

Exam Bank No.: 13**Last used on an NRC exam:** 1999

During the performance of 0POP05-EO-ES12, Post LOCA Cooldown and Depressurization, the operator is directed to STOP the LHSI Pumps and place them in AUTO if RCS pressure is greater than 415 psig and stable or increasing.

During subsequent recovery actions, which ONE of the following applies regarding operation of the LHSI Pumps?

- A. LHSI Pumps are no longer required, even if RCS pressure drops uncontrollably, since the RHR System will be available to be placed in service.
- B. LHSI Pumps are no longer required, even if RCS pressure drops uncontrollably, since HHSI Pumps will be capable of providing sufficient flow to remove decay heat.
- C. If RCS pressure drops in an uncontrolled manner to less than 415 psig, the ESF Load Sequencer will restart the LHSI pumps.
- D. If RCS pressure drops in an uncontrolled manner to less than 415 psig, the operator will be required to manually restart the LHSI pumps.

Answer: D If RCS pressure drops in an uncontrolled manner to less than 415 psig, the operator will be required to manually restart the LHSI pumps

Exam Bank No.: 13 **RO Outline Number:** 1-2-6

K/A Catalog Number: EPE E03 EK2.1 **Tier:** 1 **Group/Category:** 2

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

Knowledge of the interrelations between the LOCA Cooldown and Depressurization and the following: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features

STP Lesson: LOT 504.12 **Objective Number:** 92173

From memory STATE/IDENTIFY the criteria on the conditional information page of 0POP05-EO-ES12 to include operator response, initiating parameter(s) and values.

Reference: 0POP05-EO-ES12, Rev 14, Conditional information page

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - While the second half of the statement may be true, the conditional information page requires the pumps be started in this condition.
- B: INCORRECT - While the second half of the statement may be true, the conditional information page requires the pumps be started in this condition.
- C: INCORRECT - Low RCS pressure is not one of the signals upon which the sequencer will start the pumps, they must be restarted manually.
- D: CORRECT - Per the conditional information page, the pumps must be started.

Question Level: F **Question Difficulty** 3

Justification:

Candidate must have knowledge of the conditional information page and the actions required if a condition is met.

Exam Bank No.: 17**Last used on an NRC exam:** 1999

An inadvertent Safety Injection has just occurred on Unit 1. During the performance of OPOP05-EO-EO00, Reactor Trip or Safety Injection, the operator checks the status of RCP Seal Injection and notes that the Seal Injection Containment Isolation Valves are closed.

Which ONE of the following would explain the reason for the valves being closed?

- A. The SEAL 1 ΔP indicators for all RCPs are off-scale high.
- B. The seal injection TEMP indicator indicates 145°F
- C. The SEAL RET flow indication for all RCPs are reading > 6 gpm
- D. The green lights are ON, red lights are OFF, for both centrifugal charging pumps

Answer: D The green lights are lit for both centrifugal charging pumps

Exam Bank No.: 17 **RO Outline Number:** 1-1-6

K/A Catalog Number: APE 022 AA1.06 **Tier:** 1 **Group/Category:** 1

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

Ability to operate and/or monitor the following as they apply to the Loss of Reactor Coolant Pump Makeup: CVCS charging pump ammeters and running indicators

STP Lesson: LOT 201.06 **Objective Number:** 80614

List all Chemical and Volume Control System signals, setpoints, logic, interlocks, and auto actuations

Reference: LOT 201.06, R15, section 4.3.4

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - High differential pressure across the seal does not close the valves.
- B: INCORRECT - High seal return temperature does not close the valves (alarm function only).
- C: INCORRECT - High seal injection flow will decrease the charging pump discharge pressure, but since charging is isolated on an SI signal, the pump discharge pressure will not decrease enough to cause the seal injection valves to close.
- D: CORRECT - The valves auto close on a Phase A signal only if coincident with a low charging header pressure. If the both charging pumps are off, then under these conditions the valves would close.

Question Level: H **Question Difficulty** 3

Justification:

Candidate must have knowledge that the seal injection containment isolation valves close upon receipt of a Phase A isolation signal (which is generated by the SI actuation) coincident with a low charging header pressure. The SI actuation is given so the distractors must be analyzed to determine which condition will also give a low charging header pressure.

Exam Bank No.: 35**Last used on an NRC exam:** 2001

Unit 1 is operating at 100% power when Instrument Air pressure begins to decrease. The Secondary operator reports that Instrument Air pressure is 95 psig and slowly lowering.

Which ONE of the following actions should have already occurred?

- A. 1-IA-PV-9983, Instrument Air Dryer Bypass Valve is OPEN
- B. 1-CV-FV-0011, Letdown Orifice Header Isolation Valve is CLOSED
- C. 1-IA-PV-8568, Instrument Air to Yard Valve is CLOSED
- D. 1-IA-PV-9785, Service Air Isolation Valve is CLOSED

Answer: D 1-IA-PV-9785, Service Air Isolation Valve is CLOSED

Exam Bank No.: 35 **RO Outline Number:** 2-2-10

K/A Catalog Number: 079 K4.01 **Tier:** 2 **Group/Category:** 2

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

Knowledge of SAS design feature(s) and/or interlock(s) which provide for the following: Cross-connect with IAS

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: OPOP04-IA-0001, R11, pages 2 and 3

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - 1-IA-PV-9983 does not automatically open until 80 psig decreasing.
- B: INCORRECT - 1-CV-FV-0011 does not start to fail closed (on loss of IA) until 80 psig decreasing.
- C: INCORRECT - 1-IA-PV-8568 does not automatically close until 90 psig decreasing.
- D: CORRECT - 1-IA-PV-9785 automatically closes at 100 psig decreasing therefore, it would already be closed based on the given conditions.

Question Level: F **Question Difficulty** 2

Justification:

The applicant must apply the given conditions to his/her knowledge of the instrument air system setpoints and automatic actions to determine the current expected alignment of the system.

Which one of the following vents directly to the Gaseous Waste Processing System (GWPS) inlet header?

- A. Waste Monitor Tank (WMT) 2D
- B. Floor Drain Tank (FDT)
- C. Laundry and Hot Shower Tank (LHST)
- D. Reactor Coolant Drain Tank (RCDT)

Answer: D Reactor Coolant Drain Tank (RCDT)

Exam Bank No.: 60 **RO Outline Number:** 2-2-9

K/A Catalog Number: 068 K1.02 **Tier:** 2 **Group/Category:** 2

RO Importance: 2.5 **10CFR Reference:** 55.41(b)(11)

Knowledge of the physical connections and/or cause-effect relationships between the Liquid Radwaste System and the following systems: Waste gas vent header

STP Lesson: LOT 203.11 **Objective Number:** 92082

Describe the interfaces with other plant systems

Reference: LOT203.11, handout page 8

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: Incorrect: The WMTs vent directly to the Unit Vent Stack
- B: Incorrect: The FDT vents directly to the Unit Vent Stack
- C: Incorrect: The Laundry and Hot Shower Tank vents directly to the Unit Vent Stack
- D: Correct: The RCDT is vented to the GWPS for delay before release

Question Level: H **Question Difficulty** 3

Justification:

The candidate must recognize the system process flow paths and physical interconnection for each of the choices presented to conclude that the RCDT vents directly to the GWPS

Exam Bank No.: 232

Last used on an NRC exam:

The following Unit 1 conditions exist:

- Restoration is in progress from a Train 'A' maintenance outage.
- The MAB watch has just opened the ESSENTIAL CHILLER X-CONN valves to fill ECW Train 'A' from ECW Train 'C'.
- The MAB watch is called away to check an alarm in the Rad Waste Control Room.

Which ONE of the following describes the correct action to be taken by the MAB watch?

The MAB watch can leave the area:

- A. and the fill operation continue provided the X-CONN valves are verified "locked closed" following the fill operation.
- B. and the fill operation continue provided the MAB watch remains in constant radio contact with the Control Room.
- C. and the fill operation continue provided the MAB watch returns to the area within 10 minutes.
- D. only if the fill operation is secured by closing the X-CONN valves.

Answer: D only if the fill operation is secured by closing the X-CONN valves.

Exam Bank No.: 232 **RO Outline Number:** 2-1-25

K/A Catalog Number: 076 K4.06 **Tier:** 2 **Group/Category:** 1

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

Knowledge of SWS design feature(s) and/or interlock(s) which provide for the following: Service water train separation

STP Lesson: LOT 201.13 **Objective Number:** 91195

In regards to POP02-EW-0001, DISCUSS the following: 1. Purpose and Scope, 2. Precautions, 3. Notes

Reference: POP02-EW-0001, R40, step 4.11

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - The valves can only remain open if the operator is present and in continuous communication with the control room.
- B: INCORRECT - The valves can only remain open if the operator is present and in continuous communication with the control room.
- C: INCORRECT - The valves can only remain open if the operator is present and in continuous communication with the control room.
- D: CORRECT - the valves must be closed if the operator leaves the area.

Question Level: F **Question Difficulty** 2

Justification:

The applicant must understand the administrative controls that are required when the x-tie valves are open.

Exam Bank No.: 242

Last used on an NRC exam:

An Electrician has called the Unit Supervisor requesting that MOV-8377A, Charging Pump A discharge valve, be stroked closed for testing.

- A TEST TAG is hanging on the MCB Handswitch.

Which ONE of the following complies with OPGP03-ZO-EC01A, Equipment Clearance Order Instructions?

- A. The RO may stroke the valve if the Electrician is the TEST TAG owner.
- B. The RO is required to sign on to the Equipment Clearance in addition to the Electrician requesting the valve stroke.
- C. The RO may stroke the valve after verifying the Equipment Clearance is still active.
- D. The Electrician signed on to the Equipment Clearance is required to come to the Control Room to operate the handswitch.

Answer: A The RO may stroke MOV-8377A if the Electrician is the TEST TAG owner

Exam Bank No.: 242 **RO Outline Number:** 3-2-2

K/A Catalog Number: G2.2.13 **Tier:** 3 **Group/Category:** 2

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

Knowledge of tagging and clearance procedures.

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

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

Reference: PGP03-ZO-EC01A, R4, Step 5.2.9

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: CORRECT - a component covered by a test tag may be operated if the owner of the test tag requests the Operational Authority to perform the operation.
- B: INCORRECT - The RO is not required to be an acceptor of the clearance to perform an operation of a component covered by a test tag.
- C: INCORRECT - The RO is not required to check that a clearance is active before performing an operation of a component covered by a test tag.
- D: INCORRECT - If given permission by the Operational Authority, the Electrician could operate the valve, but it is not a requirement.

