quarter).
- D: INCORRECT: 5 12-hour watches in a calendar quarter are required to maintain a license. Performing this action will result in only four watches during the first quarter (and four watches the second quarter).

Question Level: H **Question Difficulty** 3**Justification:**

The applicant must have a knowledge of the license maintenance requirements and be able to apply those requirements to the given conditions in order to determine the correct response.

Exam Bank No.: 973**Last used on an NRC exam:** Never**RO Sequence Number:** 29

Given the following:

- A reactor trip has occurred from full power.
- Reactor trip and bypass breakers are open.
- Nuclear Instrument Power Ranges indicate power is 1% and lowering.
- All rods indicate fully inserted EXCEPT 2 Control Bank D rods indicate 188 steps withdrawn.

Based on these conditions, which one of the following correctly describes the required actions?

- A. An emergency boration of 7200 gallons (456 ppm) must be performed to ensure the minimum required shutdown margin is maintained.
- B. An emergency boration of 1860 gallons (120 ppm) must be performed to limit fission gas release and maintain fuel pellet temperature within design limits.
- C. No action is required since the core is designed for these conditions and the reactor has been verified to be shutdown by diverse indications.
- D. A Safety Injection signal must be manually actuated to ensure the reactor core remains in a safe shutdown condition.

Answer: A An emergency boration of 7200 gallons (456 ppm) must be performed to ensure the minimum required shutdown margin is maintained.

Exam Bank No.: 973

K/A Catalog Number: APE 005 AK3.01 **Tier:** 1 **Group/Category:** 2

RO Importance: 4.0 **10CFR Reference:** 55.41(b)(10)

Knowledge of the reasons for the following responses as they apply to the inoperable/stuck Control Rod: Boration and Emergency Boration in the event of a stuck rod during trip or normal evolutions.

STP Lesson: LOT 504.06 **Objective Number:** 81674

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, Rev. 24

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: CORRECT: Action specified is per 0POP05-EO-ES01, Step 4. Basis is per the Background document for ES01.
- B: INCORRECT: The gallons/ppm in this distracter are appropriate for any rods not fully inserted and are at 18 steps or less.
- C: INCORRECT: Action is required because there are 2 rods stuck. No action would be required if there were only one rod stuck.
- D: INCORRECT: Safety Injection would add the requisite boron to ensure SDM, but it is not a required action per procedure.

Question Level: F **Question Difficulty** 3

Justification:

Must know step requirements associated with stuck control rods following a trip.

Exam Bank No.: 1010

Last used on an NRC exam: Never

RO Sequence Number: 15

Given the following:

- A Loss of Offsite Power has just occurred in Unit 1.
- All ESF DGs started and restored power to their ESF buses.

Which one of the following correctly identifies the status of Containment cooling?

The RCFCs are

- A. NOT running, CCW is flowing through the cooling coils.
- B. running with no flow through the cooling coils.
- C. running with CCW flowing through the cooling coils.
- D. running with chilled water flowing through the cooling coils.

Answer: B running with no flow through the cooling coils.

Exam Bank No.: 1010

K/A Catalog Number: 022 K1.01

Tier: 2 **Group/Category:** 1

RO Importance: 3.5 **10CFR Reference:** 55.41(b)(7)

Knowledge of the physical connections and/or the cause-effect relationships between the CCS and the following systems: SWS/cooling system

STP Lesson: LOT 202.33 **Objective Number:** 4967

STATE the sources of cooling water to the RCFC'S and when each is used.

Reference: LOT 202.33, LOT 201.12

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank

Modified from

Distractor Justification

- A: INCORRECT: RCFC's will auto start, but CCW cooling water valves will not automatically open on a LOOP.
- B: CORRECT: The RCFC's will be running because they are automatically loaded on a Sequencer Mode II signal (LOOP) however they will not have any cooling water because the CCW supply valves do not automatically open on a LOOP and the Chilled Water supply valves automatically close..
- C: INCORRECT: The RCFC's will be running, but CCW cooling water valves will not automatically open on a LOOP.
- D: INCORRECT: The RCFC's will be running, but Chilled Water valves will automatically close so there will be no Chilled Water cooling flow.

Question Level: H **Question Difficulty** 3

Justification:

Must know system design features and interlocks and be able to determine system response based on the given conditions.

Exam Bank No.: 1034**Last used on an NRC exam:** 2001**RO Sequence Number:** 31

Given the following:

- Unit 1 is in MODE 4.
- RCS temperature is 325°F.
- RCS pressure is 340 psig.
- RHR Train 'B' is in service.
- An un-isolable leak in the Instrument Air (IA) system has occurred.
- IA system pressure is 60 psig and lowering.

Which one of the following correctly describes the RHR and RCS system responses?

	RHR HEAT EXCHANGER VALVE FAILURE MODE	EFFECT ON RHR DISCHARGE TEMPERATURE TO THE RCS
A.	BYP FLOW CONT valve FCV-852 will fail OPEN	Will be LOWER
B.	BYP FLOW CONT valve FCV-852 will fail CLOSED	Will be HIGHER
C.	OUTL TEMP CONT valve HCV-865 will fail OPEN	Will be LOWER
D.	OUTL TEMP CONT valve HCV-865 will fail CLOSED	Will be HIGHER

Answer: C OUTL TEMP CONT valve HCV 865 will fail OPEN; Will be LOWER

Exam Bank No.: 1034

K/A Catalog Number: 005 K6.03

Tier: 2 **Group/Category:** 1

RO Importance: 2.5 **10CFR Reference:** 55.41(b)(5)

Knowledge of the effect of a loss or malfunction on the following will have on the RHRS: RHR heat exchanger.

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, LOT 202.26, LOT 504.02

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank

Modified from

Distractor Justification

- A: INCORRECT: RHR Hx Bypass Valves fail closed on loss of air, not open. If they did fail closed, RCS temperature would lower as indicated.
- B: INCORRECT: RHR Hx Bypass Valves DO fail closed on loss of air, but that would result in RCS temperature lowering, not rising.
- C: CORRECT: The RHR Hx Outlet Temp Cont Valves fail open and the Bypass Flow Cont valves fail closed on a loss of IA. Either of these failures will cause RCS temperature to lower because there is greater heat removal in the RHR Hx.
- D: INCORRECT: The RHR Hx Outlet Valves fail open on a loss of air. RCS temperature would rise as indicated if they did fail closed.

Question Level: H **Question Difficulty** 3

Justification:

Must know failure modes of RHR Hx valves and be able to determine effect on RCS temperature based on failure of those valves.

Exam Bank No.: 1058**Last used on an NRC exam:** 2001**RO Sequence Number:** 33

Which one of the following sets of conditions satisfies Technical Specification requirements in Mode 6 during core alterations?

	Reactor Cavity Boron Concentration	Reactor Cavity level (feet above vessel flange)
A.	2800 ppm	21
B.	2700 ppm	23
C.	2700 ppm	21
D.	2800 ppm	23

Answer: D 2800 ppm, 23

Exam Bank No.: 1058

K/A Catalog Number: G2.2.22

Tier: 3

Group/Category: 2

RO Importance: 4.0

10CFR Reference: 55.41(b)(10)

Knowledge of limiting conditions for operations and safety limits.

STP Lesson: LOT 503.01

Objective Number: 92102

Given the topic or title of a specification included in the Technical Specifications, or the Technical Requirements Manual (TRM), DESCRIBE the general requirements of the specification to include components or administrative requirements affected, limitations, major time frames involved, major surveillance in order to comply, and the bases for the specification.

Reference: Tech Spec 3/4.9

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank

Modified from

Distractor Justification

- A: INCORRECT: Level is required to be at least 23 feet above the vessel flange
- B: INCORRECT: Boron is required to be greater than or equal to 2800 ppm
- C: INCORRECT: Boron is required to be greater than or equal to 2800 ppm and level is required to be at least 23 feet above the vessel flange
- D: CORRECT: All conditions are in accordance with Tech Specs

Question Level: F

Question Difficulty 3

Justification:

The applicant requires a knowledge of Tech Spec LCO entry conditions

Exam Bank No.: 1083**Last used on an NRC exam:** 2001**RO Sequence Number:** 47

Unit 1 is at 15% power and commencing to raise turbine load at 10%/hr.

Which one of the following describes how the temperature of the components cooled by the Closed Loop Auxiliary Cooling Water (CL-ACW) System will be controlled?

- A. The Open Loop Auxiliary Cooling Water (OL-ACW) System TCV (Temperature Control Valve) on the outlet of the SW/FW Heat Exchanger will modulate open to maintain CL-ACW temperature.
- B. The Closed Loop Auxiliary Cooling Water (CL-ACW) System TCV on the outlet of the SW/FW Heat Exchanger will modulate open to maintain CL-ACW temperature.
- C. The individual component TCVs will modulate open to maintain component temperature.
- D. The TGB Watch will manually throttle CL-ACW from the SW/FW Heat Exchanger to maintain CL-ACW temperature.

Answer: C The individual component TCVs will modulate open to maintain component temperature.

Exam Bank No.: 1083**K/A Catalog Number:** 076 A1.02**Tier:** 2 **Group/Category:** 1**RO Importance:** 2.6 **10CFR Reference:** 55.41(b)(4)

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the SWS controls including: Reactor and Turbine building closed cooling water temperatures.

STP Lesson: LOT 202.24 **Objective Number:** 23903

Given a plant or system condition, PREDICT the operation of the Closed Loop ACW System.

Reference: LOT202.24, PowerPoint slide #30**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** Bank**Modified from****Distractor Justification**

- A: INCORRECT: There is not a TCV on the Open Loop outlet of the Hx. There is full cooling water flow to the Hx at all times.
- B: INCORRECT: Closed loop cooling flow is not modulated on the outlet of the Hx, there is full system flow through the Hx at all times.
- C: CORRECT: Since system temperature is not maintained, each cooled component has a TCV on it's CL-ACW cooling outlet line.
- D: INCORRECT: CL-ACW system temperature is not controlled, there is full flow cooling flow thru the Hx.

Question Level: F **Question Difficulty** 3**Justification:**

The applicant must have a fundamental understanding of CL-ACW system design and operation.

Exam Bank No.: 1125**Last used on an NRC exam:** 2009**RO Sequence Number:** 16

Given the following:

- Unit 2 is in Mode 3 at normal operating temperature and pressure.
- RCB temperature is approximately 80°F.
- An error during surveillance testing results in a spurious Safety Injection initiation.
- RCB temperature has risen to 108°F.

Which one of the following correctly describes the RCB temperature response?

RCB temperature is:

- A. below the Tech Spec limit, and is rising because there is no cooling water flow through the RCFC's.
- B. below the Tech Spec limit, and is rising because RCFC cooling flow has transferred to CCW.
- C. above the Tech Spec limit, and is rising because there is no cooling water flow through the RCFC's.
- D. above the Tech Spec limit, and is rising because RCFC cooling flow has transferred to CCW.

Answer: B below the Tech Spec limit, and is rising because RCFC cooling flow has transferred to CCW.

Exam Bank No.: 1125**K/A Catalog Number:** 103 A1.01**Tier:** 2 **Group/Category:** 1**RO Importance:** 3.7 **10CFR Reference:** 55.41(b)(7)

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the containment system controls including: Containment pressure, temperature and humidity.

STP Lesson: LOT 202.33 **Objective Number:** 4967

STATE the sources of cooling water to the RCFC'S and when each is used.

Reference: LOT 202.33, Reactor Containment Building HVAC (Rev 6)**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** Bank**Modified from****Distractor Justification**

- A: INCORRECT: RCB temperature is below the TS limit however, there is CCW cooling flow to the RCFC's.
- B: CORRECT: RCB temperature is below the TS limit and there is cooling flow from the CCW system under these plant conditions. CCW temperature is warmer than Chilled Water temperature.
- C: INCORRECT: RCB temperature is below the TS limit.
- D: INCORRECT: RCB temperature is below the TS limit.

Question Level: H **Question Difficulty** 3**Justification:**

requires the applicant to evaluate RCB temperature against TS limits and to determine why the temperature is rising based on the conditions of the stem.

Exam Bank No.: 1261**Last used on an NRC exam:** Never**RO Sequence Number:** 43

Given the following Unit 1 plant conditions:

- A reactor trip and safety injection have occurred.
- RCS pressure is stable at 420 psig.
- Over the last hour all cold leg temperatures have lowered to 240°F as follows:

60 minutes ago	-	350°F
45 minutes ago	-	315°F
30 minutes ago	-	285°F
15 minutes ago	-	260°F
Now	-	240°F

Use the attached procedure to determine the appropriate Condition and Procedure (if any), based on the current state of the Integrity Critical Safety Function.

- A Critical Safety Function is satisfied
- B Yellow Path – Enter 0POP05-EO-FRP2, Response to Anticipated Thermal Shock Condition.
- C Orange Path – Enter 0POP05-EO-FRP1, Response to Imminent Thermal Shock Condition.
- D Red Path – Enter 0POP05-EO-FRP1, Response to Imminent Thermal Shock Condition.

Answer: C Orange Path; Enter 0POP05-EO-FRP1, Response to Imminent Thermal Shock Condition.

SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION

OPOP05-EO-F004 Rev. 4

INTEGRITY CRITICAL SAFETY FUNCTION STATUS TREE

DEPARTMENT PROCEDURE

SAFETY RELATED (Q)

USAGE CONTROL: In Hand Controlling Station

LIST OF ATTACHMENTS:

- o Addendum 1, Integrity Operational Limits
- o Addendum 2, Cold Overpressure Limits

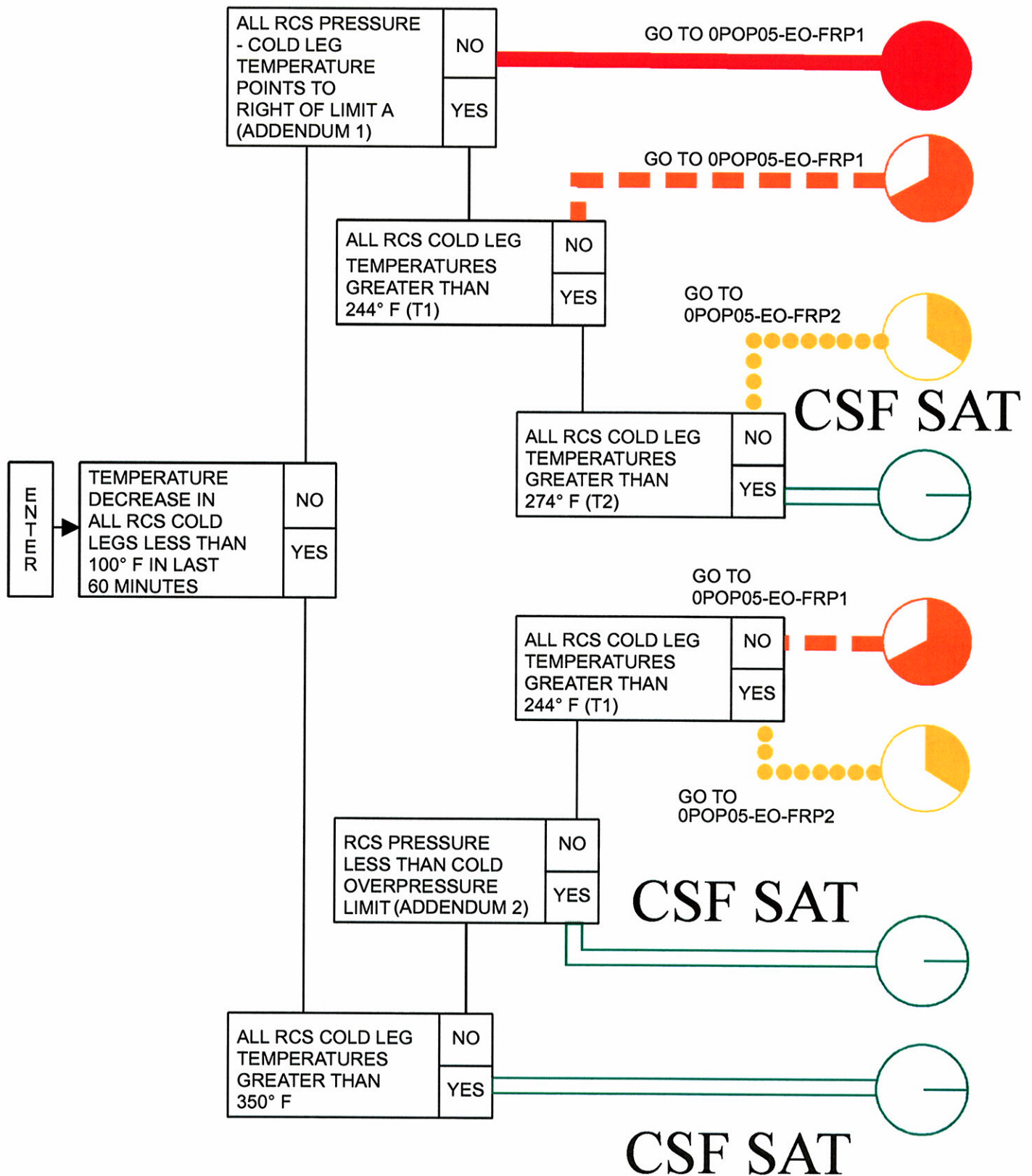
This procedure is applicable in Modes 1, 2, 3, and 4.