Question Level: F **Question Difficulty** 3

Justification:

The applicant must understand the purpose of a test tag and the procedural requirements for operation of equipment covered by a test tag.

Exam Bank No.: 278

Last used on an NRC exam:

A licensed individual has worked the following daytime schedule:

- Primary Operator - 11/6
- Primary Operator - 11/7
- OFF - 11/8
- Training - 11/9
- Training - 11/10
- Training - 11/11

Which of the following identifies the logbook entries the individual is REQUIRED to review per OPOP01-ZQ-0022, Plant Operations Shift Routines, during shift turnover as Primary Operator on 11/12?

Control Room Logbook entries:

- A. for only the previous 24 hours.
- B. for only the previous 48 hours.
- C. for only the previous 72 hours.
- D. since the individuals last on-shift duty.

Answer: C for only the previous 72 hours.

Exam Bank No.: 278 **RO Outline Number:** 3-1-1

K/A Catalog Number: G2.1.3 **Tier:** 3 **Group/Category:** 1

RO Importance: 3.0 **10CFR Reference:** 55.41(b)(10)

Knowledge of shift turnover practices.

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

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

Reference: OPOP01-ZQ-0022, R50, step 3.3.4

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT
- B: INCORRECT
- C: CORRECT - Procedure requires that on-coming personnel review pertinent information (e.g. special instructions and watchstation logbooks) that have been generated since their last on-shift duty or in the last 72 hours, whichever is less.
- D: INCORRECT

Question Level: F **Question Difficulty** 3

Justification:

Requires knowledge of the Plant Operation Shift Routines procedure.

Exam Bank No.: 330**Last used on an NRC exam:** 2001

Unit 1 is operating at 100% power with all systems aligned normally. A tube leak of approximately 15 gpm develops in the operating ECW/CCW Heat Exchanger.

Which ONE of the following describes the FIRST indication the operator would have of this leak?

- A. 2M03/F5 CCW SURGE TK LVL HI alarm
- B. 2M03/F6 CCW SURGE TK LVL LO alarm
- C. CCW Chemistry results
- D. Increased cycling of the CCW Surge Tank Makeup Valve

Answer: D Increased cycling of the CCW Surge Tank Makeup Valve

Exam Bank No.: 330 **RO Outline Number:** 2-1-9

K/A Catalog Number: 008 K4.02 **Tier:** 2 **Group/Category:** 1

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

Knowledge of CCWS design feature(s) and/or interlock(s) which provide for the following: Operation of the surge tank, including the associated valves and controls

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: LOT210.12 PowerPoint slide 14

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - leakage will be out of the system so a high alarm will not come in
- B: INCORRECT - leakage will be out of the system causing surge tank level to lower, however the makeup valve will cycle to maintain level within alarm limits.
- C: INCORRECT - leakage will be out of the system, so raw water from Essential Cooling Water will not be found in Component Cooling Water. Over a long period of time, makeup from demin water will dilute the SureCool in the Component Cooling Water system, but this will not be the first indication.
- D: CORRECT - Leakage will be out of the system and the surge tank makeup valve will cycle to maintain level without any annunciation.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must have a knowledge of the normal operating characteristics for the Essential Cooling Water system and the Component Cooling Water system to first determine in which direction the heat exchanger leakage will occur. Once it is determined that surge tank level will lower, the applicant must use their knowledge of system operation to determine how the surge tank will react.

Exam Bank No.: 340

Last used on an NRC exam:

Given the following conditions on Unit 2:

- A loss of all AC power has occurred.
- The operators are performing Addendum 4, Vital DC Bus Monitoring, of 0POP05-EO-EC00, Loss of All AC Power.
- Train 'A' Class 1E Battery voltage is 105 VDC.

Which ONE of the following identifies the correct action to be taken AND the correct basis for the action?

- A. Place Train 'A' 4.16 KV equipment in Pull-to-Lock (PTL) to prevent spurious actuation of the motors.
- B. Block open the Train 'A' Battery Room doors to allow the excess hydrogen gas to escape.
- C. Open the Train 'A' Battery output breaker to ensure availability of the battery for placing ESF DG #11 in service should it become available
- D. Remove the Train 'A' Battery Chargers from service to prevent an overload condition on the chargers.

Answer: C Open the Train A Battery output breaker to ensure availability of the battery for placing DG-11 in service should it become available

Exam Bank No.: 340 **RO Outline Number:** 1-1-14

K/A Catalog Number: APE 055 G2.4.48 **Tier:** 1 **Group/Category:** 1

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

Ability to interpret control room indications to verify the status and operation of system, and understand how operator actions and directives affect plant and system conditions.

STP Lesson: LOT 504.22 **Objective Number:** 82073

Given a copy of a step caution or note from 0POP05-EO-EC00, STATE/IDENTIFY its basis, its purpose and the result of a failure to comply with its requirements.

Reference: 0POP05-EO-EC00, Rev 18, Addendum 4, page 6

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - Low voltage may prevent a breaker from closing, but will not cause a spurious closure,
- B: INCORRECT - Hydrogen is generated during battery charging, which is not occurring in this condition (loss of all AC).
- C: CORRECT
- D: INCORRECT - The battery chargers are de-energized (loss of all AC) so overload is not a concern.

Question Level: F **Question Difficulty** 3

Justification:

The applicant must be familiar with the specific requirements of the procedure and the basis behind the actions.

Exam Bank No.: 382

Last used on an NRC exam:

Given the following:

- Unit 1 is operating at 68% power
- An electrical malfunction causes the Generator Field Breaker (41M) to trip

Which one of the below correctly describes the effect on the plant?

- A. The plant will continue to operate provided the Standby Voltage Regulator actuates within 30 seconds.
- B. A turbine trip will occur, resulting in a reactor trip.
- C. A turbine trip will occur, but will not result in a reactor trip.
- D. The plant will continue to operate provided the manual voltage regulator is placed in service within 30 seconds.

Answer: B A turbine trip will occur, resulting in a reactor trip.

Exam Bank No.: 382 **RO Outline Number:** 2-2-8

K/A Catalog Number: 045 K3.01 **Tier:** 2 **Group/Category:** 2

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

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

STP Lesson: LOT 202.03 **Objective Number:** 5530

LIST all the turbine trips and their setpoints.

Reference: LOT202.03 PowerPoint slide 64; LOT201.20 student handout #2, page 5

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - the manual voltage regulator must be placed in service by the operator, which still won't restore the generator field.
- B: CORRECT - A loss of field will trip the generator which will result in a turbine trip. With power above P-9 (50%), the reator will also trip.
- C: INCORRECT - A loss of field will trip the generator which will result in a turbine trip. With power above P-9 (50%), the reator will also trip.
- D: INCORRECT - placing the manual voltage regulator in service will not restore the generator field.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must have a knowledge of the permissive signals associated with the reactor trip system and the main turbine and generator trip signals. This knowledge must then be applied to the conditions given to determine if a turbine and reactor trip signal will be generated.

Exam Bank No.: 436

Last used on an NRC exam: 2001

Given the following:

- A Reactor Startup is being performed following a mid-cycle outage.
- Reactor Power has been stabilized at 1E-8 amps
- RCS temperature is at the no-load value
- Critical data has been taken.
- Prior to any additional control rod movement, a single SG Safety Valve on SG 1D fails open and remains open.
- RCS Tav_g decreases 9°F and reactor power starts to increase.

Which ONE of the following states the correct action, required to satisfy Technical Specification LCO(s)?

- A. Reduce power range high flux high trip setpoint to 87% rated thermal power within 4 hours.
- B. Restore the SG safety valve to operable status prior to entering Mode 1.
- C. Restore RCS Tav_g within 15 minutes or be in Mode 3 within the next 15 minutes.
- D. Immediately initiate boration to restore Shutdown Margin.

Answer: C Restore RCS Tav_g within 15 minutes or be in Mode 3 within the next 15 minutes.

Exam Bank No.: 436 **RO Outline Number:** 3-1-3

K/A Catalog Number: G2.1.11 **Tier:** 3 **Group/Category:** 1

RO Importance: 3.0 **10CFR Reference:** 55.41(b)(10)

Knowledge of less than one hour technical specification action statements for systems.

STP Lesson: LOT 503.01 **Objective Number:** 80056

Given a system scenario, DETERMINE the applicable Technical Specification and/or the Technical Requirements Manual (TRM) for the system and APPLY the specification(s).

Reference: T.S. LCOs 3.1.1.1; 3.1.1.4; 3.7.1.1

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT: power range high flux trip setpoint should be reduced to 63% (not 87%, this was the old setpoint used in T.S. 3.7.1.1 for one inoperable SG safety valve).
- B: INCORRECT: T.S. 3.7.1.1 is applicable in Modes 1-3, therefore T.S. 3.0.4 would not allow entry into Mode 1 based on the conditions given in the stem.
- C: CORRECT: The drop in RCS Tavg is below the T.S. limit of 561°F (T.S. 3.1.1.4) and requires a 15 minute response to recover temperature or be in Hot Standby within the next 15 minutes.
- D: INCORRECT: Although a cooldown has occurred, there is no indication of a loss of T.S. Shutdown Margin.

Question Level: H **Question Difficulty** 3

Justification:

Candidates must analyze the current plant conditions and determine the appropriate action; this requires a proper calculation of the change in Tavg (from a no-load value of 567 degrees-F) and thorough comprehension of the less than one hour action statement regarding to Tave being < 561 degrees-F while critical.

Exam Bank No.: 485

Last used on an NRC exam: 1995

While operating at 20% power, a plant transient occurred. During the transient, the Feed Water Isolation Valves (FWIV's) CLOSED, but the Steam Generator Feed Pumps continued to run. What event could have caused this?

- A. A manual Safety Injection signal due to a stuck open pressurizer safety valve.
- B. A failed open Feedwater Regulating Valve and no operator action.
- C. A manual reactor trip and RCS temperature dropping below the no-load Tave value.
- D. An automatic start of the Auxiliary Feed Water Pumps due to low SG levels.

Answer: C A manual reactor trip and RCS temperature dropping below the no-load Tave value.

Exam Bank No.: 485 **RO Outline Number:** 2-1-17

K/A Catalog Number: 059 K4.19 **Tier:** 2 **Group/Category:** 1

RO Importance: 3.2 **10CFR Reference:** 55.41(b)(5)

Knowledge of MFW System design feature(s) and/or interlock(s) which provide for the following:
Automatic feedwater isolation of MFW

STP Lesson: LOT 202.13 **Objective Number:** 34606

State the conditions which will cause a feedwater isolation signal including setpoints, coincidence, and logic and all the actions which take place when the signal is received.

Reference: OPOP09-AN-06M4, Rev 6; OP0P-03-ZG-0003, Rev 8; LOT202.13, Rev 6

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - A safety injection signal will close the FWIVs and will also directly trip the Steam Generator Feed Pumps.
- B: INCORRECT - A failed open reg valve will result in a Hi-Hi SG level which will close the FWIVs and also directly trip the Steam Generator Feed Pumps.
- C: CORRECT - Reactor trip with low Tavg will close the FWIVs, but will not trip the Steam Generator Feed Pumps.
- D: INCORRECT - Lo-Lo level in the SG will auto start the Aux Feed Pumps and isolate blowdown and sampling, but will not cause any action to isolate main feedwater.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must determine the plant response for the event given in each distractor and compare it against the conditions given in the stem to determine the correct response.

Exam Bank No.: 486**Last used on an NRC exam:** 1995

An automatic signal requires that the Turbine Driven Auxiliary Feed Water Pump start. The operator notes that the pump failed to start because the Steam Inlet Valve (MS-MOV-0143) is closed with power removed. Where should the Control Room Operator direct the Plant Operator to close the breaker to the MOV?

- A. Non-1E 480 VAC MCC 1J1
- B. Non-1E 125 VDC SWBD 1A
- C. ESF 120 VAC Panel DP-1201
- D. ESF 125 VDC bus E1D11

Answer: D ESF 125 VDC bus E1D11

Exam Bank No.: 486 **RO Outline Number:** 2-1-18

K/A Catalog Number: 061 K2.01 **Tier:** 2 **Group/Category:** 1

RO Importance: 3.2 **10CFR Reference:** 55.41(b)(8)

Knowledge of bus power supplies to the following: AFW system MOVs

STP Lesson: LOT 202.28 **Objective Number:** 92049

List the typical loads on the Class 1E 125 VDC System

Reference: LOT 202.28, lesson plan page 45

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - This valve has a DC power supply.
- B: INCORRECT - This valve has a Class 1E power supply.
- C: INCORRECT - This valve has a DC power supply.
- D: CORRECT - Power supply to AFW steam supply valve is Class 1E 125 VDC.

Question Level: F **Question Difficulty** 2

Justification:

Requires the knowledge that the power supply to turbine driven aux feed pump MOV is different from the motor driven pumps (DC vs AC)

Exam Bank No.: 636

Last used on an NRC exam:

The following conditions exist in Unit 1:

- A LOCA has occurred
- The operators are performing 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant
- 1D RCP is running

Which ONE of the following conditions requires entry into 0POP05-EO-FRC2, Response to Degraded Core Cooling?

- A. Five core exit thermocouples indicate greater than 708°F.
- B. Any core exit thermocouple indicates greater than 708°F.
- C. Five core exit thermocouples indicate greater than 1200°F.
- D. Any core exit thermocouple indicates greater than 1200°F.

Answer: A Five core exit thermocouples indicate greater than 708 degrees-F.

Exam Bank No.: 636 **RO Outline Number:** 1-2-7

K/A Catalog Number: EPE E06 EK2.1 **Tier:** 1 **Group/Category:** 2

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

Knowledge of the interrelations between the Degraded Core Cooling and the following: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features

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

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

Reference: 0POP05-EO-FO02 and basis document

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: CORRECT
- B: INCORRECT - The temperature used in the status tree and computer indication is based on the 5th highest thermocouple reading.
- C: INCORRECT - The temperature given would require entry into FRC1
- D: INCORRECT - The temperature given would require entry into FRC1 and the required action is based on the 5th highest thermocouple reading.

Question Level: F **Question Difficulty** 3

Justification:

The applicant must determine the correct temperature for entry into FRC2 and must be knowledgeable of the basis for the temperature setpoint.

Exam Bank No.: 860

Last used on an NRC exam:

Given the following:

- Unit 1 is at 100% power.
- All automatic control systems are in their normal lineup.
- The controlling PRZR level transmitter LT-0465 fails at the programmed level that corresponds to full plant load.
- ASSUME no operator action is taken.

Which ONE of the following describes the effect on charging and PRZR level if plant load were REDUCED to 10% power?

- A. Charging flow decreases and actual PRZR level decreases. At 17% actual level, letdown will isolate and the PRZR heaters will turn off.
- B. Charging flow remains constant and actual PRZR level remains constant. Pressurizer heaters will energize to compensate for reduced T_{avg} .
- C. Actual PRZR level increases and charging flow increases. The backup heaters will energize as level rises due to the apparent in-surge.
- D. Actual PRZR level decreases and charging flow increases. When actual level increases back to program level, charging flow will lower to maintain level.

Answer: A Charging flow decreases and actual PRZR level decreases. At 17% actual level, letdown will isolate and the PRZR heaters will turn off.

Exam Bank No.: 860 **RO Outline Number:** 2-2-2

K/A Catalog Number: 011 K6.04 **Tier:** 2 **Group/Category:** 2

RO Importance: 3.1 **10CFR Reference:** 55.41(b)(5)

Knowledge of the effect of a loss or malfunction of the following will have on the PZR LCS: Operation of PZR level controllers

STP Lesson: LOT 201.14 **Objective Number:** 92779

GIVEN plant conditions, DETERMINE their effects on the Pressurizer pressure and level control system.

Reference: LOT201.14, PowerPoint slides 28 and 29

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: CORRECT - As plant power is reduced the PRZR level program controller circuit will adjust accordingly based on Tavg thus generating a signal output to control charging flow output as it approaches its no load program level. Since LT-465 (normal controlling channel) has failed the control circuit is sensing a PRZR high level which in turn will cause charging flow to decrease. As a result actual PRZR level decreases causing a letdown isolation and heaters to turn off.
- B: INCORRECT - Charging flow will lower due to the difference between the controlling level channel and program level. Heaters will initially energize due to the high level deviation signal
- C: INCORRECT - Charging flow will lower, as will actual PZR level.
- D: INCORRECT - Charging flow will lower causing actual level to lower and will remain low.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must first determine how the failure will affect the PZR level controller and then must have knowledge of controller operation as power level (Tave and therefore program level) changes. Using this information, the applicant can then determine how the plant will react to the given scenario.

Exam Bank No.: 879

Last used on an NRC exam:

While in MODE 5, an instrument technician inadvertently sets the compensating voltage for BOTH Intermediate Range detectors too high.

Which ONE of the following describes the affect this error has on a subsequent reactor startup?

Overlap between the Source Range Channels and the Intermediate Range Channels will be ...

- A. LESS than normal allowing the Source Range channels to automatically de-energize before either Intermediate Range channel comes on scale.
- B. MORE than normal allowing the Intermediate Range high power rod stop to be reached before it can be blocked.
- C. MORE than normal allowing the Intermediate Range high power reactor trip to be reached before it can be blocked.
- D. LESS than normal allowing the Source Range high power trip to be reached before the Source Range trip can be blocked.

Answer: D LESS than normal allowing the Source Range high power trip to be reached before the Source Range trip can be blocked

Exam Bank No.: 879 **RO Outline Number:** 2-2-3

K/A Catalog Number: 015 A3.03 **Tier:** 2 **Group/Category:** 2

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

Ability to monitor automatic operation of the NIS, including: Verification of proper functioning/operability

STP Lesson: LOT 201.16 **Objective Number:** 96407

ANALYZE changes to plant conditions, instrument calibrations, and plant systems to determine effects on Excore Nuclear Instrumentation.

Reference: Lesson Plan LOT201.16, Section 2.2.2.G

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - Signal to automatically de-energize the source range channels comes from the power ranges (P-10).
- B: INCORRECT - Overcompensation will cause the intermediate ranges to indicate lower than actual.
- C: INCORRECT - Overcompensation will cause the intermediate ranges to indicate lower than actual.
- D: CORRECT - 1 of 2 IR channels must be greater than 10-10 amps in order to enable the P-6 permissive to block the SR trip. P-6 may not occur if the IR channels are indicating less than actual

Question Level: H **Question Difficulty** 3

Justification:

The applicant must first determine the affect of overcompensation of an intermediate range detector and then apply knowledge to the indications and plant response during a subsequent startup.

Exam Bank No.: 1003

Last used on an NRC exam:

A piece of equipment has a contact reading of 50 R/hr in a room with a general area radiation reading of 125 mR/hr.

In accordance with PGP03-ZR-0051, Radiological Access and Work Controls, this room would be defined as a:

- A. Restricted Radiation Area
- B. High Radiation Area
- C. Locked High Radiation Area
- D. Very High Radiation Area

Answer: B High Radiation Area

Exam Bank No.: 1003 **RO Outline Number:** 3-3-1

K/A Catalog Number: G2.3.1 **Tier:** 3 **Group/Category:** 3

RO Importance: 2.6 **10CFR Reference:** 55.41(b)(12)

Knowledge of 10CFR20 and facility radiation control requirements.

STP Lesson: LOT 507.01 **Objective Number:** 92182

Given the title to an administrative procedure, IDENTIFY the objectives, functions, purpose, scope, and definitions of that procedure.

Reference: OPGP03-ZR-0051

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - The restricted area is defined as the area inside the security fence, however a restricted radiation area is not defined at STP
- B: CORRECT - a high radiation area has an exposure rate in excess of 100 mrem/hr
- C: INCORRECT - a locked high radiation area has an exposure rate in excess of 1000 mrem/hr
- D: INCORRECT - a very high radiation area has an exposure rate in excess of 500 rad/hr absorbed dose

Question Level: F **Question Difficulty** 2

Justification:

Requires a knowledge of defined areas based on radiation exposure rates.

Which of the below are aspects of the ALARA Program at STP?

- A. NRC approval of station ALARA goals, ALARA Review Committee
- B. ALARA Review Committee, ALARA Job Holds
- C. ALARA representatives in each Department, ALARA Job Holds
- D. ALARA representatives in each Department, NRC approval of station ALARA goals

Answer: B ALARA Review Committee, ALARA Job Holds

Exam Bank No.: 1037 **RO Outline Number:** 3-3-2

K/A Catalog Number: G2.3.2 **Tier:** 3 **Group/Category:** 3

RO Importance: 2.5 **10CFR Reference:** 55.41(b)(12)

Knowledge of the facility ALARA program.

STP Lesson: **Objective Number:**

Reference: PGP03-ZR-0052, R9

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - NRC does not approve ALARA goals
- B: CORRECT
- C: INCORRECT - there are no "ALARA representatives in each department"
- D: INCORRECT - NRC does not approve ALARA goals and there are no "ALARA representatives in each department"

Question Level: F **Question Difficulty** 3

Justification:

Applicant must be familiar with the ALARA program

Exam Bank No.: 1039**Last used on an NRC exam:** 2001

Which of the below meets the Fire Brigade staffing requirements of the Conduct of Operations Manual?