STI# 32326166

ADVERSE CONTAINMENT CONDITIONS

IF any of the following conditions are met, THEN USE adverse containment values:

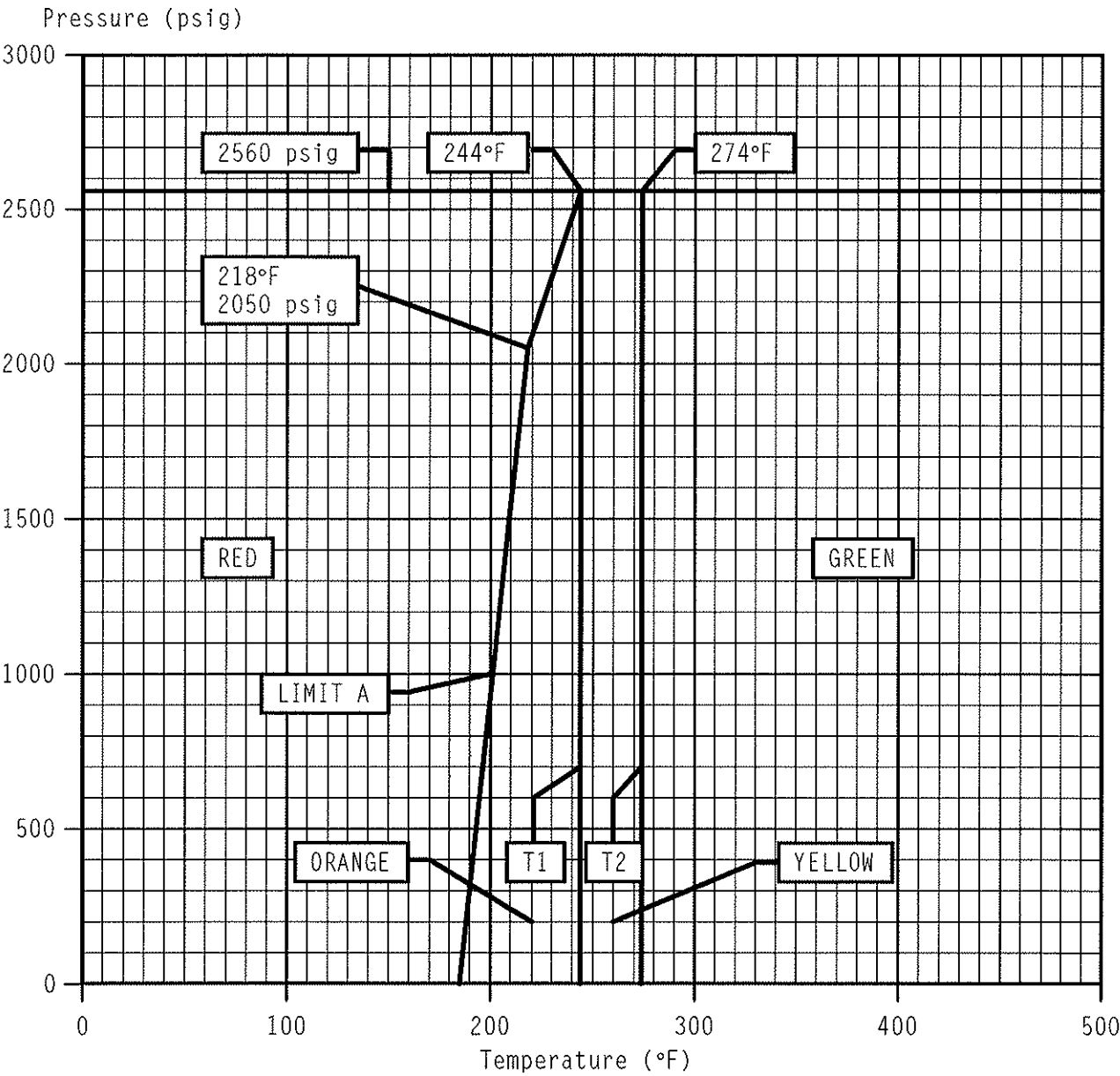
- o Containment pressure GREATER THAN OR EQUAL TO 5 PSIG.
- o Containment radiation levels GREATER THAN OR EQUAL TO 10^5 R/HR.
- o Containment integrated radiation dose GREATER THAN OR EQUAL TO 10^6 RADS.



ADDENDUM 1

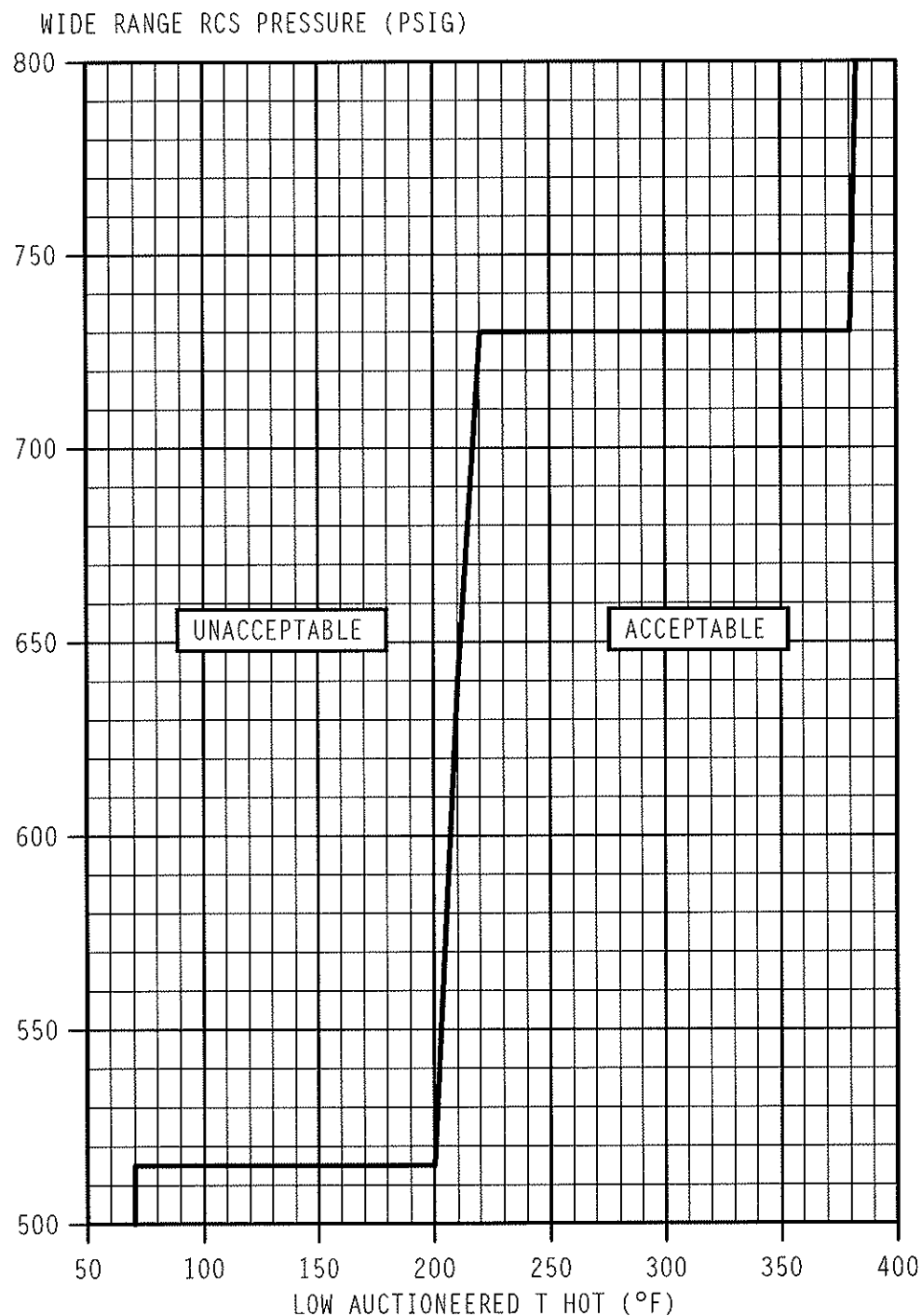
INTEGRITY OPERATIONAL LIMITS

Integrity Operational Limits



ADDENDUM 2
COLD OVERPRESSURE LIMITS

COLD OVERPRESSURE LIMITS



Exam Bank No.: 1261**K/A Catalog Number:** EPE E08 EK1.2**Tier:** 1**Group/Category:** 2**RO Importance:** 3.4**10CFR Reference:** 55.41(b)()

Knowledge of the operational implications of the following concepts as they apply to the (Pressurized Thermal Shock): Normal, abnormal and emergency operating procedures associated with (Pressurized Thermal Shock)

STP Lesson: LOT 504.04**Objective Number:** 92283

Given a set of conditions and the occurrence of a Red, Orange, or Yellow path CSF, STATE the action required per OPOP01-ZA-0018, EOP Users Guide.

Reference: OPOP05-EO-FO04, Rev. 4**Attached Reference** ☒ **Attachment:** OPOP05-EO-FO04 (entire procedure, not just CSF tree)**NRC Reference Req'd** ☐ **Attachment:****Source:** Bank**Modified from****Distractor Justification**

- A: INCORRECT: Wrong path and wrong procedure. This distracter will be selected if the individual miscalculates the cooldown rate and determines the RCS cooldown was less than 100 deg. F/hr.
- B: INCORRECT: Wrong path and wrong procedure. This distracter will be selected if the individual determines RCS cold leg temperatures are above 274 deg. F.
- C: CORRECT: With the given conditions, the RCS cooldown exceeded 100 deg. F in the last hr. RCS cold leg temperatures are also below 240 deg. F. Based on these 2 conditions, an orange path exists and the appropriate procedure to enter is FRP1.
- D: INCORRECT: Wrong path, but right procedure. This distracter will be selected if the individual misinterprets Addendum 1 and determines RCS temperatures are NOT to the right of Limit 'A'

Question Level: H**Question Difficulty** 3**Justification:**

Utilizing the given plant conditions, the individual must use the provided reference to determine the appropriate CSF path condition and related procedure.

Exam Bank No.: 1300**Last used on an NRC exam:** 2005**RO Sequence Number:** 52

Given the following:

- Unit 1 was operating at 100% power when a main steam line break occurred upstream of the Main Steam Isolation Valve for SG 1D.
- The crew is performing the actions of 0POP05-EO-EO20, Faulted Steam Generator Isolation.

Which one of the below correctly describes operator actions REQUIRED to isolate AFW to the faulted SG per 0POP05-EO-EO20?

- A.
 - Reset SI
 - Reset SG LO-LO level AFW actuations
 - Trip turbine driven AFW pump
 - Verify automatic closure of AFW OCIV for SG 1D.
- B.
 - Reset SI
 - Reset SG LO-LO level AFW actuations
 - Trip turbine driven AFW pump
 - Manually close AFW OCIV for SG 1D.
- C.
 - Reset SI
 - Reset Phase 'A' isolation
 - Reset SG LO-LO level AFW actuations
 - Trip turbine driven AFW pump
 - Verify automatic closure of AFW OCIV for SG 1D.
- D.
 - Reset SI
 - Reset Phase 'A' isolation
 - Reset SG LO-LO level AFW actuations
 - Trip turbine driven AFW pump
 - Manually close AFW OCIV for SG 1D.

Answer: B Reset SI; reset SG LO-LO level AFW actuations; trip turbine driven AFW pump; manually close AFW OCIV for SG 1D

Exam Bank No.: 1300

K/A Catalog Number: W/E12 EK3.3

Tier: 1

Group/Category: 1

RO Importance: 3.5

10CFR Reference: 55.41(b)(10)

Manipulation of controls required to obtain desired operating results during abnormal and emergency situations.

STP Lesson: LOT 504.13

Objective Number: 92146

STATE/IDENTIFY the valves which must be shut to isolate a faulted steam generator as delineated in POP05-EO-EO20, Faulted Steam Generator Isolation.

Reference: 0POP05-EO-EO20, Faulted SG Isolation

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank

Modified from

Distractor Justification

A: INCORRECT: - AFW OCIV for SG 1D does not close automatically.

B: CORRECT - Step 4 of EO20 specifies these steps in the given order.

C: INCORRECT- AFW OCIV for SG 1D does not close automatically and Phase A does not need to be reset.

D: INCORRECT- Phase A does not need to be reset.

Question Level: H

Question Difficulty 3

Justification:

Using the given conditions and knowledge of system design, the applicant must determine what actions are necessary to isolate AFW.

Exam Bank No.: 1349

Last used on an NRC exam: Never

RO Sequence Number: 53

Plant Conditions:

- Unit 2 is operating at 100% power
- Two heater groups are ON for Pressurizer Boron equalization
- Instrument air is lost to the Containment.

Which one of the following describes how the plant responds without operator action?

- A. Pressurizer level will rise due to a loss of letdown flow.
- B. Pressurizer level will lower due to a loss of charging flow.
- C. Pressurizer pressure will rise due to maximum charging flow.
- D. Pressurizer pressure will lower due to maximum spray flow.

Answer: A Pressurizer level will rise due to a loss of letdown flow.

Exam Bank No.: 1349

K/A Catalog Number: APE 065 AK3.03 **Tier:** 1 **Group/Category:** 1

RO Importance: 2.9 **10CFR Reference:** 55.41(b)(5)

Knowledge of the reasons for the following responses as they apply to the Loss of Instrument Air:
Knowing effects on plant operation of isolating certain equipment from instrument air.

STP Lesson: LOT 204.01 **Objective Number:** 20401

Given plant or system conditions, PREDICT the response of the plant and/or systems.

Reference: LOT 202.26, LOT 204.01, LOT 201.06

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank

Modified from

Distractor Justification

- A: CORRECT: Valve FV-0011, Letdown orifice isolation valve, is air-operated and inside containment. This valve fails closed on a loss of IA. Since Charging flow valve and RCP seal injection valves would be unaffected because they are outside containment, pressurizer level will rise.
- B: INCORRECT: Charging flow is unaffected because the charging flow control valve is outside containment.
- C: INCORRECT: Charging flow is unaffected because the charging flow control valve is outside containment.
- D: INCORRECT: The spray valves are air-operated and are in containment, but fail closed on a loss of air, thus pressure will not lower

Question Level: H **Question Difficulty** 3

Justification:

must know location and failure modes of air operated valves and be able to determine plant response from that.

Exam Bank No.: 1440**Last used on an NRC exam:** Never**RO Sequence Number:** 54

Given the following:

- Unit 1 is at 100% power with all systems in AUTO.
- The controlling Pressurizer pressure channel (PT-455) fails low.

Assuming no operator action, which one of the following correctly describes the plant response?

- A. Pressurizer pressure will be controlled at approximately 2185 psig.
- B. Pressurizer pressure will be controlled at approximately 2335 psig.
- C. Reactor Trip will occur on High Pressurizer pressure at 2380 psig.
- D. Reactor Trip will occur on Low Pressurizer pressure at 1870 psig.

Answer: B Pressurizer pressure will be controlled at approximately 2335 psig.

Exam Bank No.: 1440

K/A Catalog Number: 010 K3.01

Tier: 2 **Group/Category:** 1

RO Importance: 3.8 **10CFR Reference:** 55.41(b)(7)

Knowledge of the effect that a loss or malfunction of the PZR PCS will have on the following: RCS

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

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank

Modified from

Distractor Justification

- A: INCORRECT: the low failure will cause Pzr. heaters to energize and pressure to rise. If the failure had been in the high direction, actual pressure would lower and the 2185 psig setting would act to close any open PORV's to stop pressure from lowering further.
- B: CORRECT: the low failure will cause Pzr. heaters to energize and pressure to rise. The spray valves will not function since they are controlled from the same pressure controller receiving an input from the failed instrument. Pressure will continue to rise until it reaches the PORV setting of 2335 psig. The unaffected PORV will lift and lower pressure, then close. Pressure will again rise due to the heaters causing the PORV to once again open. This cycle will continue to repeat itself causing pressure to be controlled at approximately 2335 psig.
- C: INCORRECT: Although pressure will rise due to the heaters being energized, it will be limited to 2335 psig by the unaffected PORV opening/closing.
- D: INCORRECT: the low failure will cause Pzr. heaters to energize and pressure to rise. If the failure had been in the high direction, actual pressure would lower and the 2185 psig setting would act to close any open PORV's to stop pressure from lowering further. Based on this, a reactor trip would not occur even if the failure were in the high direction.

Question Level: H **Question Difficulty** 3

Justification:

Must be able to determine the plant response based on the failure and the operation of the Pressurizer Pressure Control System.

Exam Bank No.: 1488

Last used on an NRC exam: Never

RO Sequence Number: 55

Which of the following describes an action that occurs when RT-8032, GWPS Outlet, reaches the HIGH radiation alarm setpoint?

- 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**K/A Catalog Number:** 073 K1.01**Tier:** 2 **Group/Category:** 1**RO Importance:** **10CFR Reference:** 55.41(b)(13)

Knowledge of the physical connections and/or cause-effect relationships between the PRM system and the following systems: Those systems served by PRMs

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:****Source:** Bank**Modified from****Distractor Justification**

- A: CORRECT: One of the auto actions for this monitor is to close the inlet valve.
- B: INCORRECT: This valve closes to isolate the system. This distractor describes what occurs during a liquid release on Hi rad (system goes to recirc).
- C: INCORRECT: Compressor actually trips, not start.
- D: INCORRECT: Individual input valves into the system are not affected, the main system process valves are closed.

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.: 1523

Last used on an NRC exam: Never

RO Sequence Number: 44

Given the following:

- Unit 1 was operating at full power when an automatic Reactor trip and Safety Injection (SI) occurred.
- The Secondary Operator reports that HHSI Pump 'C' did not start automatically and cannot be started manually.

Which one of the following will cause this condition to occur with the HHSI Pump?

A loss of power to:

- A. Channel IV 120 VAC Vital Bus
- B. Channel III 120 VAC Vital Bus
- C. Channel III 125 VDC Vital Bus
- D. Channel IV 125 VDC Vital Bus

Answer: D Channel IV 125 VDC Vital Bus

Exam Bank No.: 1523

K/A Catalog Number: 013 K2.01

Tier: 2 **Group/Category:** 1

RO Importance: 3.6 **10CFR Reference:** 55.41(b)(7)

Knowledge of bus power supplies to the following: ESFAS/safeguards equipment control

STP Lesson: LOT 201.10 **Objective Number:** 29419

GIVEN a plant condition, PREDICT the operation of the ECCS to include automatic actuations, interlocks and/or trips.

Reference: LOT 201.10

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank

Modified from

Distractor Justification

- A: INCORRECT: this distracter is correct for the automatic closure because power will be lost to the actuation train. However, loss of power to the actuation train will not prevent the breaker from being closed manually.
- B: INCORRECT: this distracter indicates the incorrect channel and type of power.
- C: INCORRECT: this distracter indicates the incorrect channel, but the correct type of power.
- D: CORRECT: All 4160V breakers use 125 VDC for breaker control power. 'C' train is associated with Channel IV. A loss of this power will prevent the breaker from being closed automatically or manually.

Question Level: F **Question Difficulty** 3

Justification:

Must know that the 4160v breakers that supply the ESF equipment receive control power from 125 VDC and that 'C' train is associated with Channel IV.

Exam Bank No.: 1577**Last used on an NRC exam:** Never**RO Sequence Number:** 28

An operator action of 0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS, is to “Ensure 480V LC 1K1 (2K1) and 1L1 (2L1) feeder breakers open”.

This step will de-energize power to the....

- A. Rod Drive MG Set motors. Opening only one of the breakers should be sufficient to cause a reactor trip.
- B. Rod Drive MG Set motors. Both breakers must be opened to cause a reactor trip.
- C. Reactor Trip Breaker shunt trip coils. Opening only one of the breakers should be sufficient to cause a reactor trip.
- D. Reactor Trip Breaker shunt trip coils. Both breakers must be opened to cause a reactor trip.

Answer: B motors. Both breakers must be opened to cause a reactor trip.

Exam Bank No.: 1577**K/A Catalog Number:** EPE 029 EK2.06**Tier:** 1**Group/Category:** 1**RO Importance:** 2.9**10CFR Reference:** 55.41(b)(7)

Knowledge of the interrelations between the following and ATWS: Breakers, relays, and disconnects

STP Lesson: LOT 201.18**Objective Number:** 3069

IDENTIFY major components, system interfaces, interlocks and relative location of components and instrumentation by drawing and labeling a block diagram of the Rod Control System.

Reference: LOT 201.18, Rod Control**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** Bank**Modified from****Distractor Justification**

- A: INCORRECT: The Load Centers DO supply power to the MG motors, but both MG sets must be de-energized to initiate a reactor trip.
- B: CORRECT: The Load Centers supply power to the MG motors. Either MG set providing power to the Rod Control System will be sufficient to power the rod drives (design redundancy) so both MG must be de-energized as stated.
- C: INCORRECT: The Load Centers do not supply power to the shunt trip coils.
- D: INCORRECT: The Load Centers do not supply power to the shunt trip coils.