	# of Fire Brigade Members	When Required
A.	4	Modes 1-4 only
B.	4	At all times
C.	5	Modes 1-4 only
D.	5	At all times

Answer: D 5, At all times

Exam Bank No.: 1039 **RO Outline Number:** 3-4-2

K/A Catalog Number: G2.4.25 **Tier:** 3 **Group/Category:** 4

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

Knowledge of fire protection procedures.

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 Ops Chapter 2, Shift Manning

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT, 5 members needed at all times
- B: INCORRECT, 5 members needed at all times
- C: INCORRECT, 5 members needed at all times
- D: CORRECT

Question Level: F **Question Difficulty** 2

Justification:

Knowledge of the Conduct of Operations shift manning requirements needed to successfully answer the question.

Which ONE of the following provides the power source for the Train 'B' Engineered Safety Features Load Sequencer?

- A. Channel I 125 VDC Vital Switchboard.
- B. Channel II 125 VDC Vital Switchboard
- C. Channel III 125 VDC Vital Switchboard
- D. Channel IV 125 VDC Vital Switchboard

Answer: C Channel III 125 VDC Vital Switchboard.

Exam Bank No.: 1066 **RO Outline Number:** 2-1-13

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 201.37 **Objective Number:** 92049

LIST the typical loads on the Class 1E 125 VDC System

Reference: LOT201.37 PowerPoint slide 14

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - power source is Channel III DC
- B: INCORRECT - power source is Channel III DC
- C: CORRECT
- D: INCORRECT - power source is Channel III DC

Question Level: F **Question Difficulty** 2

Justification:

Requires knowledge of sequencer power supply.

Exam Bank No.: 1166

Last used on an NRC exam:

While operating at 100% power:

- Annunciators “PRZR PRES DEV HI” and “PRZR PORV DISCH TEMP HI” are illuminated.
- Both Pressurizer Spray Valves are open.
- Indicated Pressurizer pressure is 2185 psig.
- The Pressurizer pressure master controller demand is indicating 100%
- The PRZR PRESS CONT SEL switch is in the P455/456 position

What initiating failure caused these indications?

- A Pressure transmitter PT-0455 failed low.
- B Pressure transmitter PT-0456 failed high.
- C A Power Operated Relief Valve failed open.
- D The Pressurizer Pressure master controller failed.

Answer: D The Pressurizer Pressure master controller failed.

Exam Bank No.: 1166 **RO Outline Number:** 1-1-9

K/A Catalog Number: APE 027 AK2.03 **Tier:** 1 **Group/Category:** 1

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

Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following:
Controllers and positioners

STP Lesson: LOT 201.14 **Objective Number:** 92779

GIVEN plant conditions, DETERMINE their effects on the Pressurizer pressure and level control system.

Reference: 201.14 PowerPoint, slide 31

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - If the selected channel failed low, neither the spray valves or the PORVs should open.
- B: INCORRECT - If this were the case, the controller demand should read 0% and the high deviation alarm would not be in.
- C: INCORRECT - If this were the case, the controller demand should be 0%, the spray valves would not be open and the Hi Deviation alarm would not be in.
- D: CORRECT - Only a failure of the master controller would produce all indications given.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must understand how the pressurizer pressure control system operates and then apply that knowledge to each of the malfunctions given to determine the indications that would be seen.

Exam Bank No.: 1191

Last used on an NRC exam: 2005

Procedure 0POP05-EO-FRP1, "Response to Imminent Pressurized Thermal Shock Condition", contains less restrictive SI termination criteria than other procedures.

Why is it more desirable to terminate SI when in this procedure?

- A To conserve water in the RWST.
- B The other SI termination criteria will have already been met when 0POP05-EO-FRP1 is entered.
- C RCS heat removal is via the steam generators and SI flow is NOT required.
- D SI flow may have contributed to the RCS cooldown.

Answer: D SI flow may have contributed to the RCS cooldown.

Exam Bank No.: 1191 **RO Outline Number:** 1-2-8

K/A Catalog Number: EPE E08 EA3.2 **Tier:** 1 **Group/Category:** 2

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

Knowledge of the reasons for the following responses as they apply to the Pressurized Thermal Shock: Normal, abnormal and emergency operating procedures associated with Pressurized Thermal Shock

STP Lesson: LOT 504.38 **Objective Number:** 83456

Given a copy of a step, caution or note from POP05-EO-FRP1, STATE/IDENTIFY how the action is performed and the basis for the step, caution or note to include its purpose and the adverse impact of failure to comply with the step, caution, or note.

Reference: LOT504.38 PowerPoint slide #5

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - In this condition, conservation of RWST inventory is not of concern.
- B: INCORRECT - Depending on accident specifics, SI termination criteria may not (and most likely will not) be met prior to transition to FRP1.
- C: INCORRECT - During a small break LOCA, heat removal is mainly through the steam generators, but SI flow may still be required for inventory control.
- D: CORRECT

Question Level: F **Question Difficulty** 3

Justification:

Applicant must be knowledgeable of the basis for SI termination criteria in FRP1

Exam Bank No.: 1240

Last used on an NRC exam:

The following conditions exist:

- RCS temperature - 280 degrees F
- Steam Generator pressure - 50 psig
- A bubble exists in the Pressurizer
- No RCPs are running

Which ONE of the following statements describes the INITIAL primary plant response if a Reactor Coolant Pump were started?

	<u>RCS temperature</u>	<u>RCS pressure</u>
A	INCREASE	INCREASE
B	INCREASE	DECREASE
C	DECREASE	INCREASE
D	DECREASE	DECREASE

Answer: A INCREASE, INCREASE

Exam Bank No.: 1240 **RO Outline Number:** 2-1-1

K/A Catalog Number: 003 A1.07 **Tier:** 2 **Group/Category:** 1

RO Importance: 3.4 **10CFR Reference:** 55.41(b)(14)

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RCPS controls including: RCS temperature and pressure

STP Lesson: LOT 102.54 **Objective Number:** N99790

Apply saturated and superheated steam tables in solving liquid-vapor problems.

Reference: Steam Tables

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: CORRECT - Saturation temperature for 50 psig is ~297 degrees which is hotter than the RCS so heat will be transferred into the RCS causing a heatup of the RCS. A rise in RCS temperature will result in a corresponding rise in PZR level causing a rise in RCS pressure.
- B: INCORRECT - The SGs are hotter than the RCS, so the RCS temperature and pressure will initially rise.
- C: INCORRECT - The SGs are hotter than the RCS, so the RCS temperature and pressure will initially rise.
- D: INCORRECT - The SGs are hotter than the RCS, so the RCS temperature and pressure will initially rise.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must determine that SG temperature is greater than RCS temperature (based on SG pressure) which will cause heat to be transferred from the SGs to the RCS (heating up the RCS). The applicant must also correlate a rise in PZR level with the rise in RCS temperature due to the change in density of fluid in the RCS, resulting in an initial rise in RCS pressure.

Exam Bank No.: 1250

Last used on an NRC exam:

A Large Break Loss of Coolant Accident (LBLOCA) has occurred on Unit 1.

During the performance of POP05-EO-EO00, Reactor Trip or Safety Injection, all RCPs are stopped if containment pressure is greater than 9.5 psig.

Which ONE of the following describes why RCPs are tripped under these conditions?

- A. Prevent seal damage due to loss of seal cooling.
- B. Prevent overheating of bearings due to the loss of CCW.
- C. Minimize core uncovering should RCPs be tripped later.
- D. Minimize containment pressure by reducing heat input to the containment atmosphere.

Answer: B Prevent overheating of bearings due to the loss of CCW

Exam Bank No.: 1250 **RO Outline Number:** 1-1-4

K/A Catalog Number: EPE 011 EK3.14 **Tier:** 1 **Group/Category:** 1

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

Knowledge of the reasons for the following responses as they apply to the Large Break LOCA: RCP tripping requirement

STP Lesson: LOT 504.05 **Objective Number:** 80483

Given a copy of a subsequent step or from memory an immediate action step from POP05-EO-EO00, STATE/IDENTIFY how the action is performed and the basis for the action to include the action itself, its purpose and result.

Reference: LOT504.05 PowerPoint slide 44

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT - Phase B does not affect RCP seal injection. Seal injection is only isolated on a phase A is no charging pump is running.
- B: CORRECT - A phase B isolation occurs at 9.5 psig which isolates CCW to the RCPs leaving the motor air coolers and lube oil coolers without cooling.
- C: INCORRECT - This is a concern during a small break LOCA and then trip criteria is based on RCS pressure and not RCB pressure.
- D: INCORRECT - Although tied to containment pressure, tripping of the pumps is done to protect the pumps and not containment,

Question Level: F **Question Difficulty** 3

Justification:

A knowledge of the basis for the procedure step is required to determine the correct response.

Exam Bank No.: 1263

Last used on an NRC exam:

Unit 1 is at 80% power with the following equipment lineup:

- SGFPTs 11 and 12 are in service
- SGFPT 13 is isolated and drained for maintenance
- The SUFP is available for use and in AUTO

SGFPT 12 trips due to an electrical malfunction.

Which of the following describes the action to be taken by the operating crew and the reason for this action?

- A. Take manual control of the main feedwater regulating valves and raise feedwater flow to match steam flow to stop the decrease in SG levels.
- B. Take manual control of the main feedwater regulating valves and raise feedwater flow to match steam flow to prevent the automatic controls from “overshooting” the program level for the SGs.
- C. Manually reduce turbine load until steam flow equals feed flow to prevent the automatic controls from “overshooting” the program level for the SGs.
- D. Manually reduce turbine load until steam flow equals feed flow to stop the decrease in SG levels.

Answer: D Manually reduce turbine load until steam flow equals feed flow to stop the decrease in SG levels.

Exam Bank No.: 1263 **RO Outline Number:** 1-1-13

K/A Catalog Number: APE 054 AK3.02 **Tier:** 1 **Group/Category:** 1

RO Importance: 3.4 **10CFR Reference:** 55.41(b)(5)

Knowledge of the reasons for the following responses as they apply to the Loss of Main Feedwater (MFW): Matching of feedwater and steam flows

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: POP04-FW-0002, R18, step 1

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - Based on the equipment lineup given, available feedwater flow is not sufficient for 80% power therefore SG levels will not stabilize.
- B: INCORRECT - Based on the equipment lineup given, available feedwater flow is not sufficient for 80% power therefore SG levels will not rise and 'overshoot'.
- C: INCORRECT - Based on the equipment lineup given, available feedwater flow is not sufficient for 80% power. Power must be reduced to stop levels from lowering.
- D: CORRECT - Since available feedwater flow is not sufficient for 80% power, turbine load must be manually reduced to match steam flow / feed flow and allow levels to stabilize.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must have knowledge of the design capacities for the SGFPs and SUFP to determine that available feedwater flow will not sustain this power level. The applicant must then determine how to lower power and for what reason.

Exam Bank No.: 1309

Last used on an NRC exam: 2005

Operators are performing 0POP05-EO-FRH2 in response to a Steam Generator Overpressure event on SG 1A. A malfunction prevents SG 1A PORV operation from the Control Room. The Unit Supervisor has directed steam to be dumped from SG 1A via local operation of its PORV.

A CAUTION preceding Step 1 of the SG PORV Local Operation Addendum states "SG PORVs should NOT be opened GREATER THAN 50%".

Which ONE of the following identifies the reason for this CAUTION?

- A. To prevent exceeding the maximum cooldown rate of < 100 °F / HR.
- B. Too large of a release of steam will cause SG levels to rise rapidly and cause damage to piping from water hammer.
- C. The PORV hydraulic unit accumulators only contain sufficient stored energy for one and one-half strokes.
- D. To prevent a Main Steam Isolation signal due to high steam pressure rate drop.

Answer: C The PORV hydraulic unit accumulators only contain sufficient stored energy for one and one-half strokes.

Exam Bank No.: 1309 **RO Outline Number:** 1-2-9

K/A Catalog Number: EPE E13 EA1.2 **Tier:** 1 **Group/Category:** 2

RO Importance: 3.1 **10CFR Reference:** 55.41(b)(7)

Ability to operate and/or monitor the following as they apply to the Steam Generator Overpressure:
Desired operating results during abnormal and emergency situations

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

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

Reference: 0POP05-EO-FRH2, R7, Addendum 1

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: Incorrect - While the procedure does direct cooldown to < 100 °F/HR if necessary, it is not the basis for restricted motion of the PORV.
- B: Incorrect - Water hammer can occur if SG level rises too high, but it is not the basis for restricted motion of the PORV.
- C: Correct.
- D: A High Steam Pressure Rate ESFAS initiation signal can occur if step decrease of 100 psi or ramp decrease of > 2 psi/sec on 2/3 channels on 1/4 steamline and < P-11 and low compensated steamline pressure blocked, but it is not the basis for restricted motion of the PORV.

Question Level: F **Question Difficulty** 3

Justification:

Requires a knowledge of the design of the SG PORVs (which is also the basis for the requirement).

Exam Bank No.: 1317

Last used on an NRC exam: 2005

The following plant conditions exist:

- Unit 1 is performing a plant startup and power ascension
- Reactor power is at 22%
- Pressurizer Spray Valve PCV-0655B has failed open

How is pressurizer pressure trending AND what action is required in accordance with OPOP04-RP-0001, Loss of Automatic Pressurizer Pressure Control?

- A. Remains constant; trip the reactor and stop RCP 1A only
- B. Decreasing; trip the reactor and stop RCP 1D only
- C. Remains constant; trip the reactor and stop RCPs 1A & 1D
- D. Decreasing; trip the reactor and stop RCPs 1A & 1D

Answer: D Decreasing; trip the reactor and stop RCPs 1A & 1D

Exam Bank No.: 1317 **RO Outline Number:** 2-1-11

K/A Catalog Number: 010 A2.02 **Tier:** 2 **Group/Category:** 1

RO Importance: 3.9 **10CFR Reference:** 55.41(b)(5)

Ability to (a) predict the impacts of the following malfunctions or operations on the PZR PCS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Spray valve failures

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: POP04-RP-0001, R13, step 4

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - A full open spray valve will cause PZR pressure to continuously lower. If pressure remained constant, a reactor trip and stopping of RCP(s) would not be necessary.
- B: INCORRECT - Pressure will lower, but procedures require tripping both RCPs since the spray lines tie together.
- C: INCORRECT - A full open spray valve will cause PZR pressure to continuously lower. If pressure remained constant, a reactor trip and stopping of RCP(s) would not be necessary.
- D: CORRECT - A full open spray valve will cause PZR pressure to continuously lower. The procedure directs the operator to trip the reactor and then trip RCPs A and D

Question Level: H **Question Difficulty** 3

Justification:

The applicant must use their system knowledge to determine that RCS pressure will lower and the decrease will not be stopped by PZR heaters in this condition. This determination must then be applied to procedure requirements to determine the correct response.

Exam Bank No.: 1320

Last used on an NRC exam: 2005

0POP05-EO-FRZ1, Response to High Containment Pressure, Step 3.0 checks for conditions that would require containment spray to be initiated. If the conditions are met, the step directs the operator to “Verify Containment Spray pumps – RUNNING”

A CAUTION preceding Step 3.0 states “IF 0POP05-EO-EC11, Loss of Emergency Coolant Recirculation, is in effect, THEN Containment Spray should be operated as directed in 0POP05-EO-EC11, Loss of Emergency Coolant Recirculation, rather than Step 3 below.”

Why does EC11 take precedence over FRZ1 regarding Containment Spray Pump operation?

- A. EC11 ensures containment spray pump suction is aligned to the containment sump.
- B. EC11 reduces spray pump operation in order to conserve RWST inventory for ECCS operation.
- C. EC11 ensures containment fan coolers are running, thus making spray pump operation unnecessary.
- D. EC11 reduces spray pump operation since spray has little or no effect on containment heat removal capability during loss of emergency coolant recirculation.

Answer: B EC11 reduces spray pump operation in order to conserve RWST inventory for ECCS operation.

Exam Bank No.: 1320 **RO Outline Number:** 2-1-5

K/A Catalog Number: 006 K1.13 **Tier:** 2 **Group/Category:** 1

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

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

STP Lesson: LOT 504.40 **Objective Number:** 84127

Given a copy of a step, caution, or note from POP05-EO-FRZ1, STATE/IDENTIFY how the action is performed and the basis for the step, caution or note to include its purpose and the adverse impact of failure to comply with the step, caution or note.

Reference: LOT504.40 PowerPoint slide 20

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - EC11 is entered when the containment sump is not available.
- B: CORRECT - EC11 allows a reduction in number of CSS pumps running depending on RCB pressure and number of Reactor Containment Fan Coolers running in order to make more RWST inventory available for the SI pumps.
- C: INCORRECT - EC11 allows a reduction in running CSS pumps based on containment pressure and number of containment fan coolers running, but does not in all cases make running CSS pumps unnecessary.
- D: INCORRECT - During the injection phase is when the CSS has its greatest affect on containment heat removal.

Question Level: F **Question Difficulty** 3

Justification:

The applicant must realize the SI pumps and CSS pump share their suction source and running CSS pumps unnecessarily when recirculation phase is not available is not desirable.

Exam Bank No.: 1358

Last used on an NRC exam:

During the response to a Loss of All AC power, Steam Generators are depressurized at maximum rate to 355 psig.

What is the basis for performing the secondary depressurization?

- A. It reduces RCS pressure and RCP seal delta-P to minimize the potential for an RCP seal failure.
- B. It minimizes thermal stress across the SG tube sheets to minimize the potential for a SG tube leak.
- C. It prevents the formation of a void in the upper head of the Reactor Vessel to minimize the potential for losing natural circulation flow.
- D. It ensures that the SGs are a heat sink for the RCS to ensure conditions exist to sustain natural circulation cooling.

Answer: A It reduces RCS pressure and RCP seal delta-P to minimize the potential for an RCP failure.

Exam Bank No.: 1358 **RO Outline Number:** 3-4-1

K/A Catalog Number: G2.4.18 **Tier:** 3 **Group/Category:** 4

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

Knowledge of the specific bases for EOPs

STP Lesson: LOT 504.22 **Objective Number:** 82073

Given a copy of a step caution or note from 0POP05-EO-EC00, STATE/IDENTIFY its basis, its purpose and the result of a failure to comply with its requirements.

Reference: LOT504.22 powerPoint slide #39

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: CORRECT
- B: INCORRECT - cooling the steam generators by lowering pressure will raise the thermal stress across the tube sheets
- C: INCORRECT - the procedure states that head voiding may occur during the performance of this step
- D: INCORRECT - During this event, the steam generators are the only heat sink for the RCS regardless of secondary depressurization

Question Level: F **Question Difficulty** 3

Justification:

The applicant must understand the basis behind required actions of the Loss of All AC procedure.

Exam Bank No.: 1371

Last used on an NRC exam:

- Unit 1 is at 100% power.
- #11 ESF DG is the sole source of power to E1A 4.16 kV Bus
- The crew is preparing to parallel offsite power (normal supply from Standby Bus 1F) to #11 ESF D/G.

The operator is preparing to close the Normal Supply Breaker to E1A 4.16 kV Bus.

To properly close the breaker, which one of the following sets of indications would be correct?

- A. Synchroscope rotating slowly in the SLOW direction, Diesel Output Voltage slightly greater than XFMR E1A volts.
- B. Synchroscope rotating slowly in the SLOW direction, Diesel Output Voltage is equal to XFMR E1A volts.
- C. Synchroscope rotating slowly in the FAST direction, Diesel Output Voltage slightly greater than E1A Bus Voltage.
- D. Synchroscope rotating slowly in the FAST direction, Diesel Output Voltage is equal to XFMR E1A volts.

Answer: B Synchroscope rotating slowly in the SLOW direction, Diesel Output Voltage is equal to XFMR E1A volts.

Exam Bank No.: 1371 **RO Outline Number:** 2-1-22

K/A Catalog Number: 064 A4.01 **Tier:** 2 **Group/Category:** 1

RO Importance: 4.0 **10CFR Reference:** 55.41(b)(8)

Ability to manually operate and/or monitor in the control room: Local and remote operation of the ED/G

STP Lesson: LOT 201.39 **Objective Number:** 44803

DESCRIBE the procedural requirements of the Diesel Generator System Operating Procedure to include purpose, scope, precautions and prerequisites, operating parameters, definitions and evolutions (normal and abnormal).

Reference: POP02-DG-0001, R41, step 9.14

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - The direction is correct, but voltages should be equal.
- B: CORRECT - The synchroscope should be in the slow direction so the DG will lose some load and the voltages should be matched to minimize reactive load changes.
- C: INCORRECT - Direction should be slow, voltage is correct.
- D: INCORRECT - Direction should be slow and voltages should be equal.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must understand that the conditions given do not represent the "normal" paralleling operation (paralleling the DG with offsite power). Since the DG is being paralleled in the opposite direction, the applicant must determine that the synchroscope must rotate in the opposite (slow) direction. Since the reactive loading of the DG is unknown, the applicant should realize that matching voltages is necessary to minimize reactive loading changes on the DG when the normal supply breaker is closed.