Question Level: F**Question Difficulty** 3**Justification:**

must know the distribution for rod drive power including the design redundancy that must be accounted for to perform a reactor trip.

Exam Bank No.: 1605**Last used on an NRC exam:** Never**RO Sequence Number:** 66

Given the following:

- Unit 1 is in Mode 5 performing a plant heatup per 0POP03-ZG-0001, Plant Heatup.
- A Pressurizer bubble has been formed.
- Venting from the Pressurizer to the PRT is in progress to remove non-condensable gases.

Which one of the following correctly describes the THEORETICAL response of the PRT as non-condensable gases exit the pressurizer?

As Pressurizer venting occurs, PRT pressure will...

- A. rise, but can be rapidly lowered by manually spraying the PRT. Venting of the PRT is NOT required.
- B. rise, but cannot be rapidly lowered by manually spraying the PRT. Venting of the PRT IS required.
- C. remain approximately the same as steam condensation offsets the accumulation of non-condensable gases.
- D. remain approximately the same as automatic PRT venting offsets the accumulation of non-condensable gases.

Answer: B rise, but cannot be lowered by manually spraying the PRT. Venting of the PRT IS required.

Exam Bank No.: 1605**K/A Catalog Number:** 004 K5.40**Tier:** 2 **Group/Category:** 1**RO Importance:** 3.0 **10CFR Reference:** 55.41(b)(14)

Knowledge of the operational implications of the following concepts as they apply to the CVCS:
Response of PRT during bubble formation in PZR: increase in quench tank pressure when cycling PORV shows that complete steam bubble does not exist, that significant noncondensable gas is still present.

STP Lesson: LOT 204.01 **Objective Number:** 20401

Given plant or system conditions, PREDICT the response of the plant and/or systems.

Reference: LOT 201.04**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** Bank**Modified from****Distractor Justification**

- A: INCORRECT: the presence of non-condensable gases will create a partial pressure in the PRT that cannot be lowered by spray, only venting.
- B: CORRECT: Non-condensable gases cannot be removed (condensed) by spraying the PRT. PRT pressure will rise due to a combination of steam and non-condensable gases entering. The only way to remove non-condensable gases from the PRT is by venting.
- C: INCORRECT: PRT pressure will rise (not remain relatively constant) due to a combination of steam and non-condensable gases entering the PRT.
- D: INCORRECT: PRT pressure will rise (not remain relatively constant) due to a combination of steam and non-condensable gases entering the PRT. Additionally, there is no automatic cooling or venting of the PRT.

Question Level: F **Question Difficulty** 3**Justification:**

Must know the characteristics on non-condensable gases within a steam-condensing atmosphere and the process for venting the PZR during bubble formation.

Exam Bank No.: 1686

Last used on an NRC exam: 2007

RO Sequence Number: 27

Which of the following describes the power supply to the Hydrogen Recombiners?

- A. 4160VAC
- B. 480VAC
- C. 120VAC
- D. 125VDC

Answer: B 480VAC

Exam Bank No.: 1686

K/A Catalog Number: 028 K2.01

Tier: 2

Group/Category: 2

RO Importance: **10CFR Reference:** 55.41(b)(7)

Knowledge of the bus power supplies to the following: Hydrogen recombiners

STP Lesson: LOT 201.27 **Objective Number:** 91588

DESCRIBE the means of circulation through the H2 recombiner.

Reference: LOT201.27 PowerPoint slide #19

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank

Modified from

Distractor Justification

A: INCORRECT - it is 480V

B: CORRECT

C: INCORRECT - It is 480V

D: INCORRECT - It is 480V

Question Level: F **Question Difficulty** 3

Justification:

Requires a basic knowledge of system design.

Exam Bank No.: 1810**Last used on an NRC exam:** Never**RO Sequence Number:** 71

The following plant conditions exist in Unit 1:

- Power is at 100%
- Annunciator 08M3 Window F3, SAS ISOL VLV CLOSE is in alarm.
- Service Air Pressure Indicator reads 100 psig and is steady.
- Instrument Air Pressure Indicator reads 95 psig and is slowly lowering.

Based on these plant conditions which one of the following is correct?

A leak is in the

- A. Service Air System and has been isolated.
- B. Instrument Air System and has not been isolated.
- C. Service Air System and has not been isolated.
- D. Instrument Air System and has been isolated.

Answer: B Instrument Air System and has not been isolated.

Exam Bank No.: 1810

K/A Catalog Number: 078 A3.01

Tier: 2 **Group/Category:** 1

RO Importance: 3.1 **10CFR Reference:** 55.41(b)(4)

Ability to monitor automatic operation of the IAS, including: Air pressure.

STP Lesson: LOT 202.26 **Objective Number:** 92995

Given a scenario in which Instrument Air pressure is decreasing, PREDICT Instrument and Service Air system component automatic actions that will occur as pressure decreases.

Reference: 0POP04-IA-0001, Loss Of Instrument Air

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Bank

Modified from

Distractor Justification

- A: INCORRECT: At 100 psig, Service Air Isolation Valve PV-9785 closes and Annunciator SAS ISOL VLV CLOSE alarms. This separates the Instrument Air System and the Service Air System. If the leak were in the Service Air System, pressure would continue to decrease. With Service Air System pressure steady at 100 psig, this indicates that the leak is in the Instrument Air System.
- B: CORRECT: At 100 psig, Service Air Isolation Valve PV-9785 closes and Annunciator SAS ISOL VLV CLOSE alarms. This separates the Instrument Air System and the Service Air System. With Service Air System pressure steady at 100 psig, this indicates that the leak is in the Instrument Air System and that the leak has not been isolated.
- C: INCORRECT: At 100 psig, Service Air Isolation Valve PV-9785 closes and Annunciator SAS ISOL VLV CLOSE alarms. This separates the Instrument Air System and the Service Air System. With Service Air System pressure steady at 100 psig, this indicates that there is no leak in the Service Air System.
- D: INCORRECT: At 100 psig, Service Air Isolation Valve PV-9785 closes and Annunciator SAS ISOL VLV CLOSE alarms. This separates the Instrument Air System and the Service Air System. With Instrument Air System pressure continuing to decrease, this indicates that the leak has not been isolated.

Question Level: H **Question Difficulty** 3

Justification:

Applicant must evaluate the given conditions to determine the status and location of the leak.

Exam Bank No.: 1828**Last used on an NRC exam:** Never**RO Sequence Number:** 56

The following plant conditions exist in Unit 2:

- The Reactor tripped from 100% power.
- Pressurizer PORV PCV-655A has stuck open resulting in a Safety Injection.
- All attempts to close the PORV and its associated Block Valve, MOV-0001A, have failed.
- While monitoring Reactor Coolant System (RCS) pressure, the operator observed that the RATE at which RCS pressure was lowering slowed over a 10 minute period and then suddenly the RATE went up again.
- The rate at which RCS pressure is lowering is now constant.

Which one of the following is the reason for the RCS pressure response?

- A. The Pressurizer emptied causing a loss of RCS subcooling margin.
- B. When RCS pressure decreased, Safety Injection flow remained constant while break flow went down, and Safety Injection flow is now greater than break flow.
- C. Pressure in the Pressurizer Relief Tank (PRT) went up until the rupture disc failed allowing break flow to go up.
- D. Cooling from the Reactor Containment Fan Coolers caused PRT pressure to go down allowing break flow to go up.

Answer: C Pressure in the Pressurizer Relief Tank (PRT) went up until the rupture disc failed allowing break flow to go up.

Exam Bank No.: 1828**K/A Catalog Number:** APE 008 AK1.02 **Tier:** 1 **Group/Category:** 1**RO Importance:** 3.1 **10CFR Reference:** 55.41(b)(3)

Knowledge of the operational implications of the following concepts as they apply to the Pressurizer Vapor Space Accident: Change in leak rate with change in pressure.

STP Lesson: LOT 501.21 **Objective Number:** 501215

Given a set of conditions or event description, be able to PREDICT the sequence of events and trends of plant parameters for a transient or accident involving a decrease in Reactor Coolant Inventory.

Reference: LOT501.21, Decrease in RCS Inventory**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** Bank**Modified from****Distractor Justification**

- A: INCORRECT: The Pressurizer will fill up during a steam space break.
- B: INCORRECT: Plausible because pressure should have decreased over 10 minutes, however, this would cause SI flow to increase. Since RCS pressure is still lowering, break flow is still greater than SI flow.
- C: CORRECT: Break flow will slow as pressure in the PRT increases until the ruptured disc setpoint of 100 psig is reached. Once the ruptured, tailpipe back pressure will lower to containment pressure and an increase in break flow will be realized.
- D: INCORRECT: Plausible because some ambient losses from the PRT might be experienced, however, the increasing flow rate is due to blowing the ruptured disc.

Question Level: H **Question Difficulty** 3**Justification:**

Applicant must understand where the pressurizer PORVs discharge to, that the PRT rupture disc will rupture at a higher than normal pressure and how this will affect RCS pressure and consequently, break flow.

Exam Bank No.: 1901**Last used on an NRC exam:** Never**RO Sequence Number:** 51

Given the following:

- Unit 1 was manually tripped from full power.
- Subsequent to the trip, Safety Injection was manually actuated.
- The crew is performing 0POP05-EO-EO00, Reactor Trip or Safety Injection, and is at the step for determining if a Steam Generator Tube Rupture (SGTR) exists.

Which one of the following sets of conditions would be indicative of a tube leak on a particular Steam Generator and cause the crew to transition to 0POP05-EO-EO30, SGTR?

Aux feed flow is ...

- A. GREATER than steam flow and SG level rising.
- B. GREATER than steam flow and SG level lowering.
- C. LESS than steam flow and SG level rising.
- D. LESS than steam flow and SG level lowering.

Answer: C LESS than steam flow and SG level rising.

Exam Bank No.: 1901

K/A Catalog Number: APE 038 G2.4.4 **Tier:** 1 **Group/Category:** 1

RO Importance: 4.5 **10CFR Reference:** 55.41(b)(5)

Ability to recognize abnormal indications for system operating parameters that are entry level conditions for emergency and abnormal operating procedures.

STP Lesson: LOT 504.05 **Objective Number:** 80458

From memory STATE/IDENTIFY how the SG tubes are checked to be intact per POP05-EO-EO00, Reactor Trip or Safety Injection.

Reference: 0POP05-EO-EO00, Rev. 20, LOT 504.05

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: This is an expected trend in SG level for the feedflow/steamflow relationship. Although there could be a tube leak present, it would be difficult to diagnose as long as feedflow is greater than steamflow.
- B: INCORRECT: This is an abnormal situation and indicates that water in the SG is being lost (feed line leak/break) instead of there being in-leakage such as would occur during a tube leak.
- C: CORRECT: With feedflow less than steamflow, SG level should be lowering. The only reason for it to be rising instead is there is another source of water (tube leak).
- D: INCORRECT: This is an expected trend in SG level for the feedflow/steamflow relationship. Although there could be a tube leak present, it would be difficult to diagnose as long as feedflow is below steamflow and SG level is trending lower.

Question Level: H **Question Difficulty** 3

Justification:

must understand the relation of feedflow and steamflow relative to the SG level trend to determine if inleakage (tube leak) is occurring.

Exam Bank No.: 1902**Last used on an NRC exam:** Never**RO Sequence Number:** 10

OPOP04-FW-0002, SGFPT Trip, contains the following note:

“Turbine load should be reduced at a rate that will NOT open the Steam Dumps unless plant conditions require a rapid load reduction.”

Which one of the below correctly describes the basis for this note?

- A. SG pressure will drop when the Steam Dumps open resulting in a Steamline Isolation.
- B. SG levels would lower at a faster rate when the Steam Dumps open, immediately resulting in a SG Lo-Lo level trip.
- C. When the Steam Dumps re-close, SG levels will shrink possibly resulting in a SG Lo-Lo level trip.
- D. When the Steam Dumps re-close, there will be an over-feed condition in the SG's immediately resulting in a Reactor Trip on Hi-Hi SG level.

Answer: C When the Steam Dumps re-close, SG levels will shrink possibly resulting in a SG Lo-Lo level trip.

Exam Bank No.: 1902

K/A Catalog Number: APE 054 G2.4.20 **Tier:** 1 **Group/Category:** 1

RO Importance: 3.8 **10CFR Reference:** 55.41(b)(10)

Loss of Main Feedwater: Knowledge of the operational implications of EOP warnings, cautions, and notes

STP Lesson: LOT 505.01 **Objective Number:** 92110

Given a precaution, note, or step(s) and the context in which it is used from the referenced procedure, DESCRIBE its basis and any applicable limits.

Reference: 0POP04-FW-0002, Rev. 24

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: In an at-power condition, steam pressure would not be expected to change much. Especially not enough to generate a Steamline Isolation.
- B: INCORRECT: While it is true that the SG level may initially lower at a faster rate with steam dumps open, it would not result in an immediate trip and levels should eventually recover as power is reduced.
- C: CORRECT: Per the basis of the note in 0POP04-FW-0002
- D: INCORRECT: SG levels would rise, but should still be under operator control so a reactor trip is not an expected occurrence.

Question Level: F **Question Difficulty** 3

Justification:

Knowledge of procedure bases required.

Exam Bank No.: 1903**Last used on an NRC exam:** Never**RO Sequence Number:** 23

A loss of Vital 120VAC Panel DP-1201 has occurred resulting in a loss of the controlling Pressurizer Level Channel.

Which one of the below correctly describes the action to take to restore Pressurizer level indication and control in accordance with 0POP04-RP-0002, Loss of Automatic Pressurizer Level Control?

- A. Immediately de-select the failed channel. Monitor the newly selected Pressurizer Level channel to ensure Pressurizer level is returning to program level.
- B. Place Charging Flow Control Valve, FCV-0205 in MANUAL and use manual control to return Pressurizer level to program level while monitoring an operable level channel.
- C. Immediately select COLD CAL for Pressurizer Level display. Monitor the COLD CAL Pressurizer Level channel to ensure Pressurizer level is returning to program level.
- D. Place Charging Flow Control Valve, FCV-0205 in MANUAL, then use RCP Seal Injection Flow Control Valve, HV-0218, to return Pressurizer Level to program level while monitoring an operable level channel.

Answer: B Place Charging Flow Control Valve, FCV-0205 in MANUAL and use manual control to return Pressurizer level to program level while monitoring an operable level channel.

Exam Bank No.: 1903

K/A Catalog Number: APE 057 AA1.05 **Tier:** 1 **Group/Category:** 1

RO Importance: 3.2 **10CFR Reference:** 55.41(b)(10)

Ability to operate and/or monitor the following as they apply to the Loss of Vital AC Instrument Bus:
Backup instrument indications.

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: Ref. 0POP04-RP-0002, Rev. 20

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT: Action is not in accordance with procedure requirements. This action would be correct if a Pressurizer Pressure channel failed high, but de-selecting the failed channel before taking manual control of charging flow can result in an unwanted transient in charging flow and Pzr level.
- B: CORRECT: per the procedure requirements to provide a controlled method of handling the instrument failure while minimizing transient effects on the plant.
- C: INCORRECT: Action is not in accordance with procedure requirements. The Cold Cal position utilizes a level channel that is not calibrated for hot conditions and would not provide accurate indication of pressurizer level.
- D: INCORRECT: Action is not in accordance with procedure requirements. The action to take the Charging flow controller to manual is correct, however, using RCP seal injection to restore level is not correct. Seal injection flow must be controlled in conjunction with charging flow to ensure both flow requirements are met.

Question Level: F **Question Difficulty** 3

Justification:

must know the immediate actions for a pressurizer level instrument failure.

Exam Bank No.: 1904**Last used on an NRC exam:** Never**RO Sequence Number:** 24

Given the following:

- Unit 1 is in Mode 3 at normal operating temperature and pressure and with normal system lineups for this plant condition.
- An electrical disturbance occurred in the Switchyard.
- ESF DG's 11 and 13 are now running and supplying their respective 4160V ESF Buses.
- All systems operated as designed.

Which one of the following correctly describes the status of the power available from the offsite circuits?

Unit 1...

- A. Auxiliary and Standby Transformers are both ENERGIZED.
- B. Auxiliary and Standby Transformers are both DE-ENERGIZED.
- C. Auxiliary Transformer is ENERGIZED, but the Standby Transformer is DE-ENERGIZED.
- D. Auxiliary Transformer is DE-ENERGIZED, but the Standby Transformer is ENERGIZED.

Answer: D Auxiliary Transformer is DE-ENERGIZED, but the Standby Transformer is ENERGIZED.

Exam Bank No.: 1904

K/A Catalog Number: APE 077 AA2.05 **Tier:** 1 **Group/Category:** 1

RO Importance: 3.2 **10CFR Reference:** 55.41(b)(7)

Ability to determine and interpret the following as they apply to Generator Voltage and Electric Grid Disturbances: Operational status of offsite circuit.

STP Lesson: LOT 201.30 **Objective Number:** 91662

Given control room indications associated with the Offsite Electrical Distribution system, EVALUATE plant conditions.

Reference: LOT 201.31, POP02-AE-0001, Rev. 23

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT: The Auxiliary Transformer is the normal offsite source of power to 4160v buses A and C. These are the buses being supplied by ESF DG's 11 and 13 which indicates the Aux Transformer is de-energized.
- B: INCORRECT: Although the Auxiliary Transformer is de-energized because the ESF DG's are supplying power to the related 4160V buses, the offsite source from the Standby Transformer is still energized because it's 4160V bus is not being supplied by its ESF DG.
- C: INCORRECT: The Auxiliary Transformer is the normal offsite source of power to 4160v buses A and C. These are the buses being supplied by ESF DG's 11 and 13 which indicates the Aux Transformer is de-energized. The Standby Transformer offsite source is energized because it is still supplying power to 4160V Bus B (ESF DG is NOT supplying power to that bus).
- D: CORRECT: The Auxiliary Transformer is the normal offsite source of power to 4160v buses A and C. These are the buses being supplied by ESF DG's 11 and 13 which indicates the Aux Transformer is de-energized. The offsite source from the Standby Transformer is still energized because it's 4160V bus is not being supplied by its ESF DG.

Question Level: H **Question Difficulty** 3

Justification:

Must evaluate given plant conditions and be able to determine the status of offsite power sources.

Exam Bank No.: 1905**Last used on an NRC exam:** Never**RO Sequence Number:** 40

Given the following:

- A Small Break LOCA has occurred on Unit 2.
- The Reactor cannot be tripped.
- Operators are performing the actions of 0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS.
- CNTMT PRESS HI/LO annunciator is in alarm. Current Containment pressure is 5.5 psig.
- All SG LO-LO-LVL annunciators are in alarm. Current levels are 8-12% NR.
- All AFW flows are 150-175 gpm.

In accordance with 0POP05-EO-FRS1, the secondary heat sink is...