Exam Bank No.: 1373

Last used on an NRC exam:

You are performing the actions of Addendum 5, Verification of SI Equipment Operation of OPOP05-EO-EO00, Reactor Trip or Safety Injection.

At Step 6, VERIFY Containment Isolation Phase 'A', on the ESF Status Panel, you note the following on the CONTAINMENT ISOLATION PHASE A/B status monitoring panel:

- Train 'A' PHASE A ISOL red light ON
- Train 'B' PHASE A ISOL red light ON
- Train 'C' PHASE A ISOL red light OFF
- Train 'A' white lights all OFF
- Train 'B' white lights all OFF
- Train 'C' white lights all OFF

Which of the following describes the probable failure and action necessary to address the failure?

- A. Trains 'A' and 'B' failed to actuate. No further action is required because no white lights are lit indicating that no valves are out of position.
- B. Trains 'A' and 'B' failed to actuate. Manually Actuate Phase 'A' and verify/ensure all valves associated with the trains of Phase 'A' that failed to actuate are closed.
- C. Train 'C' failed to actuate. No further action is required because no white lights are lit indicating that no valves are out of position.
- D. Train 'C' failed to actuate. Manually actuate Phase 'A' and verify/ensure all valves associated with the train that failed to actuate are closed.

Answer: D Train 'C' failed to actuate. Manually actuate Phase 'A' and verify/ensure all valves associated with the train that failed to actuate are closed.

Exam Bank No.: 1373 **RO Outline Number:** 2-1-27

K/A Catalog Number: 103 A3.01 **Tier:** 2 **Group/Category:** 1

RO Importance: 3.9 **10CFR Reference:** 55.41(b)(9)

Ability to monitor automatic operation of the Containment System, including: Containment isolation

STP Lesson: LOT 504.05 **Objective Number:** 80483

Given a copy of a subsequent step or from memory an immediate action step from POP05-EO-EO00, STATE/IDENTIFY how the action is performed and the basis for the action to include the action itself, its purpose and result.

Reference: POP05-EO-EO00, R19, Addendum 5, step 6; LOT201.22, PowerPoint slide 65

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - Red lights lit indicates the actuation signal is present. White lights only provide accurate indication when the actuation has occurred,
- B: INCORRECT - Red lights lit indicates the actuation signal is present. The action indicated is correct for a failure to actuate.
- C: INCORRECT - If the red light is not lit, then the white lights do not provide accurate indication.
- D: CORRECT - The lack of red light indicates the actuation did not occur, so the operator must perform a manual actuation and verify valves are closed.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must first determine the meaning of the light indication given in the stem. Then using their knowledge of procedural requirements, determine the correct course of action for the condition given.

Exam Bank No.: 1381

Last used on an NRC exam:

Following a Small Break LOCA on Unit 2, the operators have just entered POP05-EO-ES12, Post LOCA Cooldown and Depressurization, with the following plant conditions:

- RCS Pressure 1385 psig
- All HHSI pumps running
- Hot leg temperatures:

Loop A	470°
Loop B	320°
Loop C	480°
Loop D	440°
- Reactor head temperature 564°
- Highest core exit thermocouple (CET) 512°

The Primary operator places auxiliary spray in service to lower RCS pressure.

Based on these plant conditions, which of the following is true concerning when indications of voiding may be seen by the operators?

- A. Voiding should not occur due to the operation of the reactor coolant pumps.
- B. Indications of voiding will first be seen at approximately 1155 psig.
- C. Indications of voiding will first be seen at approximately 743 psig.
- D. Indications of voiding will first be seen at approximately 551 psig.

Answer: B Indications of voiding will first be seen at approximately 1155 psig.

Exam Bank No.: 1381 **RO Outline Number:** 1-1-3

K/A Catalog Number: EPE 009 EK1.02 **Tier:** 1 **Group/Category:** 1

RO Importance: 3.5 **10CFR Reference:** 55.41(b)(14)

Knowledge of the operational implications of the following concepts as they apply to the small break LOCA: Use of steam tables

STP Lesson: LOT 102.54 **Objective Number:** N99790

Apply saturated and superheated steam tables in solving liquid-vapor problems.

Reference: Steam Tables, POP05-EO-EO10 CIP (RCP trip criteria)

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - Although operation of RCPs could sweep any voids out of the head, the initial conditions given would require that no RCPs be running.
- B: CORRECT - Voiding will occur when pressure reaches saturation for the highest temperature in the RCS.
- C: INCORRECT - This is the saturation pressure for the highest reading CET, voiding will first occur when pressure reaches saturation for the hottest spot in the RCS (head).
- D: INCORRECT - This is the saturation pressure for the highest hot leg temperature, voiding will first occur when pressure reaches saturation for the hottest spot in the RCS (head).

Question Level: H **Question Difficulty** 3

Justification:

The applicant must recognize that under the given conditions, no RCPs will be running. The applicant must then understand that voiding will first occur when pressure reaches saturation for the highest temperature given and then be able to use the steam tables to determine what that pressure will be.

Exam Bank No.: 1390

Last used on an NRC exam:

Unit 1 is at 100% power when a turbine trip occurs.

During step 1 of POP05-EO-EO00, Reactor Trip or Safety Injection, the primary operator observes the following:

- Reactor trip breaker R red light is LIT (green light is OUT)
- Reactor trip breaker S has both lights OUT
- All rod bottom lights are lit except one (1) which indicates fully withdrawn
- Neutron flux is <5% and lowering

Based on these indications, an ATWS has....

- A. not occurred, the operators should continue with POP05-EO-EO00.
- B. not occurred, however the actions of POP05-EO-FRS1 should be performed until reactor trip breaker position can be verified locally.
- C. occurred, the operators should immediately transition to POP05-EO-FRS1
- D. occurred, however as long as neutron flux remains below 5%, transition to POP05-EO-FRS1 is not required.

Answer: A not occurred, the operators should continue with POP05-EO-EO00.

Exam Bank No.: 1390 **RO Outline Number:** 1-1-10

K/A Catalog Number: EPE 029 EA2.07 **Tier:** 1 **Group/Category:** 1

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

Ability to determine and interpret the following as they apply to a ATWS: Reactor trip breaker indicating lights

STP Lesson: LOT 504.05 **Objective Number:** 80061

From memory, STATE/IDENTIFY how a Reactor Trip and a Safety Injection is verified per 0POP05-EO-EO00.

Reference: POP05-EO-EO00, R19, step 1; POP01-ZA-0018, R18, step 4.32

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: CORRECT - The indications given allow a subjective determination to be made that the reactor is tripped, therefore the operators should continue with POP05-EO-EO00.
- B: INCORRECT - If the reactor is tripped (ATWS has not occurred), then it is not desirable nor required to transition to POP05-EO-FRS1.
- C: INCORRECT - Enough information given indicates that the reactor is tripped (ATWS has not occurred), the operator should not transition to POP05-EO-FRS1.
- D: INCORRECT - Enough information given indicates that the reactor is tripped (ATWS has not occurred) and while performing E0, step 1, transition to FRS1 must be made any time the reactor does not trip regardless of power level.

Question Level: H **Question Difficulty** 3

Justification:

Although the indications given do not match the expected response in E0, the EOP users guide requires the applicant to make a subjective determination from the information given that the reactor is tripped. Then the applicant must use the EOP rules of usage to determine that continuing in E0 is the proper course of action.

Exam Bank No.: 1398

Last used on an NRC exam:

Unit 2 was operating at 100% power when a LOCA outside Containment occurred. The following conditions exist:

- The crew is performing 0POP05-EO-EC12, LOCA Outside Containment
- FHB Area Rad Monitors are alarming
- Train 'A' ECCS and Containment Spray have been isolated based on high SI/CS sump level.
- RCS temperature is slowly increasing
- RCS Pressure continues to decrease

Based on these conditions, which one of the below correctly describes the plant status and action path for the crew?

- A. The leak IS isolated. Transition to another EOP to cool down and depressurize the plant to Cold Shutdown conditions.
- B. The leak IS isolated. Transition to another EOP to terminate Safety Injection before initiating plant cooldown.
- C. The leak is NOT isolated. Remain in 0POP05-EO-EC12, and sequentially isolate the remaining ECCS and CS trains in an attempt to stop the leakage.
- D. The leak is NOT isolated. Remain in 0POP05-EO-EC12, and begin isolating systems that connect with the RCS that are located in the MAB.

Answer: C The leak is NOT isolated. Remain in 0POP05-EO-EC12, and sequentially isolate the remaining ECCS and CS trains in an attempt to stop the leakage.

Exam Bank No.: 1398 **RO Outline Number:** 1-1-18

K/A Catalog Number: EPE E04 EK1.2 **Tier:** 1 **Group/Category:** 1

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

Knowledge of the operational implications of the following concepts as they apply to the LOCA Outside Containment: Normal, abnormal and emergency operating procedures associated with LOCA Outside Containment

STP Lesson: LOT 504.46 **Objective Number:** 82656

From memory, STATE/IDENTIFY the method used to identify and isolate the leak in accordance with POP05-EO-EC12.

Reference: 0POP05-EO-EC12, R7, Step 3

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - The leak is not isolated because RCS pressure is still lowering.
- B: INCORRECT -The leak is not isolated because RCS pressure is still lowering.
- C: CORRECT -
- D: INCORRECT - Based on indications given (FHB radiation monitors alarming), the leak is probably in the FHB. Isolating systems connecting to the MAB will not be done until FHB leakage sources have been isolated.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must first determine that the leak is not isolated (based on RCS pressure response) and then based on their knowledge of the procedure determine the correct action to take.

Exam Bank No.: 1404

Last used on an NRC exam:

In accordance with POP04-RH-0001, Loss of Residual Heat Removal, which of the following describes the expected response of RHR pump motor current if air entrainment is occurring?

Motor current will:

- A. stabilize higher than normal when the pump becomes completely air bound.
- B. stabilize lower than normal due to cavitation.
- C. be erratic due to cavitation.
- D. be erratic when the pump becomes completely air bound.

Answer: C erratic due to cavitation.

Exam Bank No.: 1404 **RO Outline Number:** 1-1-7

K/A Catalog Number: APE 025 AA2.01 **Tier:** 1 **Group/Category:** 1

RO Importance: 2.7 **10CFR Reference:** 55.41(b)(14)

Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System: Proper amperage of running LPI/decay heat removal/RHR pump(s)

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: POP04-RH-0001, R18, page 80

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT - the procedure is looking for erratic current indication due to cavitation.
- B: INCORRECT - the procedure is looking for erratic current indication due to cavitation.
- C: CORRECT
- D: INCORRECT - the procedure is looking for erratic current indication due to cavitation.