- A. ADEQUATE, but RCS temperatures will continue to rise if Reactor power is greater than 5%.
- B. ADEQUATE and RCS temperatures can be stabilized regardless of Reactor power.
- C. INADEQUATE. Total AFW flow should be raised to greater than 1080 gpm.
- D. INADEQUATE. At least one SG level should be raised to be greater than 14% NR.

Answer: C INADEQUATE. Total AFW flow should be raised to greater than 1080 gpm.

Exam Bank No.: 1905

K/A Catalog Number: EPE W/EO5 EK1.3 **Tier:** 1 **Group/Category:** 1

RO Importance: 3.9 **10CFR Reference:** 55.41(b)(10)

Annunciators and conditions indicating signals, and remedial actions associated with the (Loss of Secondary Heat Sink)

STP Lesson: LOT 504.28 **Objective Number:** 83555

Given a step, note or caution from 0POP05-EO-FRS1, STATE its basis.

Reference: 0POP05-EO-FRS1, Rev. 15

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: The heat sink is inadequate because neither SG levels nor AFW flow meet the heat sink requirements for 0POP05-EO-FRS1 and the adverse containment conditions that exist. AFW flow meets the normal heat sink requirements for flow in other procedures, but does not meet FRS1 requirements. It is true that RCS temperatures would continue to rise if reactor power is above 5%, even if the heat sink were adequate.
- B: INCORRECT: The heat sink is inadequate because neither SG levels nor AFW flow meet the heat sink requirements for 0POP05-EO-FRS1 and the adverse containment conditions that exist. AFW flow meets the normal heat sink requirements for flow in other procedures, but does not meet FRS1 requirements. Additionally, RCS temperatures would continue to rise if reactor power is above 5%.
- C: CORRECT: the heat sink is inadequate because neither SG levels nor AFW flow meet the heat sink requirements for 0POP05-EO-FRS1. The appropriate action is raise AFW flow to above 1080 gpm.
- D: INCORRECT: the heat sink is inadequate, but the action is incorrect. To establish a heat sink with SG level, the level would have to be raised to at least 34% NR due to adverse containment conditions. The action of raising level to 14% NR would satisfy heat sink requirements if adverse containment conditions did not exist.

Question Level: H **Question Difficulty** 3

Justification:

Must compare the given conditions to procedural requirements to determine the correct status of the heat sink.

Exam Bank No.: 1906**Last used on an NRC exam:** Never**RO Sequence Number:** 19

Given the following:

- Unit 1 was manually tripped from full power due to a leak in the CCW system.
- Subsequent to the trip, a Loss of Offsite Power (LOOP) occurred resulting in a feedwater line break inside Containment due to water hammer.
- All plant systems operated as designed.
- CCW Surge Tank level is at 61% and lowering slowly.
- RCB pressure is at 9.8 psig and rising slowly.

Based on the above conditions, an automatic isolation of CCW to the RCP's has occurred due to which of the following signals?

- A. CCW Surge Tank low level isolation OR Phase 'B' Isolation
- B. LOOP OR Phase 'B' Isolation
- C. LOOP OR Phase 'A' Isolation
- D. CCW Surge Tank low level isolation OR Phase 'A' Isolation.

Answer: A CCW Surge Tank low level isolation OR Phase 'B' Isolation

Exam Bank No.: 1906**K/A Catalog Number:** APE 026 AA2.02**Tier:** 1**Group/Category:** 1**RO Importance:** 2.9**10CFR Reference:** 55.41(b)(7)

Ability to determine and interpret the following as they apply to the Loss of Component Cooling Water: the cause of possible CCW loss.

STP Lesson: LOT 201.12**Objective Number:** 57126

DESCRIBE the operation of the Component Cooling Water System and its major components. Include automatic actions, interlocks and trips.

Reference: LOT 201.12**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** New**Modified from****Distractor Justification**

- A: CORRECT: A CCW Surge Tank level below 61.5% will close all the common header valves which isolates CCW to the RCP's. A Phase 'B' signal exists because RCB pressure is above 9.5 psig. A Phase 'B' Isolation will close all the RCB penetration valves for the CCW system which isolates CCW to the RCP's.
- B: INCORRECT: A Phase 'B' signal exists because RCB pressure is above 9.5 psig. A Phase 'B' Isolation will close all the RCB penetration valves for the CCW system which isolates CCW to the RCP's. A LOOP signal will close a RCB CCW penetration valve, but there is a valve in parallel with that one so CCW is not lost to the RCP's.
- C: INCORRECT: A Phase 'A' Isolation signal is present, but it does not close any CCW penetration valves. A LOOP signal will close a RCB CCW penetration valve, but there is a valve in parallel with that one so CCW is not lost to the RCP's.
- D: INCORRECT: A CCW Surge Tank level below 61.5% will close all the common header valves which isolates CCW to the RCP's. A Phase 'A' Isolation signal is present, but it does not close any CCW penetration valves.

Question Level: H**Question Difficulty** 3**Justification:**

Must know system interlocks and flowpaths and be able to determine isolation status based on given plant information.

Exam Bank No.: 1907**Last used on an NRC exam:** Never**RO Sequence Number:** 57

Given the following:

- Unit 2 has tripped from a full power condition.
- SG PORVs are maintaining SG pressure at 1225 psig.
- All RCPs are in operation.

Assuming decay heat remains constant under forced flow and natural circulation, if all of the RCPs had tripped following the reactor trip,

- A. core ΔT would be higher.
- B. total AFW flow would be higher.
- C. RCS Tave would be lower.
- D. SG PORVs would be open further.

Answer: A core ΔT would be higher.

Exam Bank No.: 1907

K/A Catalog Number: APE 015 AK1.01 **Tier:** 1 **Group/Category:** 1

RO Importance: 4.4 **10CFR Reference:** 55.41(b)(14)

Knowledge of the operational implications of the following concepts as apply to Reactor Coolant Pump Malfunctions (Loss of RC Flow): Natural circulation in a nuclear reactor power plant.

STP Lesson: LOT 102.59 **Objective Number:** N99904

Describe the means by which the operator can determine if natural circulation flow exists.

Reference: LOT 102.59

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: CORRECT: In order to transfer the same amount of heat with less flow, delta T must go up ($MCp\Delta T$)
- B: INCORRECT: To remove the same amount of heat (or a little less since RCPs are not running), AFW flow would be the same or less.
- C: INCORRECT: Tcold would remain the same since SG pressure is the same in both cases. If Tcold remains the same and ΔT goes up, then Thot and Tave would both go up.
- D: INCORRECT: With the same SG pressure and decay heat in both cases, PORV position would remain the same (in order to remove the same amount of heat from the SG).

Question Level: H **Question Difficulty** 3

Justification:

Must apply the principles of heat transfer and natural circulation cooling to determine the expected plant response to the given conditions.

Exam Bank No.: 1908**Last used on an NRC exam:** Never**RO Sequence Number:** 30

Given the following:

- Unit 1 Reactor tripped from 100% power due to a secondary plant transient.
- The crew is performing Step 4 of 0POP05-EO-ES01, Reactor Trip Response: “VERIFY Control Rods Fully Inserted.”
- One Control Rod indicates it is at 50 steps on DRPI.
- A second Control Rod indicates it is at 10 steps on DRPI.
- All other Control Rods have Rod Bottom lights lit.

0POP05-EO-ES01 Step 4 specifies Emergency Boration by amount (gallons or ppm) or until RCS boron concentration is 2800 ppm. Assuming you will perform an Emergency Boration by amount, which one of the following correctly describes the action to be taken and the basis for that action?

In accordance with POP04-CV-0003, Emergency Boration, initiate an Emergency Boration from the....

- A. Boric Acid Storage Tanks (BAT's). Add more boric acid for the rod at 50 steps because it affects Shutdown Margin more than the other rod.
- B. Refueling Water Storage Tank (RWST). Add the same amount of boric acid for each rod because the amount is based on rods that are fully withdrawn.
- C. Boric Acid Storage Tanks (BAT's). Add the same amount of boric acid for each rod because the amount is based on rods that are fully withdrawn.
- D. Refueling Water Storage Tank (RWST). Add more boric acid for the rod at 50 steps because it affects Shutdown Margin more than the other rod.

Answer: A Initiate an Emergency Boration from the Boric Acid Storage Tanks (BAT's). Add more boric acid for the rod at 50 steps because it affects Shutdown Margin more than the other rod.

Exam Bank No.: 1908

K/A Catalog Number: APE 024 G2.1.32 **Tier:** 1 **Group/Category:** 2

RO Importance: 3.8 **10CFR Reference:** 55.41(b)(10)

Emergency Boration: Ability to explain and apply system limits and precautions.

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: OPOP05-EO-ES01, Rev. 24, OPOP04-CV-0003, Rev. 12

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: CORRECT: Action is per the procedure. Bases correctly states that SDM is affected more by rods stuck at higher positions
- B: INCORRECT: The preferred method of Emergency Borating is from the BA Tanks, not the RWST. Additionally, the amount of acid to be added is based on designated rod positions, not full out.
- C: INCORRECT: This distracter correctly states the method for Emergency Boration, but incorrectly states the amount to be added is the same for both rods.
- D: INCORRECT: The preferred method of Emergency Borating is from the BA Tanks, not the RWST. The basis for the amount of acid being added is correct.

Question Level: F **Question Difficulty** 3

Justification:

Must know requirements of procedure step and basis.

Exam Bank No.: 1909**Last used on an NRC exam:** Never**RO Sequence Number:** 72

In accordance with OPOP05-EO-FO02, Core Cooling Critical Safety Function Status Tree, which of the following temperature sensors are used to determine if an Inadequate Core Cooling Condition exists?

- A. Wide range Hot Leg RTDs
- B. Wide range Cold Leg RTDs
- C. Wide range Hot Leg RTDs and Cold Leg RTDs (Tave)
- D. Core Exit Thermocouples (CETs)

Answer: D Core Exit Thermocouples (CETs)

Exam Bank No.: 1909

K/A Catalog Number: EPE 074 EK2.08 **Tier:** 1 **Group/Category:** 2

RO Importance: 2.5 **10CFR Reference:** 55.41(b)(2)

Knowledge of the interrelationships between the and the following Inadequate Core Cooling: Sensors and Detectors

STP Lesson: LOT 504.04 **Objective Number:** 92282

STATE the individual parameter(s) used in each Critical Safety Function Status Tree.

Reference: OPOP05-EO-FO02, rev 2

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: While this indication is readily available to the operator and is indicative of RCS conditions, it is not to be used in accordance with procedure.
- B: INCORRECT: While this indication is readily available to the operator and is indicative of RCS conditions, it is not to be used in accordance with procedure.
- C: INCORRECT: While this indication is readily available to the operator and is indicative of RCS conditions, it is not to be used in accordance with procedure.
- D: CORRECT: The procedure directs the use of CETs when determining the status of Core Cooling

Question Level: F **Question Difficulty** 3

Justification:

Must know the what indication is used to determine the status of the Core Cooling Safety Function.

Exam Bank No.: 1910**Last used on an NRC exam:** Never**RO Sequence Number:** 39

Given the following:

- Unit 2 has experienced a transient outside of Containment that has resulted in a Reactor trip and Safety Injection.
- All MSIV's are closed.
- The crew is currently performing the actions of 0POP05-EO-ES00, Rediagnosis to determine if there are any faulted or ruptured SG's.
- The Secondary Operator observes the following SG indications:

	NR Level	Pressure	MSL Radiation	AFW Flow
SG 'A'	60% and ↑	1210 psig and ↑	0.12 $\mu\text{Ci/cc}$	0 gpm
SG 'B'	0% and ↓	1180 psig and stable	0.018 $\mu\text{Ci/cc}$	100 gpm
SG 'C'	5% and ↓	700 psig and ↓	0.02 $\mu\text{Ci/cc}$	200 gpm
SG 'D'	20% and stable	900 psig and stable	0.019 $\mu\text{Ci/cc}$	200 gpm

Which one of the following correctly describes the status of the SG's?

- A. SG 'A' is ruptured and SG 'B' is faulted.
- B. SG 'A' is ruptured and SG 'C' is faulted.
- C. SG 'C' and 'D' are both faulted.
- D. SG 'B' and 'D' are both faulted.

Answer: B SG 'A' is ruptured and SG 'C' is faulted.

Exam Bank No.: 1910

K/A Catalog Number: EPE W/E01 EA1.1 **Tier:** 1 **Group/Category:** 2

RO Importance: 3.7 **10CFR Reference:** 55.41(b)(10)

Ability to operate and/or monitor the following as they apply to the (Reactor Trip or Safety Injection/Rediagnoses): Components and functions of control and safety systems including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

STP Lesson: LOT 501.16 **Objective Number:** 501165

Given a set of conditions or event description, be able to PREDICT the sequence of events and trends of plant parameters for an increase heat removal accident.

Reference: 0POP05-EO-ES00, Rediagnosis, Rev. 7, 0POP01-ZA-0018, EOP Users Guide

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT: 'A' SG is ruptured as stated, but 'B' SG is not faulted because it's pressure is at what's expected and stable.
- B: CORRECT: SG 'A' indicates it is ruptured because there is higher Rad Monitor indication than the other SG's and SG level is rising even though there is not AFW flow to the SG. SG 'C' is faulted because its level is lowering even though there is AFW flow to the SG and the SG pressure is the lowest of all SG's and continues to lower.
- C: INCORRECT: SG 'C' is faulted as stated, but SG 'D' is not faulted because its pressure is where it's expected and stable.
- D: INCORRECT: Neither of these SG's are faulted. 'B' SG is not faulted because it's pressure is at what's expected and stable. SG 'D' is not faulted because its pressure is where it's expected and stable.

Question Level: H **Question Difficulty** 3

Justification:

Must be able to evaluate the given conditions and make a determination of which SG's are in a faulted and/or ruptured condition.

Exam Bank No.: 1911**Last used on an NRC exam:** Never**RO Sequence Number:** 38

Given the following:

- Unit 1 has experienced a Small Break LOCA
- A Loss of Offsite Power (LOOP) has occurred.
- ESF DG #11 failed to start, all other ESF equipment operated as designed.
- All LHSI pumps are OFF
- The crew is performing the actions of step 13 of 0POP05-EO-ES12, Post LOCA Cooldown and Depressurization.

Plant conditions are:

- Pressurizer level is 45%
- RCS pressure is 1135 psig
- RCS T-hot temperatures are 393 °F
- Incore TC temperatures are 397 °F
- Containment pressure is 5.3 psig
- Charging flow is 200 gpm

Given the attached procedure and based on the above indications and conditions, which one of the below correctly describes the appropriate action?

- A. STOP one HHSI Pump (and place in AUTO), then evaluate if another HHSI Pump can be stopped.
- B. STOP one HHSI Pump (and place in AUTO), then continue to Step 14.
- C. Do NOT stop a HHSI Pump. Ensure at least one LHSI pump is running.
- D. Do NOT stop a HHSI Pump. Start an additional Charging Pump to raise RCS pressure.

Answer: C Do NOT stop a HHSI Pump. Ensure at least one LHSI pump is running.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

IF offsite power is lost after the sequencers have been locally reset, THEN manual action may be required to restart safeguards equipment.

- ___12 RESET ESF Load Sequencers Mode I
 Logic Per ADDENDUM 4, RESETTING ESF
 SEQUENCER MODE I LOGIC

NOTE

WHEN any HHSI pump is stopped, THEN RCS pressure should be allowed to stabilize OR rise prior to stopping another pump.

- ___13 CHECK IF One HHSI Pump Should Be
 Stopped:

___a. Any HHSI pump - RUNNING

a. PERFORM the following:

- 1) IF any LHSI pump running, THEN
 GO TO Step 19.
 - 2) GO TO Step 14.
-

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
------	--------------------------	-----------------------

Step 13 continued from previous page.

NOTE

IF RCS subcooling exceeds 200°F, THEN QDPS will indicate "LO" and Plant computer will show the actual subcooling value followed by "B" for bad data. This is the expected response. The Plant computer value may be used for operation.

___b. DETERMINE required RCS subcooling from table:

CHARGING PUMP STATUS	RCS SUBCOOLING (°F) - BASED ON CORE EXIT TCs					
	ANY RCP RUNNING			NO RCP RUNNING		
	ONE HHSI PUMP RUNNING	TWO HHSI PUMPS RUNNING	THREE HHSI PUMPS RUNNING	ONE HHSI PUMP RUNNING	TWO HHSI PUMPS RUNNING	THREE HHSI PUMPS RUNNING
NONE RUNNING	DO NOT STOP HHSI PUMP	181 [191]	83 [97]	DO NOT STOP HHSI PUMP	193 [198]	96 [107]
ONE RUNNING	350 [354]	138 [151]	78 [92]	349 [353]	159 [167]	90 [101]
TWO RUNNING	298 [301]	117 [130]	74 [88]	297 [300]	135 [144]	85 [97]

Step 13 continued on next page.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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Step 13 continued from previous page.

___c. RCS subcooling based on core exit
T/Cs - GREATER THAN REQUIRED
SUBCOOLING

c. PERFORM the following:

- 1) IF any active loop RCS hot leg temperature GREATER THAN 405°F [400°F], THEN GO TO Step 19.
- 2) IF active loop RCS hot leg temperatures are LESS THAN OR EQUAL TO 405°F [400°F], THEN ENSURE at least one LHSI pump running.
- 3) IF at least one LHSI pump can NOT be started, THEN GO TO Step 19.

___d. Pressurizer level - GREATER THAN
22% [50%]

d. RETURN TO Step 10, OBSERVE NOTE
prior to Step 10.

NOTE

Additional CCPs may be started in an effort to control RCS inventory and RCS pressure.

___e. STOP one HHSI pump and PLACE in
AUTO

___f. RETURN TO Step 13.a, OBSERVE NOTE
prior to Step 13.

Exam Bank No.: 1911**K/A Catalog Number:** EPE W/E03 EA1.3 **Tier:** 1 **Group/Category:** 2**RO Importance:** 3.7 **10CFR Reference:** 55.41(b)(10)

Ability to operate and/or monitor the following as they apply to the (LOCA Cooldown and Depressurization): Desired operating results during abnormal and emergency situations.

STP Lesson: LOT 504.12 **Objective Number:** 92172

Given a copy of a step from 0POP05-EO-ES12, STATE/IDENTIFY how the action is performed and the basis for the action to include the action itself, its purpose and the result.

Reference:**Attached Reference** ☒ **Attachment:** 0POP05-EO-ES12, Step 13 (pages 13 through 15)**NRC Reference Req'd** ☐ **Attachment:****Source:** New**Modified from****Distractor Justification**

- A: INCORRECT: This would be a correct action if adverse containment conditions didn't exist.
- B: INCORRECT: This would be a correct action if adverse containment conditions didn't exist.
Following this action, the operator should return to the beginning of the step just completed to determine if an additional HHSI pump can be stopped, not continue to step 14. Continuing to step 14 would be appropriate if the HHSI pump stopped was the last HHSI pump running.
- C: CORRECT: SCM is not adequate to stop one HHSI pump based on adverse containment conditions. The operator should then ensure at least one LHSI pump is running based on RCS T-hot temperatures being below 405 deg. F.
- D: INCORRECT: It's true that SCM is not adequate to stop one HHSI pump, but starting an additional charging pump is 1) not procedurally correct, and 2) not available because ESF DG #11 isn't powering its bus which supplies CCP 'C'.