Question Level: F **Question Difficulty** 3

Justification:

Requires a knowledge of the off-normal procedure indications for air entrainment and basis.

Exam Bank No.: 1405

Last used on an NRC exam:

Unit 1 is in mode 6 with the following equipment lineup:

- CCW train 'A' and 'B' in service
- CCW train 'C' is available with its control switch in 'AUTO'
- All CCW/ECW Train Mode Selector switches are in 'OFF'

CCW PUMP 1B TRIP annunciator is received

In accordance with the annunciator response procedure, which of the following will occur as a result of this condition?

- A. CCW Pump 1C will start.
- B. MOV-0314, CCW Train 'B' Common Header Supply, AND MOV-0132, CCW Train 'B' Common Header Return, will close
- C. MOV-0770, CCW Train 'B' Charging Pump Supply, AND MOV-0774, CCW Train 'B' Charging Pump Return, will close.
- D. MOV-0314, CCW Train 'B' Common Header Supply, AND MOV-0132, CCW Train 'B' Common Header Return, AND MOV-0770, CCW Train 'B' Charging Pump Supply, AND MOV-0774, CCW Train 'B' Charging Pump Return, will close

Answer: C MOV-0770, CCW Train 'B' Charging Pump Supply, AND MOV-0774, CCW Train 'B' Charging Pump Return, will close.

Exam Bank No.: 1405 **RO Outline Number:** 1-1-8

K/A Catalog Number: APE 026 G2.4.10 **Tier:** 1 **Group/Category:** 1

RO Importance: 3.0 **10CFR Reference:** 55.41(b)(10)

Loss of Component Cooling Water (CCW) - Knowledge of annunciator response procedures.

STP Lesson: LOT 201.12 **Objective Number:** 4803

Given the name of a Component Cooling Water System Alarm, DISCUSS the following: A. Setpoint, B. Origins, C. Possible causes, D. Automatic actions, E. Immediate actions

Reference: POP09-AN-2M04, R20, page 3

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT - CCW pump C will not auto start if the mode select switch is in OFF.
- B: INCORRECT - These valves will auto open on a pump start, but do not auto close when the pump stops.
- C: CORRECT - These valves will auto close.
- D: INCORRECT - The common header valcvcs do not move.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must determine from the initial condition and knowledge of the system, the automatic action that will occur.

Exam Bank No.: 1441

Last used on an NRC exam:

A Safety Injection has occurred on Unit 1 due to a pressurizer steam space break. The crew is performing the actions of POP05-EO-EO10, Loss of Reactor or Secondary Coolant, with the following plant conditions:

- Pressurizer level 100%
- Containment pressure 6.7 psig
- Containment radiation 3×10^4 R/hr
- Steam Generator narrow range levels:

A	17%
B	25%
C	45%
D	10%

The step in progress directs the crew to “CONTROL AFW flow to maintain NR levels BETWEEN 22% [34%] and 50%.”

To accomplish this, the secondary operator:

- A. must maintain total AFW flow greater than 576 gpm until all steam generator levels are greater than 14%, then adjust AFW flow to maintain levels between 22% and 50%.
- B. must maintain total AFW flow greater than 576 gpm until all steam generator levels are greater than 34%, then adjust AFW flow to maintain levels between 34% and 50%.
- C. should raise level in A and D steam generators to greater than 22% and maintain level in B and C steam generators.
- D. should raise level in A, B and D steam generators to greater than 34% and maintain level in C steam generator.

Answer: D should raise level in A, B and D steam generators to greater than 34% and maintain level in C steam generator.

Exam Bank No.: 1441 **RO Outline Number:** 1-1-2

K/A Catalog Number: EPE 008 G2.4.24 **Tier:** 1 **Group/Category:** 1

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

Pressurizer (PZR) Vapor Space Accident - Knowledge of loss of cooling water procedures.

STP Lesson: LOT 504.09 **Objective Number:** 81084

Given a copy of a step from 0POP05-EO-EO10, STATE/IDENTIFY how the action is performed and the basis for the action to include the action itself, its purpose and the result.

Reference: POP05-EO-EO10, R18, pages 2 and 8

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - Heat sink requirements are met so there is no minimum AFW flow requirement and with adverse containment, the required band is 34-50%.
- B: INCORRECT - The required level band is correct, however heat sink requirements are met so there is no minimum required AFW flow.
- C: INCORRECT - With adverse containment conditions, the required level band is 34-50%.
- D: CORRECT - With adverse containment conditions the required band is 34-50%. Since heat sink requirements are met, there is no minimum required AFW flow at this time.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must first determine that adverse containment conditions exist from the information given. A knowledge of heat sink requirements is also needed to determine that there are no minimum AFW flow requirements at this time. Procedure usage requirements are also needed to determine the required level band.

Exam Bank No.: 1451

Last used on an NRC exam:

Given the following:

- Unit 1 is at 55% power.
- "MAIN COND VACUUM LO" alarm is lit.
- "LP TURB EXH HOOD TEMP HI" alarm is lit.
- Condenser vacuum is 21 inches Hg and slowly LOWERING.

WHICH ONE (1) of the following actions should be taken per OPOP04-CR-0001, Loss of Condenser Vacuum?

- A. commence an orderly shutdown of the Main Turbine
- B. commence RCS boration, and perform actions for a Fast Load Reduction
- C. trip the Reactor, then ensure the Main Turbine is tripped
- D. increase turbine load 10% to allow increased exhaust hood cooling

Answer: C trip the Reactor, then ensure the Main Turbine is tripped

Exam Bank No.: 1451 **RO Outline Number:** 1-2-2

K/A Catalog Number: APE 051 AA2.02 **Tier:** 1 **Group/Category:** 2

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

Ability to determine and interpret the following as they apply to the Loss of Condenser Vacuum:
Conditions requiring reactor and/or turbine trip

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-CR-0001, R12, Step 7

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - In this condition, a fast load reduction should already be in progress with vacuum less than 26 inches.
- B: INCORRECT - The fast load reduction should already be in progress with vacuum less than 26 inches. This level of vacuum requires additional actions.
- C: CORRECT
- D: INCORRECT - Although raising steam flow through the turbine will lower exhaust hood temperature, the critical issue to address is the low vacuum.

Question Level: H **Question Difficulty** 3

Justification:

Knowledge of the required actions contained in POP04-CR-0001 required.

Exam Bank No.: 1499

Last used on an NRC exam:

Given the following:

- Unit 1 is operating at power
- RCP 1C stator temperature is 320° requiring a pump trip.

In accordance with POP04-RC-0002, Reactor Coolant Pump Off Normal, which of the following is the correct sequence for securing the RCP 1C?

- A. Trip RCP 1C, then trip the reactor.
- B. If reactor power is <P-8 then trip RCP 1C, otherwise trip the reactor and then trip RCP 1C.
- C. If reactor power is <P-9 then trip RCP 1C, otherwise trip RCP 1C and then trip the reactor.
- D. Trip the reactor, then trip RCP 1C.

Answer: D Trip the reactor, then trip RCP C

Exam Bank No.: 1499 **RO Outline Number:** 1-1-5

K/A Catalog Number: APE 015 AA2.09 **Tier:** 1 **Group/Category:** 1

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

Ability to determine and interpret the following as they apply to the Reactor Coolant Pump Malfunctions:
When to secure RCPs on high stator temperatures

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: POP04-RC-0002, R23, conditional information page (RCP trip criteria)

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT - the reactor is tripped before the pump is secured.
- B: INCORRECT - although a reactor trip will not occur <P-8, we cannot be critical with less than 4 RCPs in service.
- C: INCORRECT - P-9 is not associated with RCP flow and the reactor must always be tripped before the pump is secured.
- D: CORRECT - the reactor is tripped first, then the affected pump is secured.

Question Level: H **Question Difficulty** 3

Justification:

A knowledge of the requirements of the conditional information page (also in the procedure body) is required.

Exam Bank No.: 1622

Last used on an NRC exam:

If break flow is greater than safety injection flow following a steam generator tube rupture, reflux boiling may eventually occur.

Reflux boiling will:

- A. cool the reactor core by condensing steam in the steam generator tubes and the condensate returning to the core via the RCS cold legs.
- B. refill the reactor vessel by condensing steam in the steam generator tubes and the condensate returning to the vessel via the RCS cold legs.
- C. cool the reactor core by condensing steam in the steam generator tubes and the condensate returning to the core via the RCS hot legs.
- D. refill the reactor vessel by condensing steam in the steam generator tubes and the condensate returning to the vessel via the RCS hot legs.

Answer: C cool the reactor core by condensing steam in the steam generator tubes and the condensate returning to the core via the hot leg.

Exam Bank No.: 1622 **RO Outline Number:** 1-1-11

K/A Catalog Number: EPE 038 EK1.04 **Tier:** 1 **Group/Category:** 1

RO Importance: 3.1 **10CFR Reference:** 55.41(b)(14)

Knowledge of the operational implications of the following concepts as they apply to the SGTR: Reflux boiling

STP Lesson: LOT 102.59 **Objective Number:** N99907

Describe the process of reflux boiling.

Reference: LOT502.01, WOGMCD~2.pdf, page 43

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - condensate travels back to the core via the hot leg
- B: INCORRECT - reflux boiling does not refill the vessel. Condensate travels back via the hot leg.
- C: CORRECT
- D: INCORRECT - the condensate travels back to the core via the hot leg

Question Level: F **Question Difficulty** 3

Justification:

The applicant must understand the concept of reflux boiling.

Exam Bank No.: 1645

Last used on an NRC exam:

During performance of POP04-ZO-0001, Control Room Evacuation, the Plant Operator who is the “Designated Safe Shutdown Watch” will report to the ESF Train ‘C’ Switchgear Room located on the:

- A. 10-foot elevation to transfer control of designated equipment to the ESF DG Control Panel.
- B. 60-foot elevation to transfer control of designated equipment to the ESF DG Control Panel.
- C. 10-foot elevation to operate designated equipment from the switchgear room.
- D. 60-foot elevation to operate designated equipment from the switchgear room.

Answer: D 60-foot elevation to operate designated equipment from the switchgear room.

Exam Bank No.: 1645 **RO Outline Number:** 3-4-3

K/A Catalog Number: G2.4.35 **Tier:** 3 **Group/Category:** 4

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

Knowledge of local auxiliary operator tasks during emergency operations including system geography and system implications.