Question Level: H **Question Difficulty** 3**Justification:**

Must evaluate plant conditions and make a determination whether to stop HHSI pumps.

Exam Bank No.: 1912

Last used on an NRC exam: Never

RO Sequence Number: 17

Given the following:

- Unit 2 is operating at 100% power.
- CCW Pump 22 failed its surveillance test and has been declared inoperable.

Based on the above, which of the following equipment will have to be evaluated for Tech Spec (or Technical Requirements Manual) compliance?

- A. ESF DG #22
- B. ECW Train 2B
- C. RCFC's 21B and 22B
- D. Spent Fuel Pool Cooling

Answer: C RCFC's 21B and 22B

Exam Bank No.: 1912

K/A Catalog Number: APE 062 G2.2.40 **Tier:** 1 **Group/Category:** 1

RO Importance: 3.4 **10CFR Reference:** 55.41(b)(10)

Loss of Nuclear Service Water: Ability to apply Technical Specifications for a system.

STP Lesson: LOT 201.12 **Objective Number:** 5906

List all the systems that interface with the Component Cooling Water System and state the function of each interface.

Reference: LOT201.12, CCW, handout page 2; LOT202.33, RCB HVAC, handout page 2

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - The ESF DG is a support system for CCW, ECW cools the DG.
- B: INCORRECT - ECW is a support system for CCW (provides cooling to the CCW Hx).
- C: CORRECT - CCW is a support system for the Tech Spec required Reactor Containment Fan Coolers (RCFCs).
- D: INCORRECT - Although SFP Cooling is supported by CCW (provides cooling to the Hx), SFP Cooling is not a Tech Spec Covered system.

Question Level: F **Question Difficulty** 3

Justification:

The applicant requires a knowledge of CCW design along with an understanding of systems/components required by Technical specifications.

Exam Bank No.: 1913**Last used on an NRC exam:** Never**RO Sequence Number:** 68

Given the following:

- Unit 1 is operating at 100% power.
- RCS Tavg is 592 °F.
- RCS ΔT is 60 °F.

If RCS Tavg is allowed to rise above 602 °F, which one of the following will occur?

- A. SG PORV's will lift.
- B. RCS Subcooling will lower and go below 35 °F.
- C. The Steam Dumps will open.
- D. Reactor power will no longer match steam demand under steady-state conditions.

Answer: A SG PORV's will lift.

Exam Bank No.: 1913**K/A Catalog Number:** W/E13 EK2.2**Tier:** 1**Group/Category:** 2**RO Importance:** 3.0**10CFR Reference:** 55.41(b)(14)

Knowledge of the interrelationships between the (Steam Generator Overpressure) and the following: Facilities heat removal systems, including primary coolant, emergency coolant, the decay heat removal system, and relations between the proper operation of these systems to the operation of the facility.

STP Lesson: LOT 204.01**Objective Number:** 20401

Given plant or sytem conditions, PREDICT the response of the plant and/or sytems.

Reference: LOT 204.01**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** New**Modified from****Distractor Justification**

- A: CORRECT: With a Tave of 602, this would create a Tcold of approx. 572 deg. F. Tcold determines SG pressure and the saturation pressure for 572 Deg F is 1230 psig which is above the SG PORV setpoints.
- B: INCORRECT: RCS subcooling will lower, but it's already below 35 deg. F in the intial condntions.
- C: INCORRECT: The Steam Dumps would open if they received an arming signal, but there is no arming signal present (turbine trip or load reduction).
- D: INCORRECT: Raising RCS Tave will not change the steady-state relationship of reactor power and steam demand.

Question Level: H**Question Difficulty** 3**Justification:**

Must be able to utilize principles of heat transfer to determine plant response.

Exam Bank No.: 1914**Last used on an NRC exam:** Never**RO Sequence Number:** 34

Given the following:

- Unit 2 is in a post-accident condition.
- The crew is implementing the actions of 0POP05-EO-FRZ3, Response to High Containment Radiation.

0POP05-EO-FRZ3 is entered based on indications from (1), and will have the operators check Containment Ventilation Isolation to ensure (2).

	(1)	(2)
A.	RT-8011, RCB Atmosphere Rad Monitor	Containment Purge valves are closed to prevent unwanted release of radioactive material.
B.	RT-8011, RCB Atmosphere Rad Monitor	it is reset to allow placing Supplemental Purge in service to lower RCB radiation levels.
C.	RT-8050/51, RCB High Range Rad Monitors	Containment Purge valves are closed to prevent unwanted release of radioactive material.
D.	RT-8050/51, RCB High Range Rad Monitors	it is reset to allow placing Supplemental Purge in service to lower RCB radiation levels.

Answer: C RT-8050/51, RCB High Range Rad Monitors; Containment Purge valves are closed to prevent unwanted release of radioactive material.

Exam Bank No.: 1914**K/A Catalog Number:** W/E16 EK3.2**Tier:** 1**Group/Category:** 2**RO Importance:** 2.9**10CFR Reference:** 55.41(b)(13)

Knowledge of the reasons for the following responses as they apply to the (High Containment Radiation): Normal, abnormal and emergency operating procedures associated with High Containment Radiation.

STP Lesson: LOT 504.42**Objective Number:** 83794

Given a copy of a step from 0POP05-EO-FRZ3, STATE/IDENTIFY how the action is performed and the basis for the action to include the action itself, its purpose and the result.

Reference: 0POP05-EO-FRZ3, Rev. 2 and 0POP05-EO-FO05, Rev. 1**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** New**Modified from****Distractor Justification**

- A: INCORRECT: RT-8011 is the RCS leak rate monitor used for TS leak rate determination, but it is not the post-accident monitor designated for use in the EOPs. It is correct that the CVI is checked to prevent unwanted release.
- B: INCORRECT: RT-8011 is the RCS leak rate monitor used for TS leak rate determination, but it is not the post-accident monitor designated for use in the EOPs. It is NOT correct that Supplemental Purge will be placed in service.
- C: CORRECT: The RCB hi range rad monitors are post-accident monitors designated for use in the EOPs. CVI is checked to ensure an unwanted release does not occur.
- D: INCORRECT: The RCB hi range rad monitors are post-accident monitors designated for use in the EOPs. It is NOT correct that Supplemental Purge will be placed in service.

Question Level: F**Question Difficulty** 3**Justification:**

Must know which rad monitors are used for procedure entry and why CVI is verified.

Exam Bank No.: 1915**Last used on an NRC exam:** Never**RO Sequence Number:** 58

Given the following:

- Unit 1 is in Mode 3 preparing to cool down to Mode 5.
- All RCP's are running.
- Two RCP's are to be secured.

Which of the following describes 1) the RCP combination that would maximize spray flow; and 2) the percentage of full RCS flow after the RCPs are secured?

	1) RCP's to remain running in order to maximize spray flow	2) Percentage of full RCS flow after the RCPs are secured
A.	A and D	50%
B.	A and D	> 50%
C.	B and C	50%
D.	B and C	> 50%

Answer: B A and D; > 50%

Exam Bank No.: 1915

K/A Catalog Number: 003 K5.05

Tier: 2 **Group/Category:** 1

RO Importance: 2.8 **10CFR Reference:** 55.41(b)(5)

Knowledge of the operational implications of the following concepts as they apply to the RCPs: The dependency of RCS flow rates upon the number of operating RCPs.

STP Lesson: LOT 201.02 **Objective Number:** 96651

Given plant conditions, ANALYZE the conditions and accurately PREDICT Reactor Coolant System response.

Reference: OPOP03-ZG-0007, Rev. 58

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: This is the correct combination of RCP's however, RCS flow will be higher than 50% as described below.
- B: CORRECT: Loops A and D have the connections to the Pzr spray line and will therefore provide the best spray flow if their RCPs are running. RCS flow is non-linear with regard to the number of RCP's running because all the RCP's discharge to a common area. As the number of RCP's is reduced, the remaining RCP's can pump more since there is less pressure to pump against.
- C: INCORRECT: This is the wrong combination of RCP's and the wrong expected RCS flow.
- D: INCORRECT: This is the wrong combination of RCP's, but the correct expected RCS flow.

Question Level: F **Question Difficulty** 3

Justification:

Must know which RCS loops have spray flow connections and the characteristics of RCS flow vs. the number of RCPs running.

Exam Bank No.: 1916**Last used on an NRC exam:** Never**RO Sequence Number:** 12

Which of the following indications are available in the Control Room for monitoring a Waste Monitor Tank Release?

1. RT-8038, LWPS Monitor #1, status on the RM-11 display
2. RT-8038, LWPS Monitor #1, status on CP-023 (RM-023)
3. Circ Water Pump status on CP-009
5. WL-FV-4077, LWPS DISCHARGE VALVE, position on CP-009

- A. 1, 3
- B. 1, 4
- C. 2, 3
- D. 2, 4

Answer: A 1, 3

Exam Bank No.: 1916

K/A Catalog Number: 068 A4.02

Tier: 2 **Group/Category:** 2

RO Importance: 3.2 **10CFR Reference:** 55.41(b)(13)

Ability to manually operate and/or monitor in the control room: Remote radwaste release.

STP Lesson: LOT 202.41 **Objective Number:** 92938

SUMMARIZE the Process and Effluent Radiation Monitor information available on RM-11 and RM-23 displays

Reference: LOT202.41, Handout #2; LOT202.22, PowerPoint slide #36

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: CORRECT - Indications are in the locations identified.
- B: INCORRECT - FV-4077 does not have position indication on CP-009 (or anywhere in the control room).
- C: INCORRECT - CP-023 has indications/controls for the safety related rad monitors and a couple non-safety related, but RT-8038 is not one of them.
- D: INCORRECT - FV-4077 does not have position indication on CP-009 (or anywhere in the control room). CP-023 has indications/controls for the safety related rad monitors and a couple non-safety related, but RT-8038 is not one of them.

Question Level: F **Question Difficulty** 3

Justification:

Knowledge of available control board indications is required.

Exam Bank No.: 1917**Last used on an NRC exam:** Never**RO Sequence Number:** 7

Given the following:

- Unit 1 is operating at 100% power
- SGFPs 11, 12 and 13 are in service
- Condensate Pumps 11 and 12 are in service
- Condensate Pump #12 subsequently trips

Prior to any Operator actions, which of the following alarms would be expected for these conditions?

1. SGFPT 11/12/13 SUCTION PRESS LOW
2. COND PMP TRIP
3. SGFPT 11/12/13 SEAL WTR DP LO
4. POLISHER SYS DIFF PRESS HI

- A. 1, 2
- B. 2, 3
- C. 3, 4
- D. 1, 4

Answer: B 2, 3

Exam Bank No.: 1917

K/A Catalog Number: 056 G2.4.46

Tier: 2 **Group/Category:** 2

RO Importance: 4.2 **10CFR Reference:** 55.41(b)(7)

Condensate System: Ability to verify that the alarms are consistent with current plant conditions.

STP Lesson: LOT 202.10 **Objective Number:** 83037

DESCRIBE the instrumentation and controls available to monitor and operate the Condensate System

Reference: POP09-AN-09M1, page 3; LOT202.10, PowerPoint slide #33

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - The seal DP alarms will come in, however the condensate pumps do not directly supply suction to the SGFPs, so a low suction alarm would not be expected.
- B: CORRECT - The condensate pump trip alarm would be received since the pump stops with a start signal present and the reduction in condensate system pressure caused by the pump trip will cause the seal water DP low alarms to come in.
- C: INCORRECT - The seal DP alarms will come in, however polisher system flow will actually drop which would lower the DP through the polishers.
- D: INCORRECT - The condensate pumps do not directly supply suction to the SGFPs, so a low suction alarm would not be expected and polisher system flow will actually drop which would lower the DP through the polishers.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must analyze the given conditions and then using system design knowledge determine how the plant will respond and what indications should be evident.

Exam Bank No.: 1918**Last used on an NRC exam:** Never**RO Sequence Number:** 67

Given the following:

- Unit 1 is operating steady state at 100% power.
- VCT LEVEL HI/LO annunciator alarms on 04M8.
- LI-112, VCT Level, indicates 35% and lowering (CP-004).
- LI-113, VCT Level, indicates 100% (ICS).

Which one of the following describes the expected plant response?

- A. VCT level will continue to lower until the operator manually aligns Divert valve LCV-112A, to the VCT position. VCT pressure will be maintained at setpoint as VCT level lowers.
- B. VCT level will continue to lower until the operator manually aligns Divert valve LCV-112A, to the VCT position. VCT pressure will lower with VCT level.
- C. Auto makeup will initiate to the VCT when LT-112, VCT Level, lowers to 28% and will raise VCT level back to 48%. VCT pressure will lower and rise with VCT level.
- D. Auto makeup will initiate to the VCT when LT-112, VCT Level, lowers to 28% and will raise VCT level back to 48%. VCT pressure will be maintained at setpoint as VCT level lowers and rises.

Answer: C Auto makeup will initiate to the VCT when LT-112, VCT Level, lowers to 28% and will raise VCT level back to 48%. VCT pressure will lower and rise with VCT level.

Exam Bank No.: 1918

K/A Catalog Number: 004 A4.13

Tier: 2 **Group/Category:** 1

RO Importance: 3.3 **10CFR Reference:** 55.41(b)(7)

Ability to manually operate and/or monitor in the control room: VCT level control and pressure control.

STP Lesson: LOT 201.06 **Objective Number:** 507226

Given a description of plant conditions, ANALYZE the conditions and PREDICT how the Chemical and Volume Control System will respond.

Reference: LOT 201.06

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Modified

Modified from 675

Distractor Justification

- A: INCORRECT: Failure of VCT level channel 113 will cause a divert, but level will not continue to lower because level channel 112 will provide normal makeup operation. Pressure control is incorrect because there is no automatic pressure control feature for the VCT.
- B: INCORRECT: Failure of VCT level channel 113 will cause a divert, but level will not continue to lower because level channel 112 will provide normal makeup operation. Pressure response is correct.
- C: CORRECT: Either VCT level channel can initiate makeup to the VCT so the 'good' channel will continue to provide normal makeup capability. There is no automatic VCT pressure control so the pressure is a function of level in the tank unless a manual operation to add/remove H2 is performed.
- D: INCORRECT: Level control response is correct, but pressure control is incorrect. There is no automatic VCT pressure control feature.

Question Level: H

Question Difficulty 3

Justification:

Must know the VCT level and pressure control features and determine how they respond to the VCT level channel failure.

Exam Bank No.: 675

Last used on an NRC exam: 2005

Given the following:

- Unit 1 is operating steady state at 93% power
- VCT LEVEL HI/LO annunciator alarms on 04M8
- LI-112, VCT Level, indicates 35% decreasing (CP-004)
- LI-113, VCT Level, indicates 100% (ERFDADS)

Which ONE the following describes the expected plant response?

- A. Pressurizer level will decrease to 17% resulting in letdown isolation and recovery of VCT level.
- B. VCT level will continue to decrease until the operator manually aligns Divert valve LCV-112A, to the VCT position.
- C. Auto makeup will initiate to the VCT when LT-112, VCT Level, decreases to 28% and raise VCT level back to 48%.
- D. Suction to the operating CCP will automatically align to the RWST when VCT level decreases to 3%.

This is the question from which #1918 was modified

Answer: C Auto makeup will initiate to the VCT when LT-112, VCT Level, decreases to 28% and raise VCT level back to 48%.

Exam Bank No.: 1919**Last used on an NRC exam:** Never**RO Sequence Number:** 74

Which one of the following correctly describes the control board indications and/or controls available in the Control Room associated with Rod Control MG Set breakers?

Discount indications available on the ICS.

- A. Annunciator 05M3-F5, ROD DRIVE MG SET TRBL, on CP005 ONLY.
- B. MG Set supply breaker control switches on CP005 (including red/green lights) and MG Set output voltmeters on CP010.
- C. MG Set output breaker positions (red/green lights) on CP005 ONLY.
- D. MG Set start control switches on CP005 (including red/green lights) and MG Set output current meters on CP010.

Answer: A Annunciator 05M3-F5, ROD DRIVE MG SET TRBL, on CP005 ONLY.

Exam Bank No.: 1919

K/A Catalog Number: 012 A4.07

Tier: 2 **Group/Category:** 1

RO Importance: 3.9 **10CFR Reference:** 55.41(b)(7)

Ability to manually operate and/or monitor in the control room: M/G set breakers.

STP Lesson: LOT 201.18 **Objective Number:** 86061

DESCRIBE the instrumentation and controls available to monitor and operate the Rod Control System.

Reference: LOT 201.18

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: CORRECT: This is the only indication available to the operator on the control panels.
- B: INCORRECT: While CP-005 contains all available rod control indications/controls available to the operator, these control switches are not included. CP-010 has all the plant electrical controls and indications, but not for MG sets.
- C: INCORRECT: While CP-005 contains all available rod control indications/controls available to the operator, these control switches are not included.
- D: INCORRECT: While CP-005 contains all available rod control indications/controls available to the operator, these control switches are not included. CP-010 has all the plant electrical controls and indications, but not for MG sets.

Question Level: F **Question Difficulty** 3

Justification:

The applicant must have knowledge of the controls/indications available in the control room .

Exam Bank No.: 1920**Last used on an NRC exam:** Never**RO Sequence Number:** 61

Which one of the below correctly describes the operation of the Train 'A' RWST TO SI SUCT HDR ISOL VLV (SI-MOV-0001A) which provides suction to Containment Spray (CS) Pump 'A'?

SI-MOV-0001A is powered from...

- A. the same train as CS Pump 'A' and is interlocked with CS Pump 'A' Discharge Valve (CS-MOV-0001A) to prevent the discharge valve from opening unless the suction valve is open.
- B. the same train as CS Pump 'A' and is interlocked with the train Containment Emergency Sump Suction Valve (SI-MOV-0016A) to prevent both from being open at the same time during normal operation.
- C. a different train than CS Pump 'A' and is interlocked with CS Pump 'A' Discharge Valve (CS-MOV-0001A) to prevent the discharge valve from opening unless the suction valve is open.
- D. a different train than CS Pump 'A' and is interlocked with the train Containment Emergency Sump Suction Valve (SI-MOV-0016A) to prevent both from being open at the same time during normal operation.

Answer: B the same train as CS Pump 'A' and is interlocked with the train Containment Emergency Sump Suction Valve (SI-MOV-0016A) to prevent both from being open at the same time during normal operation.

Exam Bank No.: 1920

K/A Catalog Number: 026 K2.02

Tier: 2 **Group/Category:** 1

RO Importance: 2.7 **10CFR Reference:** 55.41(b)(7)

Knowledge of bus power supplies to the following: MOVs

STP Lesson: LOT 201.11 **Objective Number:** 2777

LIST THE AUTOMATIC ACTIONS/INTERLOCKS ASSOCIATED WITH THE CONTAINMENT SPRAY SYSTEM, COMPONENTS AND/OR CONTROLS.

Reference: LOT 201.10, LOT 201.11

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: The suction valves DO receive power from the same train as the CS pumps, but there is no interlock between the suction and discharge valves.
- B: CORRECT: All CS MOV's are powered from the same train as the pumps. There are certain ESF valves that are cross-train powered, but these are not included in that group. The RWST suction valves are interlocked with the Containment Emergency Sump Outlet valves to prevent both from being open at the same time to prevent draining the RWST to the RCB.
- C: INCORRECT: The suction valves are not cross-train powered although there are some ESF valves that are. Additionally, there is no interlock between the suction and discharge valves.
- D: INCORRECT: The suction valves are not cross-train powered although there are some ESF valves that are. The interlock described in this distracter does exist.

Question Level: F **Question Difficulty** 3

Justification:

Must know the power supplies and interlocks for the suction and discharge valves of the CS pumps.

Exam Bank No.: 1921**Last used on an NRC exam:** Never**RO Sequence Number:** 37

Given the following:

- A LOCA, INSIDE containment, with fuel damage has occurred in Unit 2.
- During the performance of POP05-EO-EO00, Reactor Trip or Safety Injection, the Primary Operator noted a high level alarm on 'B' Train ECCS sump in the FHB.
- During the performance of POP05-EO-EO10, Loss of Reactor or Secondary Coolant, the RWST LO-LO/EMPTY alarm is received accompanied by a high radiation alarm on RE-8085, 'B' Train SI Pump Room.

Which of the following describes the reason for these indications?

- A. Leakage is occurring UPSTREAM of the 'B' Train Emergency Sump isolation valve (SI-MOV-0016) in the FHB. A LOCA OUTSIDE containment has been occurring since the beginning of the accident.
- B. Leakage is occurring DOWNSTREAM of the 'B' Train Emergency Sump isolation valve (SI-MOV-0016) in the FHB. A LOCA OUTSIDE containment has been occurring since the beginning of the accident.
- C. Leakage is occurring UPSTREAM of the 'B' Train Emergency Sump isolation valve (SI-MOV-0016) in the FHB. A LOCA OUTSIDE containment has been occurring since SI pump suction swapover to the Emergency Sump.
- D. Leakage is occurring DOWNSTREAM of the 'B' Train Emergency Sump isolation valve (SI-MOV-0016) in the FHB. A LOCA OUTSIDE containment has been occurring since SI pump suction swapover to the Emergency Sump.

Answer: D Leakage is occurring DOWNSTREAM of the 'B' Train Emergency Sump isolation valve (SI-MOV-0016) in the FHB. A LOCA outside containment has been occurring since SI pump suction swapover to the Emergency Sump.

Exam Bank No.: 1921**K/A Catalog Number:** W/E04 EK3.1**Tier:** 1**Group/Category:** 1**RO Importance:** 3.2**10CFR Reference:** 55.41(b)(5)

Knowledge of the reason for the following responses as they apply to the LOCA Outside Containment: Facility operating characteristics during transient conditions, including coolant chemistry and the effects of temperature, pressure, and reactivity changes and operating limitations and reasons for these characteristics.

STP Lesson: LOT 504.46**Objective Number:** 92484

Given the conditions under which POP05-EO-EC12 is entered, STATE/IDENTIFY the basis for each

Reference: ECA 1.2 background document, page 5**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** New**Modified from****Distractor Justification**

- A: INCORRECT - Since the rad alarm did not come in until the sump valve was opened, the leakage must be downstream of the valve. The leak is not a LOCA until RCS inventory is being lost (vice RWST inventory) which did not occur until after the sump valve was opened.
- B: INCORRECT - Leak location is correct. The leak is not a LOCA until RCS inventory is being lost (vice RWST inventory) which did not occur until after the sump valve was opened.
- C: INCORRECT - Since the rad alarm did not come in until the sump valve was opened, the leakage must be downstream of the valve. Identification of the LOCA Outside Containment is correct.
- D: CORRECT - Since the rad alarm did not come in until the sump valve was opened, the leakage must be downstream of the valve. A LOCA Outside Containment does not occur until RCS inventory is lost which would be after the sump valve is open (with the leak downstream of the valve).

Question Level: H**Question Difficulty** 3**Justification:**

The applicant must analyze the given conditions and then formulate plant conditions which would coincide with the given indications.

Exam Bank No.: 1922**Last used on an NRC exam:** Never**RO Sequence Number:** 64

Given the following:

- Unit 1 is operating at 100% power.
- All systems are in their normal full power lineup.
- The Main Turbine EHC is in IMP OUT mode.
- One Steam Dump valve fails full open.

Which one of the following correctly describes the plant response and the necessary operator action?

Reactor power will...

- A. remain at 100% because total steamflow has remained constant due to the Turbine EHC automatically lowering turbine load (steamflow). Perform the immediate action of 0POP04-MS-0001, Excessive Steam Demand, by placing PK-0557, HDR PRESS CONT, to Manual and ensuring there is zero demand.
- B. remain at 100% because total steam flow has remained constant due to the Turbine EHC automatically lowering turbine load (steamflow). Perform the immediate action of 0POP04-MS-0001, Excessive Steam Demand, by using the Main Turbine Governor Valve Limiter to ensure Reactor power is $\leq 100\%$.
- C. rise because total steamflow is higher which will add positive reactivity to the reactor. Perform the immediate action of 0POP04-MS-0001, Excessive Steam Demand, by placing PK-0557, HDR PRESS CONT, to Manual and ensuring there is zero demand.
- D. rise because total steamflow is higher which will add positive reactivity to the reactor. Perform the immediate action of 0POP04-MS-0001, Excessive Steam Demand, by using the Main Turbine Governor Valve Limiter to ensure Reactor power is $\leq 100\%$.

Answer: D rise because total steamflow is higher which will add positive reactivity to the reactor. Perform the immediate action of 0POP04-MS-0001, Excessive Steam Demand, by using the Main Turbine Governor Valve Limiter to ensure Reactor power is $\leq 100\%$.

Exam Bank No.: 1922**K/A Catalog Number:** 039 A2.04**Tier:** 2 **Group/Category:** 1**RO Importance:** 3.4 **10CFR Reference:** 55.41(b)(5)

Ability to a) predict the impacts of the following malfunctions or operations on the MRSS; and b) based on predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations.

STP Lesson: LOT 204.01 **Objective Number:** 20401

Given plant or system conditions, PREDICT the response of the plant and/or systems.

Reference: OPOP04-MS-0001, Rev. 4, LOT 101.25**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** New**Modified from****Distractor Justification**

- A: INCORRECT: the main turbine controls will not automatically maintain reactor power. Instead they are designed to maintain the MW setting or GV position. Additionally, the immediate action of MS-0001 is to use the Turbine GV Limiter to ensure reactor power is below 100%. Using the Steam Dump Interlock Sel. Sw. to close the steam dump is a procedural action, but not an immediate one.
- B: INCORRECT: the main turbine controls will not automatically maintain reactor power. Instead they are designed to maintain the MW setting or GV position. The specified action to use the limiter is the designated immediate action of MS-0001.
- C: INCORRECT: It's true that reactor power will rise, but the immediate action of MS-0001 is to use the Turbine GV Limiter to ensure reactor power is below 100%. Using the Steam Dump Interlock Sel. Sw. to close the steam dump is a procedural action, but not an immediate one.
- D: CORRECT: Reactor power will follow steam demand. The immediate action of MS-0001 is to ensure reactor power is at or below 100% using the GV Limiter on the Turbine control panel.

Question Level: H **Question Difficulty** 3**Justification:**

Must know the turbine controls and how they relate to changing plant conditions to determine the plant response. Must know the immediate action of MS-0001

Exam Bank No.: 1923**Last used on an NRC exam:** Never**RO Sequence Number:** 26

Given the following:

- Unit 1 is operating a 100% power.
- Annunciator 4KV E1C UV ALERT alarms.
- 4160V Bus E1C voltage is approximately 3800V.

Which one of the following correctly describes the effect of the low voltage and the appropriate action?

As 4160V Bus voltage lowers, current drawn by bus loads will...

- A. RISE, possibly resulting in an overcurrent trip of the power source to the 4160V Bus. ENSURE ESF DG #13 is started and lined up to be the sole power source to 4160V E1C Bus.
- B. RISE, possibly resulting in an overcurrent trip of the power source to the 4160V Bus. Manually adjust the Load Tap Changer at CP010 for the Auxiliary Transformer to raise Bus E1C voltage.
- C. LOWER, possibly resulting in an undervoltage (UV) trip of individual 4160V Bus loads (e.g. pumps). ENSURE ESF DG #13 is started and lined up to be the sole power source to 4160V E1C Bus
- D. LOWER, possibly resulting in an undervoltage (UV) trip of individual 4160V Bus loads (e.g. pumps). Manually adjust the Load Tap Changer at CP010 for the Auxiliary Transformer to raise Bus E1C voltage.

Answer: A RISE, possibly resulting in an overcurrent trip of the power source to the 4160V Bus. ENSURE ESF DG #11 is started and lined up to be the sole power source to 4160V E1A Bus.

Exam Bank No.: 1923**K/A Catalog Number:** 062 A2.16**Tier:** 2 **Group/Category:** 1**RO Importance:** 2.5 **10CFR Reference:** 55.41(b)(10)

Ability to a) predict the impact 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.

STP Lesson: LOT 201.31 **Objective Number:** 62351

Given a plant or system condition, Predict the operation of the Non-Class 1E 13.8 to 4160 volt AC Distribution system.

Reference: LOT 201.31, LOT 201.36, OPOP09-AN-03M3, Rev. 23**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** New**Modified from****Distractor Justification**

- A: CORRECT: For a given equipment loading on the bus, as voltage lowers, the current demand for the loads will rise. Eventually, the current will result in a trip of the supply breaker for the bus. The appropriate action is to ensure the bus is powered from it's most reliable source (ESF DG) before an overcurrent trip occurs.
- B: INCORRECT: It's true that bus current will rise, but the action in this distracter is incorrect.
- C: INCORRECT: It's not true that bus current will lower. Each load has a certain power demand. As voltage lowers, current must rise to try to maintain the power required of the component. The action specified is the correct action.
- D: INCORRECT: It's not true that bus current will lower. Each load has a certain power demand. As voltage lowers, current must rise to try to maintain the power required of the component. The action specified is also incorrect.

Question Level: H **Question Difficulty** 3**Justification:**

Must be able to determine the effect on low voltage on system operation based on principles of electrical theory. Must know the appropriate action for low voltage in an ESF Bus.

Exam Bank No.: 1924**Last used on an NRC exam:** Never**RO Sequence Number:** 59

Given the following:

- Core reload is in progress on Unit 2
- As a new fuel assembly is being lowered into the core, the SR SHUTDOWN FLUX HI alarm annunciates in the Control Room

Which of the following will occur as a result of this alarm?

- A. The High Flux at Shutdown light will illuminate on the Refueling Machine control panel and the Refueling Machine hoist will automatically stop.
- B. The High Flux at Shutdown light will illuminate on the Refueling Machine control panel and the Refueling Machine operator must manually stop movement of the Refueling Machine hoist.
- C. The audible High Flux at Shutdown alarm will actuate in containment and the Refueling Machine hoist will automatically stop.
- D. The audible High Flux at Shutdown alarm will actuate in containment and the Refueling Machine operator must manually stop movement of the Refueling Machine hoist.

Answer: D The audible High Flux at Shutdown alarm will actuate in containment the Refueling Machine operator must manually stop movement of the Refueling Machine hoist.

Exam Bank No.: 1924

K/A Catalog Number: 034 K1.05

Tier: 2 **Group/Category:** 2

RO Importance: 2.5 **10CFR Reference:** 55.41(b)(6)

Knowledge of the physical connections and/or cause-effect relationships between the Fuel Handling System and the following systems: Shutdown Monitor.

STP Lesson: LOT 201.16 **Objective Number:** 37160

LIST all the systems that interface with the NIS, and STATE the function of each interface

Reference: POP09-AN-05M3, window A-1

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - There is an audible alarm in containment and not a light on the panel. The hoist will continue to move until the operator stops it.
- B: INCORRECT - There is an audible alarm in containment and not a light on the panel.
- C: INCORRECT - The hoist will continue to move until the operator stops it.
- D: CORRECT - An audible alarm will actuate in containment and the hoist will continue to move until the operator stops it.

Question Level: F **Question Difficulty** 3

Justification:

The applicant must have a knowledge of the Hi Flux at Shutdown design and interfaces.

Exam Bank No.: 1926**Last used on an NRC exam:** Never**RO Sequence Number:** 36

Given the following:

- A Large Break Loss of Coolant Accident has occurred.
- The ECCS is operating in the Cold Leg Recirculation mode.

Based on standard heat transfer relationships, which of the following describes the INITIAL effects of INCREASED CCW flow to the RHR Heat Exchanger during these plant conditions?

ΔT across the RHR Heat Exchanger tubes will...

- A. RISE resulting in LOWER heat transfer rate in the RHR Heat Exchanger.
- B. RISE resulting in HIGHER heat transfer rate in the RHR Heat Exchanger.
- C. LOWER resulting in LOWER heat transfer rate in the RHR Heat Exchanger.
- D. LOWER resulting in HIGHER heat transfer rate in the RHR Heat Exchanger.

Answer: B RISE resulting in HIGHER heat transfer rate in the RHR Heat Exchanger.

Exam Bank No.: 1926

K/A Catalog Number: 006 K5.11

Tier: 2 **Group/Category:** 1

RO Importance: 2.5 **10CFR Reference:** 55.41(b)(14)

Knowledge of the operational implications of the following concepts as they apply to ECCS: Basic heat transfer equation

STP Lesson: LOT 204.01 **Objective Number:** 20401

Given plant or system conditions, PREDICT the response of the plant and/or systems.

Reference: LOT204.01, Integrated Plant Operations

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Modified

Modified from 1871

Distractor Justification

- A: INCORRECT: Delta-T across the Hx will go up resulting in more heat transfer, not less.
- B: CORRECT: Delta-T across the Hx will go up resulting in more heat transfer.
- C: INCORRECT: Delta-T across the Hx will go up resulting in more heat transfer.
- D: INCORRECT: Delta-T across the Hx will go up, not down, resulting in more heat transfer as stated.

Question Level: H **Question Difficulty** 3

Justification:

Must be able to determine response of Hx delta-T and heat transfer rate based on principles of heat transfer and fluid flow.

Exam Bank No.: 1871

Last used on an NRC exam: 2009

Given the following:

- A Large Break Loss of Coolant Accident has occurred.
- The ECCS is operating in the Cold Leg Recirculation mode.

Based on standard heat transfer relationships (e.g. $\dot{Q} = UA\Delta T$), which one of the below describes the INITIAL effects of INCREASED CCW temperature to the RHR Heat Exchanger during these plant conditions?

ΔT across the RHR Heat Exchanger tubes will...

- A. RISE resulting in LOWER heat transfer rate in the RHR Heat Exchanger.
- B. RISE resulting in HIGHER heat transfer rate in the RHR Heat Exchanger.
- C. LOWER resulting in LOWER heat transfer rate in the RHR Heat Exchanger.
- D. LOWER resulting in HIGHER heat transfer rate in the RHR Heat Exchanger.

This is the question from which #1926 was modified

Answer: C LOWER resulting in LOWER heat transfer rate in the RHR Heat Exchanger.

Exam Bank No.: 1927**Last used on an NRC exam:** Never**RO Sequence Number:** 18

Which one of the following correctly describes the effect on RCP operation if ONLY Thermal Barrier CCW cooling is lost?

RCP #1 seal inlet temperature will...

- A. RISE. The RCP must be tripped within 3-5 minutes to prevent damage to #1 seal.
- B. REMAIN THE SAME. RCP operation may continue however Thermal Barrier cooling should be restored as soon as possible.
- C. RISE. RCP operation may continue providing RCP seal temperatures and flows remain within prescribed limits.
- D. REMAIN THE SAME. The RCP must be tripped within 3-5 minutes because the lower pump bearing lost cooling flow.

Answer: B REMAIN THE SAME. RCP operation may continue however Thermal Barrier cooling should be restored as soon as possible.

Exam Bank No.: 1927

K/A Catalog Number: 008 K3.03

Tier: 2 **Group/Category:** 1

RO Importance: 4.1 **10CFR Reference:** 55.41(b)(5)

Knowledge of the effect that a loss of malfunction of the CCWS will have on the following: RCP

STP Lesson: LOT 201.05 **Objective Number:** 97119

Given plant conditions, ANALYZE the conditions and accurately PREDICT Reactor Coolant Pump response.

Reference: OPOP04-RC-0002, Rev. 28

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: Seal inlet temperatures will NOT rise therefore a RCP trip is NOT required.
- B: CORRECT: The RCP Thermal Barrier is designed to cool incoming RCS water to the seal package if normal seal injection is lost. Normal seal injection flows TO the RCS therefore the seal package temperatures will remain the same. Because Thermal Barrier cooling is a backup method of cooling the seal, it should be restored as soon as possible.
- C: INCORRECT: Seal inlet temperatures will NOT rise. The prescribed action is correct if seal injection flow to the RCP is lost.
- D: INCORRECT: It's true that seal injection temperature will remain the same, however the lower pump bearing will not lose cooling because seal injection is still present and cools the bearing as it flows to the RCS.

Question Level: H **Question Difficulty** 3

Justification:

Must understand RCP seal operation and be able to determine how seal operation is affected by a loss of thermal barrier cooling.

Exam Bank No.: 1928**Last used on an NRC exam:** Never**RO Sequence Number:** 75

Which of the following describes the purpose of the carbon filters in the Containment Carbon Filter Units?

- A. Remove smoke from the containment atmosphere to allow personnel entry following a fire.
- B. Remove radioiodines from the containment building atmosphere resulting from RCS leakage to allow personnel entry.
- C. Filter radioactive particulate from the containment atmosphere resulting from RCS leakage to allow personnel entry.
- D. Remove excessive hydrogen from the containment atmosphere during post accident conditions to prevent the buildup of explosive concentrations.

Answer: B Remove radioiodines from the containment building atmosphere resulting from RCS leakage to allow personnel entry.

Exam Bank No.: 1928**K/A Catalog Number:** 027 K5.01**Tier:** 2 **Group/Category:** 2**RO Importance:** 3.1 **10CFR Reference:** 55.41(b)(13)

Knowledge of the operational implications of the following concepts as they apply to the CIRS: Purpose of charcoal filters.

STP Lesson: LOT 202.33 **Objective Number:** 92035

DESCRIBE the flowpath and STATE the functions for each of the following RCB-HVAC subsystems:

- A. Reactor Containment Fan Coolers
- B. Containment Carbon Units
- C. Control Rod Drive Mechanism Ventilation
- D. Containment Cubicles Exhaust
- E. Normal Containment Purge
- F. Supplementary Containment Purge
- G. Tendon Gallery Tunnel Ventilation
- H. Reactor Cavity and Supports Ventilation
- I. Elevator and Machinery Room Ventilation
- J. RCB Chill Water
- K. MSIV Cubicle Ventilatio

Reference: LOT202.33, handout page 7**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** New**Modified from****Distractor Justification**

- A: INCORRECT - Carbon does not remove smoke, it would more likely be removed by the HEPA filter.
- B: CORRECT - The carbon filter portion of the unit is there to remove radioiodine.
- C: INCORRECT - This is the function of the HEPA filter in the unit.
- D: INCORRECT - This is the function of the Hydrogen Recombiner, and not the Carbon Filter Units.

Question Level: F **Question Difficulty** 3**Justification:**

Basic knowledge of system design is required.

Exam Bank No.: 1929**Last used on an NRC exam:** Never**RO Sequence Number:** 73

Reactor power is being raised from 70% to 100%.

Which of the following describes the effect of the power change on Control Rod Insertion Limits and how the operator must compensate?

Control Rod Insertion Limits will....

- A. increase as power changes. The operator must ensure DRPI indicated rod position remains above the limit.
- B. increase as power changes. The operator must ensure DRPI indicated rod position remains below the limit.
- C. decrease as power changes. The operator must ensure DRPI indicated rod position remains above the limit.
- D. decrease as power changes. The operator must ensure DRPI indicated rod position remains below the limit.

Answer: A increase as power changes. The operator must ensure DRPI indicated rod position remains above the limit.

Exam Bank No.: 1929

K/A Catalog Number: 014 A1.03

Tier: 2 **Group/Category:** 2

RO Importance: 3.6 **10CFR Reference:** 55.41(b)(6)

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RPIS controls, including: PDIL, PPDIL

STP Lesson: LOT 201.15 **Objective Number:** 92495

Given a description of plant conditions, PREDICT the indications received in the control room.

Reference: LOT201.15, handout pages 14-16

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: CORRECT - Insertion limits increase as power increases due to power defect. The operator must ensure that rods remain above the limit.
- B: INCORRECT - The action described is what is required to ensure compliance with rod withdrawal limits.
- C: INCORRECT - Insertion limits will increase.
- D: INCORRECT - Insertion limits will increase. The action described is what is required to ensure compliance with rod withdrawal limits.

Question Level: H **Question Difficulty** 3

Justification:

Using the given conditions, the applicant must determine how insertion limits will change and must also have an understanding of how compliance with the limit is verified.

Exam Bank No.: 1930**Last used on an NRC exam:** Never**RO Sequence Number:** 6

Given the following:

- Unit 1 is operating at 100% power
- A secondary system transient results in a loss of ALL SGFPT's.
- All systems operate as designed.

Which one of the following correctly describes the PRIMARY Reactor trip protection for this event and the bases of that protection?

	PRIMARY Reactor Trip Protection	Bases for Reactor Trip:
A.	LO-LO SG Level	RCS Over-pressurization
B.	LO-LO SG Level	Loss of heat sink
C.	Over Temperature ΔT	RCS Over-pressurization
D.	Over Temperature ΔT	Loss of heat sink

Answer: B LO-LO SG Level; Loss of heat sink

Exam Bank No.: 1930

K/A Catalog Number: 012 K4.02

Tier: 2 **Group/Category:** 1

RO Importance: 3.9 **10CFR Reference:** 55.41(b)(6)

Knowledge of RPS design feature(s) and/or interlocks which provide for the following: Automatic reactor trip when RPS setpoints are exceeded for each RPS function; basis for each.

STP Lesson: LOT 201.20 **Objective Number:** 91160

DISCUSS the design bases for the solid state protection system.

Reference: Tech Spec Section 2.0 Bases, LOT 501.17

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: SG LO-LO level is the primary protection. Although RCS temperature, and therefore pressure, will rise following this event, that is not the basis for the trip.
- B: CORRECT: SG LO-LO level is the primary protection for a loss of heat sink event from power.
- C: INCORRECT: With a loss of FW, RCS temperatures will rise, but DT's will lower due to negative reactivity addition. Although this trip could occur during a loss of normal FW, it is not the primary reactor trip protection for this event. Although RCS temperature/pressure will rise during this event, it is not the bases for this trip
- D: INCORRECT: Although this trip could occur during a loss of normal FW, it is not the primary reactor trip protection for this event. Although rising temperatures due to a loss of feedwater will cause the OTDT setpoint to lower and possibly cause a trip, it is not the bases for the trip.

Question Level: F **Question Difficulty** 3

Justification:

Must know what reactor trip is the primary protection for a loss of normal FW and the basis for the trip.

Exam Bank No.: 1931**Last used on an NRC exam:** Never**RO Sequence Number:** 3

The Unit Supervisor directs you to monitor Instrument and Service Air System operation due to lowering pressure.

Which of the following lists the indications available to the operator on the Control Room Panels (excluding computer displays)?

- A. Instrument and Service Air Header Pressures ONLY.
- B. Instrument and Service Air Header Pressures AND Instrument and Service Air receiver pressures.
- C. Instrument and Service Air Header Pressures AND Instrument Air Compressor discharge pressures.
- D. Instrument and Service Air Header Pressures; Instrument and Service Air receiver pressures; AND Instrument Air Compressor discharge pressures.

Answer: A Instrument and Service Air Header Pressures ONLY.

Exam Bank No.: 1931

K/A Catalog Number: 078 A4.01

Tier: 2 **Group/Category:** 1

RO Importance: 3.1 **10CFR Reference:** 55.41(b)(4)

Ability to manually operate and/or monitor in the control room: Pressure gauges

STP Lesson: LOT 200.15 **Objective Number:** 80556

DESCRIBE the instrumentation and controls available to monitor and operate the Instrument Air and Service Air System.

Reference: LOT200.15, handout page 15

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: CORRECT: Only IA and service air header pressure indications are available on the control boards.
- B: INCORRECT: Only IA and service air header pressure indications are available on the control boards.
- C: INCORRECT: Only IA and service air header pressure indications are available on the control boards.
- D: INCORRECT: Only IA and service air header pressure indications are available on the control boards.

Question Level: F **Question Difficulty** 3

Justification:

Applicant must have knowledge of system indications available on the control panels

Exam Bank No.: 1932**Last used on an NRC exam:** Never**RO Sequence Number:** 22

Given the following:

- Unit 2 Reactor was tripped from 100% power.
- The crew evacuated the Control Room after performing ALL Control Room required actions of OPOP04-ZO-0001, Control Room Evacuation.
- You are the Primary Reactor Operator and have just arrived at your designated location.

Which one of the following correctly describes an INITIAL action required of the Primary Reactor Operator at his/her designated location, and the basis for that action?

- A. At the Auxiliary Shutdown Panel (ASP), open Pressurizer PORV Block Valves after control has been transferred to the ASP, to minimize the possibility of the Pressurizer Safety Valves lifting if RCS pressure rises.
- B. Using Transfer Switches at the Auxiliary Shutdown Panel, transfer control of SG 'A' AFW Pump/valves and SG PORV components to establish a secondary heat sink.
- C. At the ESF Train 'A' Switchgear Room, stop both Charging Pumps, after control has been transferred, to minimize the possibility of a loss of suction from a spurious closure of a VCT outlet valve.
- D. Using Transfer Switches at the ESF Train 'A' Switchgear Room, transfer control of the RCP supply breakers and trip all RCP's to prevent possible RCS depressurization due to a spurious spray valve failure.

Answer: A At the Auxiliary Shutdown Panel (ASP), open Pressurizer PORV Block Valves after control has been transferred to the ASP, to minimize the possibility of the Pressurizer Safety Valves lifting if RCS pressure rises.

Exam Bank No.: 1932

K/A Catalog Number: 061 G2.4.34

Tier: 2 **Group/Category:** 1

RO Importance: 4.2 **10CFR Reference:** 55.41(b)(10)

Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects.

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: OPOP04-ZG-0001, Rev. 31

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: CORRECT: The Primary RO goes to the ASP. One of his initial actions is to open the Pzr PORV's once control has been transferred. This prevents the Pzr Safety Valves from lifting and possibly failing open. This would create a SBLOCA since they cannot be isolated.
- B: INCORRECT: There are only transfer switches for SG 'D' AFW & PORV at the ASP. There are controls for SG 'A' AFW and PORV at the ASP however.
- C: INCORRECT: There are controls for the Charging Pumps at the ASP, but the CCP's should have been tripped upon exiting the Control Room. The action at the ASP is to verify the CCP's are secured.
- D: INCORRECT: The RCP's are tripped prior to evacuating the Control Room. Additionally, there are no RCP breaker controls at the ESF Train 'A' Switchgear Room.

Question Level: F **Question Difficulty** 3

Justification:

Must know the designated location for the primary RO and actions required during a Control Room Evacuation, and how to perform them.

Exam Bank No.: 1933**Last used on an NRC exam:** Never**RO Sequence Number:** 25

Given the following:

- Unit 1 has a normal 13.8 KV electrical lineup.
- An air leak on ESF DG #12 required isolating one of the Starting Air Receivers by closing its outlet isolation.
- The second Starting Air Receiver is at normal operating pressure.

A Unit 1 Standby Transformer lockout occurs.

Which of the following describes the response of ESF DG #12 to these conditions?

ESF DG #12 will.....

- A. NOT receive a start signal, but is capable of starting and will accelerate to full speed in <10 seconds.
- B. NOT receive a start signal, but is capable of starting and will take >10 seconds to accelerate to full speed.
- C. receive a start signal and accelerate to full speed in <10 seconds.
- D. receive a start signal, but will take >10 seconds to accelerate to full speed.

Answer: C receive a start signal and accelerate to full speed in <10 seconds.

Exam Bank No.: 1933

K/A Catalog Number: 064 K6.07

Tier: 2 **Group/Category:** 1

RO Importance: 2.7 **10CFR Reference:** 55.41(b)(7)

Knowledge of the effect of a loss or malfunction of the following will have on the ED/G system: Air receivers

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: LOT201.39, handout page #18

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: The DG will receive a start signal.
- B: INCORRECT: The DG will receive a start signal and take less than 10 seconds to come up to speed under these conditions.
- C: CORRECT: The DG will start since E1B is supplied by the Standby Transformer and is capable of accelerating to speed within 10 seconds with only one receiver.
- D: INCORRECT: The DG is still capable of starting in less than 10 seconds.

Question Level: H **Question Difficulty** 3

Justification:

Applicant must determine 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.: 1934**Last used on an NRC exam:** Never**RO Sequence Number:** 35

Given the following:

- A Small Break LOCA has just occurred while at 20% power.
- Safety Injection has automatically actuated.
- RCB pressure is 2.3 psig and slowly rising
- All RCPs are running
- All SG NR levels lowered to between 30-35% following the trip.
- All RCS Hot Leg temperatures are at 568 °F.
- ESF Diesel Generator (DG) # 13 failed to start.
- All other equipment operated as designed.
- NO manual operator actions have been performed.

Which of the following correctly compares 'C' Steam Generator to the other Steam Generators?

'C' SG ...

- A. level is the same as the other SG's because AFW flow has not yet automatically initiated to any SG.
- B. pressure is the same as the other SG's because a Main Steamline Isolation has not occurred.
- C. level is lower than the other SG's because of the #13 ESF DG malfunction.
- D. pressure is lower than the other SG's because there is no AFW flow to 'C' SG.

Answer: B pressure is the same as the other SG's because a Main Steamline Isolation has not occurred.

Exam Bank No.: 1934

K/A Catalog Number: 061 K3.02

Tier: 2 **Group/Category:** 1

RO Importance: 4.2 **10CFR Reference:** 55.41(b)(4)

Knowledge of the effect that a loss or malfunction of the AFW will have on the following: SG

STP Lesson: LOT 204.01 **Objective Number:** 20401

Given plant or system conditions, PREDICT the response of the plant and/or systems.

Reference: LOT 204.01

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: Modified

Modified from 1692

Distractor Justification

- A: INCORRECT: All SG levels WILL be about the same, but it's because AFW flow has actuated from the SI that automatically occurred.
- B: CORRECT: A MSI will occur at 3 psig in the RCB. Before a MSI occurs, all the steamlines are interconnected thru the equalizing header in the Turbine Bldg, thus all pressures will be the same.
- C: INCORRECT: This would be a correct answer if a LOOP occurred with the SBLOCA. The ESF DG's automatically start on an SI, but do not connect to their buses unless the normal power source is lost (which it hasn't in this case).
- D: INCORRECT: There is AFW flow to 'C' SG because it actuated from the SI signal. The pressure in 'C' SG is approximately the same as the other SG's because a MSI has not occurred.

Question Level: H **Question Difficulty** 3

Justification:

Must be able to determine the response of 'C' SG pressure/level based on the given information.

Exam Bank No.: 1692

Last used on an NRC exam: Never

Given the following:

- A Small Break LOCA has just occurred while at 20% power
- RCB pressure is 4 psig and slowly rising
- All RCPs are running
- All SG NR levels lowered to between 30-35% following the trip.
- All RCS Hot Leg temperatures are at 568 °F.
- Train 'C' Sequencer did not operate
- All other equipment operated as designed
- NO manual operator actions have been performed

Which of the following correctly compares 'C' Steam Generator to the other Steam Generators?

'C' SG ...

- A. level is the same as the other SG's because AFW flow has not yet automatically initiated to any SG.
- B. pressure is the same as the other SG's because all SG PORV's are controlling SG pressure in AUTO.
- C. level is lower than the other SG's because of the 'C' Train Sequencer malfunction.
- D. pressure is lower than the other SG's because there is no AFW flow to 'C' SG.

This is the question from which #1934 was modified

Answer: C level is lower than the other SG's because of the 'C' Train Sequencer malfunction.

Exam Bank No.: 1935**Last used on an NRC exam:** Never**RO Sequence Number:** 60

Which one of the below correctly describes the SEQUENCE of operations during RAPID REFUELING to gain access to the fuel assemblies?

NOTE: each sequence below does not necessarily include ALL steps.

- A.
 - The Control Rods are uncoupled.
 - Reactor Vessel Head Package is removed.
 - The Upper Internals Assembly is removed.
 - Reactor Cavity is filled from the RWST using the RHR Pumps.
- B.
 - Reactor Vessel Head studs are de-tensioned and removed.
 - The Control Rods are uncoupled.
 - The Reactor Vessel Head is removed.
 - Reactor Cavity is filled from the RWST using the LHSI Pumps while the head is being removed.
- C.
 - Reactor Vessel Head studs are de-tensioned and removed.
 - Incore detectors and thimbles are retracted from the bottom of the Reactor Vessel.
 - Reactor Vessel Head Package is removed.
 - Reactor Cavity is filled from the RWST using the LHSI Pumps while the head is being removed.
- D.
 - Incore detectors and thimbles are retracted from the bottom of the Reactor Vessel.
 - The Reactor Vessel Head is removed.
 - Reactor Cavity is filled from the RWST using the RHR Pumps while the head is being removed.
 - Upper Internals assembly is removed.

Answer: C - Reactor Vessel Head studs are de-tensioned and removed.
- Incore detectors and thimbles are retracted from the bottom of the Reactor Vessel.
- Reactor Vessel Head Package is removed.
- Reactor Cavity is filled from the RWST using the LHSI Pumps.

Exam Bank No.: 1935

K/A Catalog Number: G2.1.42

Tier: 3

Group/Category: 1

RO Importance: 2.5

10CFR Reference: 55.41(b)(10)

Knowledge of new and spent fuel movement procedures.

STP Lesson: LOT 201.43

Objective Number: 92267

DESCRIBE the significant differences between rapid refueling and normal refueling.

Reference: LOT 20143

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: Control rods are not uncoupled prior to lifting the head package. The head package includes the Upper Internals assembly so it does not have to be removed separately. The Refueling Cavity is filled using the LHSI pumps, not RHR pumps.
- B: INCORRECT: Control rods are not uncoupled prior to lifting the head package. The RV head PACKAGE is removed, not just the RV head.
- C: CORRECT: as stated.
- D: INCORRECT: The RV head PACKAGE is removed, not just the RV head. The head package includes the Upper Internals assembly so it does not have to be removed separately.

Question Level: F

Question Difficulty 3

Justification:

Must know the general sequence of operations to perform a Rapid Refueling.

Exam Bank No.: 1936**Last used on an NRC exam:** Never**RO Sequence Number:** 13

Which one of the following correctly describes the steps necessary to evaluate an alarm on the RM11 Rad Monitor Console, INCLUDING the history trend?

- A.
 - Silence the alarm by depressing the grid display key for the alarming rad monitor.
 - Check the alarm condition based on the color of the alarming rad monitor icon (HIGH alarm is red, ALERT alarm is Yellow).
 - Select the alarming monitor by using the mouse cursor, then double-click on the alarming rad monitor icon.
 - Evaluate the rad monitor trend by depressing the STATUS key.
- B.
 - Silence the alarm by depressing the grid display key for the alarming rad monitor.
 - Check the alarm condition based on the color of the alarming rad monitor icon (HIGH alarm is yellow, ALERT alarm is red).
 - Select the alarming monitor by using the mouse cursor, then double-click on the alarming rad monitor icon.
 - Evaluate the rad monitor trend by depressing the TREND 10 MIN key.
- C.
 - Silence the alarm by depressing the SYSTEM ACK key.
 - Check the alarm condition based on the color of the alarming rad monitor icon (HIGH alarm is red, ALERT alarm is Yellow).
 - Select the alarming monitor by keying in its designated number, then depress the SEL key.
 - Evaluate the rad monitor trend by depressing the TREND 10 MIN key.
- D.
 - Silence the alarm by depressing the SYSTEM ACK key.
 - Check the alarm condition based on the color of the alarming rad monitor icon (HIGH alarm is yellow, ALERT alarm is red).
 - Select the alarming monitor by depressing the SEL key until a white border surrounds the alarming rad monitor icon.
 - Evaluate the rad monitor trend by depressing the STATUS key.

Answer: C - Silence the alarm by depressing the SYSTEM ACK key.
- Check the alarm condition based on the color of the alarming rad monitor icon (HIGH alarm is red, ALERT alarm is Yellow).
- Select the alarming monitor by keying in its designated number, then depress the SEL key.
- Evaluate the rad monitor trend by depressing the TREND 10 MIN key.

Exam Bank No.: 1936

K/A Catalog Number: G2.3.5

Tier: 3

Group/Category: 3

RO Importance: 2.9

10CFR Reference: 55.41(b)(11)

Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personal monitoring, equipment, etc.

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: OPOP04-RA-0001, Rev. 23

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: the portions of this distracter that are incorrect are 1) there is no mouse associated with the RM11 and 2) the STATUS key gives rad monitor technical information, not history trend.
- B: INCORRECT: the portions of this distracter that are incorrect are 1) the HIGH alarm is red and the ALERT alarm is yellow and 2) there is no mouse associated with the RM11.
- C: CORRECT: as stated.
- D: INCORRECT: the portions of this distracter that are incorrect are 1) the HIGH alarm is red and the ALERT alarm is yellow and 2) the STATUS key gives rad monitor technical information, not history trend.

Question Level: F

Question Difficulty 3

Justification:

Must know the basic operations associated with the RM11 Rad monitor console.

Exam Bank No.: 1937**Last used on an NRC exam:** Never**RO Sequence Number:** 2

Given the following:

- Unit 1 is at 100% power.
- The MCC supplying the in-service Battery Charger to 125VDC Bus E1A11 de-energizes.

Which one of the below correctly describes the response of the 125VDC system associated with Bus E1A11?

The E1A11 battery will ...

- A. automatically begin powering 125VDC Bus E1A11 AFTER a 10 second time delay if the standby Battery Charger has not automatically connected to the bus.
- B. immediately begin powering 125VDC Bus E1A11. The standby Battery Charger will have to be placed in service manually.
- C. immediately begin powering 125VDC Bus E1A11. The standby Battery Charger should automatically connect to the bus within 10 seconds.
- D. automatically begin powering 125VDC Bus E1A11 AFTER a 10 second time delay provided the in-service Battery Charger output breaker trips open.

Answer: B immediately begin powering 125VDC Bus E1A11. The standby Battery Charger will have to be placed in service manually.

Exam Bank No.: 1937**K/A Catalog Number:** 063 K4.02**Tier:** 2 **Group/Category:** 1**RO Importance:** 2.9 **10CFR Reference:** 55.41(b)(7)

Knowledge of DC electrical system design feature(s) and/or interlock(s) which provide for the following:
Breaker interlocks, permissives, bypasses and cross-ties.

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: LOT 201.37**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** New**Modified from****Distractor Justification**

- A: INCORRECT: The battery output breaker is always closed so the in-service charger supplies the bus loads as well as charging the battery. If the battery charger is lost, the battery will immediately take over as the power source for the bus. There is no automatic features associated with the battery chargers that cause them to automatically connect to the bus.
- B: CORRECT: The battery output breaker is always closed so the in-service charger supplies the bus loads as well as charging the battery. If the battery charger is lost, the battery will take over as the power source for the bus. The standby charger must be placed in service manually.
- C: INCORRECT: The battery output breaker is always closed so the in-service charger supplies the bus loads as well as charging the battery. If the battery charger is lost, the standby charger can only be placed in service manually.
- D: INCORRECT: The battery output breaker is always closed and there is no interlock for preventing more than one power source to the battery bus (as there is on many AC systems).

Question Level: F **Question Difficulty** 3**Justification:**

Must know the design features of the Vital DC distribution system associated with power sources and how they apply to the given scenario.

Exam Bank No.: 1938**Last used on an NRC exam:** Never**RO Sequence Number:** 63

Given the following:

- Unit 1 tripped from 100% power due to a turbine trip.
- The crew is performing the immediate actions of POP05-EO-EO00, Reactor Trip or Safety Injection.
- You are the Secondary Operator and note the following:
 - The STM DUMP UNBLOCK AVAILABLE light is illuminated
 - The STM DUMP VLVS TRIP light is illuminated

Which one of the following correctly describes the possible cause of these indications and the status of the Steam Dumps?

	POSSIBLE CAUSE	STEAM DUMP STATUS
A.	An RCS T-cold instrument failed high	Armed, and open
B.	Steam Pressure instrument PT-557 failed high	Armed, but not open
C.	An RCS T-cold instrument failed high	Armed, but not open
D.	Steam Pressure instrument PT-557 failed high	Armed, and open

Answer: A An RCS T-cold instrument failed high; Armed, and open

Exam Bank No.: 1938

K/A Catalog Number: 041 K6.03

Tier: 2 **Group/Category:** 2

RO Importance: 2.7 **10CFR Reference:** 55.41(b)(4)

Knowledge of the effect of a loss or malfunction on the following will have on the SDS: Controller and positioners, including ICS, S/G, CRDS

STP Lesson: LOT 202.09 **Objective Number:** 93002

Given plant conditions, DETERMINE their effects on the Steam Dump System.

Reference: LOT 202.09

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: CORRECT: following a trip the steam dumps are still in the Tavg mode when the operators are performing their immediate actions. A T-cold failed high would result in auctioneered Tavg failing high and this is a control input to the steam dumps that will want to open the steam dumps if the sensed Tavg is > 567 deg. F which it will be due to the failure. The steam dumps are armed due to the turbine trip. With these 2 conditions (high error signal and armed), the steam dumps will open.
- B: INCORRECT: following a trip the steam dumps are still in the Tavg mode when the operators are performing their immediate actions. Later, they will be transferred to the Steam Pressure mode. The PT-557 failure would cause the steam dumps to open if they were in the Steam Pressure Mode. Additionally, the steam dumps are armed due to the turbine trip and the Steam Dump Valves Trip light indicates there is an open signal present to the trip bistables.
- C: INCORRECT: A T-cold failed high would result in auctioneered Tavg failing high and this is a control input to the steam dumps that will want to open the steam dumps if the sensed Tavg is > 567 deg. F which it will be due to the failure. The steam dumps are also armed due to the turbine trip. With these 2 conditions, the steam dumps are armed and WILL open.
- D: INCORRECT: following a trip the steam dumps are still in the Tavg mode when the operators are performing their immediate actions. Later, they will be transferred to the Steam Pressure mode. The PT-557 failure would cause the steam dumps to open if they were in the Steam Pressure Mode. Additionally, if the steam dumps are in the Steam Pressure mode, they would be armed.

Question Level: H **Question Difficulty** 3

Justification:

Must be able to determine the status of the steam dumps given the initial plant conditions and the possible failure events.

Exam Bank No.: 1939**Last used on an NRC exam:** Never**RO Sequence Number:** 49

Which one of the following describes the design features for the Fire Protection water system that provides for maintaining fire water system header pressure?

- A. A Jockey Pump with local controls is utilized to maintain normal system pressure. Motor-driven Fire Pumps will automatically start if the Jockey Pump cannot maintain pressure.
- B. A Jockey Pump with local controls is utilized to maintain normal system pressure. Diesel-driven Fire Pumps will automatically start if the Jockey Pump cannot maintain pressure.
- C. A Jockey Pump with controls in the Unit 1 Control Room is utilized to maintain normal system pressure. Diesel-driven Fire Pumps will automatically start if the Jockey Pump cannot maintain pressure.
- D. A Jockey Pump with controls in the Unit 1 Control Room is utilized to maintain normal system pressure. Motor-driven Fire Pumps will automatically start if the Jockey Pump cannot maintain pressure.

Answer: B A Jockey Pump with local controls is utilized to maintain normal system pressure. Diesel-driven Fire Pumps will automatically start if the Jockey Pump cannot maintain pressure.

Exam Bank No.: 1939

K/A Catalog Number: 086 K4.02

Tier: 2 **Group/Category:** 2

RO Importance: 3.0 **10CFR Reference:** 55.41(b)(7)

Knowledge of design feature(s) and/or interlock(s) which provide for the following: Maintenance of fire header pressure.

STP Lesson: LOT 201.29 **Objective Number:** 53717

DESCRIBE the procedural requirements of POP02-FP-0001, Fire Protection System Operating Procedure, to include notes and precautions, and normal system alignment.

Reference: LOT 201.29, 0POP02-FP-0001, Rev. 26

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: The Jockey pump control is correct, but the fire pumps are diesel driven, not motor driven.
- B: CORRECT: The Jockey Pump has local controls. The Fire pumps are all diesel driven.
- C: INCORRECT: The Jockey pump control is incorrect. The fire pumps are diesel driven as stated.
- D: INCORRECT: The Jockey pump control is incorrect. Additionally, the fire pumps are diesel driven, not motor driven.

Question Level: F **Question Difficulty** 2

Justification:

Must know the basic controls and operation of the fire protection pumps.

Exam Bank No.: 1940

Last used on an NRC exam: Never

RO Sequence Number: 1

In accordance with OPGP03-ZF-0011, STPEGS Fire Brigade, what is the minimum compliment of operators required to staff the plant fire brigade?

- A. 3
- B. 4
- C. 5
- D. 6

Answer: C 5

Exam Bank No.: 1940

K/A Catalog Number: G2.4.26

Tier: 3

Group/Category: 4

RO Importance: 3.1

10CFR Reference: 55.41(b)(10)

Knowledge of the facility protection requirements, including fire brigade and portable fire fighting equipment usage.

STP Lesson: LOT 507.01

Objective Number: 92186

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

Reference: OPGP03-ZF-0011, Rev 10, step 5.1.2

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: This number represents the normal shift compliment for Ros
- B: INCORRECT: This number represents the minimum number of Safe Shutdown Plant Operators required to be on shift
- C: CORRECT: At least 5 members are required to staff the fire brigade.
- D: INCORRECT: This number represents the normal on shift compliment of Plant Operators

Question Level: F

Question Difficulty 2

Justification:

Requires a basic knowledge of staffing requirements, specifically for the fire brigade.

Exam Bank No.: 1941**Last used on an NRC exam:** Never**RO Sequence Number:** 4

Given the following:

- Unit 1 was operating at 100% power.
- A high energy line break just occurred inside Containment causing a Reactor trip.
- Containment pressure is rising.
- RCS pressure is lowering.

Which one of the below correctly describes an automatic action that will occur assuming these responses continue?

- A. RCP's trip.
- B. RCP Seal Injection Isolates.
- C. ESF Diesel Generators start and supply power to their respective buses.
- D. Feedwater Isolation occurs.

Answer: D Feedwater Isolation occurs.

Exam Bank No.: 1941

K/A Catalog Number: G2.4.2

Tier: 3 **Group/Category:** 4

RO Importance: 4.5 **10CFR Reference:** 55.41(b)(7)

Knowledge of systems setpoints, interlocks and automatic actions associated with EOP entry conditions.

STP Lesson: LOT 201.20 **Objective Number:** 507227

Given a description of plant conditions, ANALYZE the conditions and PREDICT how the Solid State Protection System will respond.

Reference: LOT 201.20

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: RCP's will not trip on either low RCS pressure or high RCB pressure. The RCP's will trip on UV or UF as well as standard electrical relay protection (e.g. overcurrent, ground fault, etc.)
- B: INCORRECT: RCP seal injection will only isolate if a low CCP discharge pressure is sensed along with a Phase 'A' Isolation signal. Based on the plant conditions, there will be a Phase 'A' Isolation signal, but there should not be a low discharge pressure on the CCP's because they have not lost power.
- C: INCORRECT: The ESF DG's will automatically start, but not connect to their buses unless there's a loss of the normal supply. The given conditions do not indicate a loss of the normal supply.
- D: CORRECT: A FW Isolation will occur on an SI signal which can be generated from either low RCS pressure or high RCB pressure.

Question Level: H **Question Difficulty** 3

Justification:

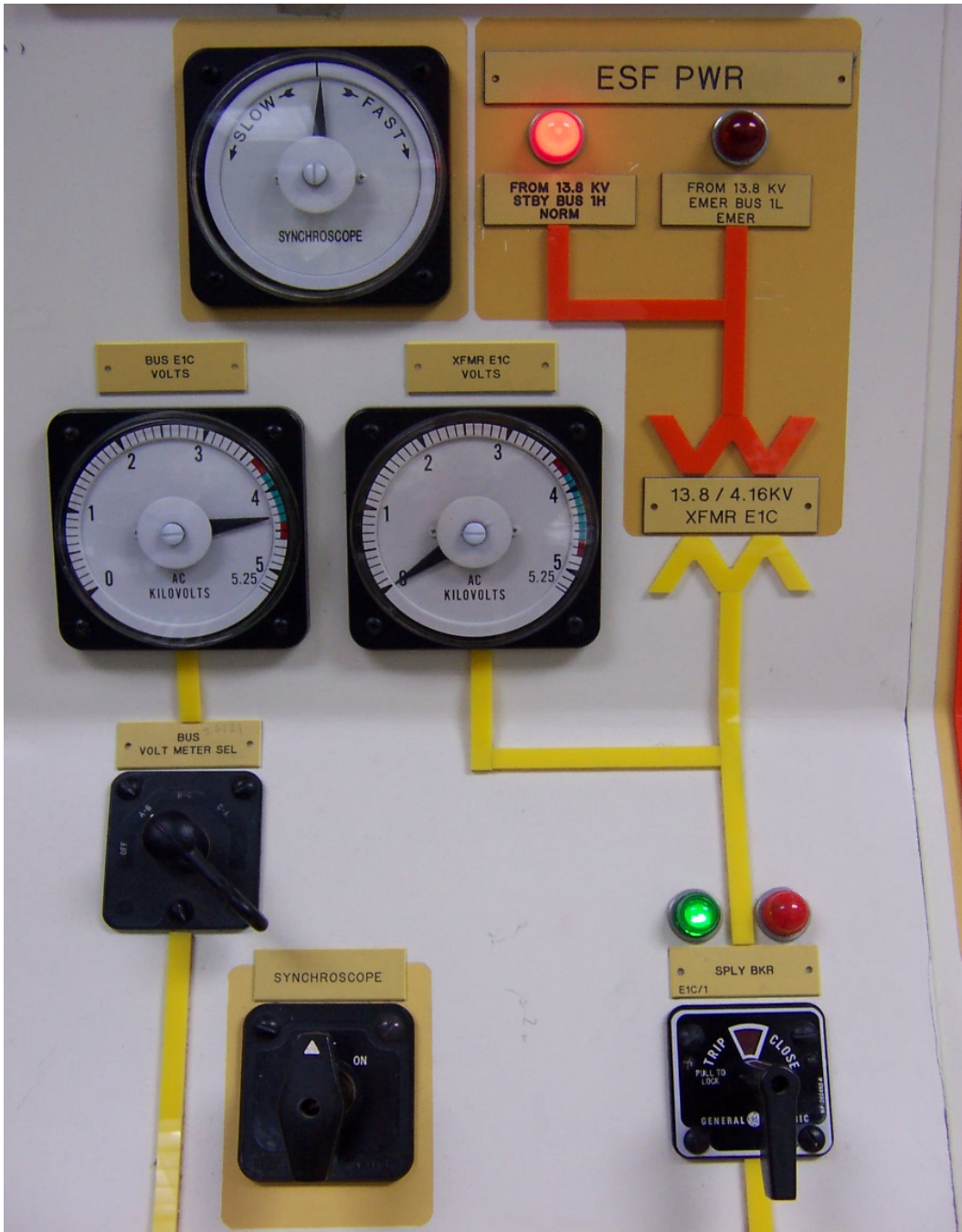
Must be able to determine how the SSPS responds to the given parameter trends to determine which of the automatic acutations will occur.

Exam Bank No.: 1942**Last used on an NRC exam:** Never**RO Sequence Number:** 5

Assuming all light bulbs are functional, based on the attached display of Control Room Panel CP-003, 4160V Bus E1C is...

- A. de-energized. The normal off site supply from the 138 kV line has been lost.
- B. de-energized. The normal off site supply from the Aux Transformer has been lost.
- C. energized by its respective ESF DG. The normal off site supply from the 138 kV line has been lost.
- D. energized by its respective ESF DG. The normal off site supply from the Aux Transformer has been lost.

Answer: D energized by its respective ESF DG. The normal off site supply from the Aux Transformer has been lost.



Exam Bank No.: 1942

K/A Catalog Number: APE 056 AA2.78 **Tier:** 1 **Group/Category:** 1

RO Importance: 3.2 **10CFR Reference:** 55.41(b)(7)

Ability to determine and interpret the following as they apply to the Loss of Offsite Power: Bus Voltmeters

STP Lesson: LOT 201.31 **Objective Number:** 80603

DESCRIBE the instrumentation and controls available to monitor and operate the Non-Class 1E Electrical Distribution System.

Reference: OPOP02-AE-0001, Rev. 23

Attached Reference ☒ **Attachment:** Picture on second page of question file

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: The bus voltage is indicating normal, it is the normal supply voltage that is indicating 0. Normal supply is the Aux transformer.
- B: INCORRECT: The bus voltage is indicating normal, it is the normal supply voltage that is indicating 0. Normal supply is the Aux transformer.
- C: INCORRECT: The bus is energized. The 138 kv line is the emergency offsite supply.
- D: CORRECT: The control board display shows the Bus voltage as normal, but the normal supply voltage as 0. The normal supply for this bus is from the Aux Transformer, but that supply is unavailable based on the SPLY BKR being open.

Question Level: H **Question Difficulty** 3

Justification:

Must be able to determine the electrical lineup from the presentation of control board indications.

Exam Bank No.: 1943**Last used on an NRC exam:** Never**RO Sequence Number:** 32

When in Mid-Loop Operations, which one the following sets of conditions would indicate that an RHR Pump is AIR BOUND or has AIR ENTRAINMENT?

	AIR BOUND		AIR ENTRAINMENT	
	Pump CURRENT	Pump FLOW	Pump CURRENT	Pump FLOW
A.	fluctuating	fluctuating	fluctuating	fluctuating
B.	fluctuating	fluctuating	low	low
C.	low	low	low	low
D.	low	low	fluctuating	fluctuating

Answer: D low; low; fluctuating; fluctuating

Exam Bank No.: 1943

K/A Catalog Number: APE 025 AA1.09

Tier: 1

Group/Category: 1

RO Importance: 3.2

10CFR Reference: 55.41(b)(14)

Ability to operate and/or monitor the following as they apply to the Loss of Residual Heat Removal System: LPI pump switches, ammeter, discharge pressure gauge, flow meter, and indicators.

STP Lesson: LOT 506.02

Objective Number: 91920

DESCRIBE how you can determine RHR pump air binding (parameter and response).

Reference: OPOP03-ZG-0009, Rev 49, page 46

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: Air binding results in low flow and current.
- B: INCORRECT: Indications are swapped. Air binding results in low flow and current while air entrainment results in fluctuating current and flow.
- C: INCORRECT: Air entrainment results in fluctuating current and flow
- D: CORRECT: Air binding results in low flow and current while air entrainment results in fluctuating current and flow.

Question Level: H

Question Difficulty 3

Justification:

The applicant must understand the difference between air bound and air entrainment and be able to differentiate between the indications seen for each.

Exam Bank No.: 2030**Last used on an NRC exam:** Never**RO Sequence Number:** 14

A large break LOCA has occurred in Unit 2 with the following indications:

- Upper Range Flux is 4% and slowly lowering.
- Core Exit Thermocouples are 1000°F and slowly rising.
- RCB pressure is 57 psig and slowly rising.
- Pressurizer level is 0%.

Based on these indications, a RED path exists for which one of the following Critical Safety Functions?

- A. Inventory
- B. Subcriticality
- C. Core Cooling
- D. Containment

Answer: D Containment

Exam Bank No.: 2030**K/A Catalog Number:** G2.4.21**Tier:** 3 **Group/Category:** 4**RO Importance:** 4.0 **10CFR Reference:** 55.41(b)(10)

Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.

STP Lesson: LOT 504.04 **Objective Number:** 92282

STATE the individual parameter(s) used in each Critical Safety Function Status Tree.

Reference: OPOP050EO0FO05, Rev 1, Containment Critical Safety Function Status Tree**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Source:** New**Modified from****Distractor Justification**

- A: INCORRECT: This represents an yellow path
- B: INCORRECT: This represents a possible orange path
- C: INCORRECT: This represents a possible yellow or orange path
- D: CORRECT: This represents the only red path for containment

Question Level: F **Question Difficulty** 3**Justification:**

The applicant requires fundamental knowledge of the parameters for a red path on Containment Status.