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: POP04-ZO-0001. R29, step 8

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT - should be on the 60' elev to locally operate
- B: INCORRECT - should be to locally operate
- C: INCORRECT - should be 60'
- D: CORRECT

Question Level: F **Question Difficulty** 3

Justification:

The applicant requires a knowledge of personnel duties contained in the Control Room Evacuation procedure

Exam Bank No.: 1646

Last used on an NRC exam:

Which one of the below correctly describes the reason DC power is used for control of the ESF Diesel Generators AND the result if DC power was lost?

Class 1E DC power is a source of power that has a high reliability, by design, due to...

- A. having a battery backup. A TOTAL loss of Class 1E DC power to an ESF Diesel Generator would generate an Emergency Trip Signal for the diesel.
- B. having a battery backup. A TOTAL loss of Class 1E DC power to an ESF Diesel Generator would allow the diesel to start, but not load.
- C. having multiple AC sources available. A TOTAL loss of Class 1E DC power to an ESF Diesel Generator would generate an Emergency Trip Signal for the diesel.
- D. having multiple AC sources available. A TOTAL loss of Class 1E DC power to an ESF Diesel Generator would allow the diesel to start, but not load.

Answer: A having a battery backup. A TOTAL loss of Class 1E DC power to an ESF Diesel Generator would generate an Emergency Trip Signal for the diesel.

Exam Bank No.: 1646 **RO Outline Number:** 1-1-15

K/A Catalog Number: APE 058 AK3.01 **Tier:** 1 **Group/Category:** 1

RO Importance: 3.4 **10CFR Reference:** 55.41(b)(8)

Knowledge of the reasons for the following responses as they apply to the Loss of DC Power: Use of dc control power by ED/Gs

STP Lesson: LOT 201.39 **Objective Number:** 45057

STATE the Emergency Diesel Generator trips in the emergency mode and in the test mode.

Reference: LOT201.39 lesson plan section 4.6.4.A..1

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

A: CORRECT

B: INCORRECT - the ESF DG will not start without DC control power.

C: INCORRECT - having a battery backup source provides the design reliability needed for the ESF DGs

D: INCORRECT -having a battery backup source provides the design reliability needed for the ESF DGs

Question Level: F **Question Difficulty** 3

Justification:

The applicant requires a knowledge of the design features of Class 1E DC and the emergency trips for the ESF diesel generators.

Exam Bank No.: 1647**Last used on an NRC exam:**

Unit 1 is operating at full power when a loss of power to 4160V Bus E1C occurs. Immediately after the loss of power, an operator notes the following indications:

- #13 Diesel Generator Blue, READY FOR LD, light is LIT.
- 4160V Bus E1C voltage = 4160 volts
- Indicating lights for 'C' ECW Pump show the Red light OUT, Green light ON
- Indicating lights for 'C' ECW Pump Discharge Valve show the Red light OUT, Green light OUT.

These indications are:

- A. Expected at this time. The operator should ensure the Sequencer shortly re-energizes the 480 VAC MCC's, to provide power to the 'C' ECW Pump Discharge Valve, and starts the 'C' ECW Pump.
- B. Expected at this time. The operator should ensure the Sequencer automatically starts the 'C' ECW Pump to provide cooling flow to the Diesel Generator. The Discharge Valve for 'C' ECW Pump is normally open.
- C. NOT expected at this time. The operator should manually start the 'C' Train ECW Pump and dispatch a plant operator to manually open the 'C' ECW Pump Discharge Valve.
- D. NOT expected at this time. The operator should manually start the 'C' Train ECW Pump. The Discharge Valve for 'C' ECW Pump is normally open.

Answer: A Expected at this time. The operator should ensure the Sequencer shortly re-energizes the 480 VAC MCC's, to provide power to the 'C' ECW Pump Discharge Valve, and starts the 'C' ECW Pump.

Exam Bank No.: 1647 **RO Outline Number:** 1-1-16

K/A Catalog Number: APE 062 AA1.06 **Tier:** 1 **Group/Category:** 1

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

Ability to operate and/or monitor the following as they apply to the Loss of Nuclear Service Water (SWS):
Control of flow rates to components cooled by the SWS

STP Lesson: LOT 201.22 **Objective Number:** 80107

DESCRIBE the ESF sequencing logic.

Reference: LOT201.22 PowerPoint slide #39

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

- A: CORRECT - on a LOOP signal the 4160 v bus is stripped including cascading 480 VAC MCC's that supply MOV's. Once the DG connects to the bus, the Sequencer will reload the bus beginning with the 480 VAC MCC's and subsequently the 'C' ECW Pump. The Discharge Valve will automatically open after pump start.
- B: INCORRECT - 'C' ECW Pump Discharge Valve is normally closed. Valve automatically opens following pump start.
- C: INCORRECT - indications show a normal condition shortly after the Diesel Generator connects to the bus, but before the Sequencer has begun loading.
- D: INCORRECT - indications show a normal condition shortly after the Diesel Generator connects to the bus, but before the Sequencer has begun loading. The Valve automatically opens following pump start.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must understand the sequence of events that occur during a LOOP and apply that knowledge to the given conditions to determine if this is expected. A knowledge of the normal operation for the ECW system is also required.

Exam Bank No.: 1649

Last used on an NRC exam:

A leak has caused Instrument Air (IA) System pressure to drop to 85 psig.

Which one of the following correctly describes operation of the Instrument Air (IA) System as a result of the leak?

- A. IA Dryer Bypass Valve, PV-9983, should have automatically closed. If the valve did not close, a Plant Operator must be dispatched to locally isolate the IA Dryer Bypass.
- B. IA Dryer Bypass Valve, PV-9983, should have automatically closed. If the valve did not close, a Control Room operator must manually close the valve at Control Room Panel CP-008.
- C. IA to Yard Isolation Valve, PV-8568, should have automatically closed. If the valve did not close, a Plant Operator must be dispatched to locally isolate the IA to Yard header.
- D. IA to Yard Isolation Valve, PV-8568, should have automatically closed. If the valve did not close, a Control Room operator must manually close the valve at Control Room Panel CP-008.

Answer: C IA to Yard Isolation Valve, PV-8568, should have automatically closed. If the valve did not close, a Plant Operator must be dispatched to locally isolate the IA to Yard header.

Exam Bank No.: 1649 **RO Outline Number:** 1-1-17

K/A Catalog Number: APE 065 AA1.02 **Tier:** 1 **Group/Category:** 1

RO Importance: 2.6 **10CFR Reference:** 55.41(b)(4)

Ability to operate and/or monitor the following as they apply to the Loss of Instrument Air: Components served by instrument air to minimize drain on system

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: OPOP04-IA-0001, R11, pages 2 and 5

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT - this valve opens on lowering pressure. Local action is to fail the valve open.
- B: INCORRECT - this valve opens on lowering pressure. Local action is to fail the valve open.
- C: CORRECT
- D: INCORRECT - there are no Control Room controls for this valve.

Question Level: H **Question Difficulty** 3

Justification:

The applicant requires a knowledge of the system interlocks for IA and the required actions for the off-normal procedure.

Exam Bank No.: 1650

Last used on an NRC exam:

Given the following:

- Unit 1 is operating at 60% power, with a plant startup in progress
- One control rod did not move during Control Rod testing.
- The Unit Supervisor has determined the stuck rod is inoperable

Based on these conditions, which one of the following correctly describes the requirement for calculating Shutdown Margin (SDM)?

A SDM calculation....

- A. is NOT required if only one control rod is inoperable.
- B. is NOT required because reactor power is below 75%.
- C. IS required to satisfy Tech Spec requirements.
- D. IS required to satisfy Reactivity Management Program requirements.

Answer: C IS required to satisfy Tech Spec requirements.

Exam Bank No.: 1650 **RO Outline Number:** 1-2-1

K/A Catalog Number: APE 005 AK1.05 **Tier:** 1 **Group/Category:** 2

RO Importance: 3.3 **10CFR Reference:** 55.41(b)(6)

Knowledge of the operational implications of the following concepts as they apply to Inoperable/Stuck Control Rod: Calculation of minimum shutdown margin

STP Lesson: LOT 503.01 **Objective Number:** 80056

Given a system scenario, DETERMINE the applicable Technical Specification and/or the Technical Requirements Manual (TRM) for the system and APPLY the specification(s).

Reference: Tech Spec 3.1.3.1

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - a SDM calculation is required for any inoperable control rod
- B: INCORRECT: Power level doesn't relate to the requirements for performing a SDM calculation
- C: CORRECT - A SDM calculation is required per TS 3.1.3.1
- D: INCORRECT - the Reactivity Management Program describes how the program is administrated at STP (event classification, roles & responsibilities, etc) but does not give specific guidance on performing SDM calculations.

Question Level: F **Question Difficulty** 3

Justification:

The applicant must have knowledge of the LCO requirements and apply the given conditions to those requirements to determine if a SDM calculation is required or not.

Exam Bank No.: 1651

Last used on an NRC exam:

A liquid release is in progress from a Waste Monitor Tank (WMT). Which one of the following correctly describes operation of the system if the Liquid Release Rad Monitor, RT-8038 reaches its HIGH alarm setpoint?

- A. Liquid Waste Discharge Valve, FV4077, will close to stop flow from the WMT. If the valve fails to close, the Control Room operator must manually close the valve from the RM-11 console.
- B. Liquid Waste Discharge Valve, FV4077, will re-position to recirc the contents of the WMT. If the valve fails to re-position, the Control Room operator must manually re-position the valve to recirc from the RM-11 console.
- C. Liquid Waste Discharge Valve, FV4077, will close to stop flow from the WMT. If the valve fails to close, a Plant Operator will have to be dispatched to close the valve.
- D. Liquid Waste Discharge Valve, FV4077, will re-position to recirc the contents of the WMT. If the valve fails to re-position, a Plant Operator will have to be dispatched to re-position the valve using the local handswitch.

Answer: D Liquid Waste Discharge Valve, FV4077, will re-position to recirc the contents of the WMT. If the valve fails to re-position, a Plant Operator will have to be dispatched to re-position the valve using the local handswitch.

Exam Bank No.: 1651 **RO Outline Number:** 1-2-3

K/A Catalog Number: APE 059 AA1.01 **Tier:** 1 **Group/Category:** 2

RO Importance: 3.5 **10CFR Reference:** 55.41(b)(13)

Ability to operate and/or monitor the following as they apply to the Accidental Liquid Radwaste Release:
Radioactive-liquid monitor

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, Rad Monitoring System

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - FV-4077 repositions to recirc, not close. The valve cannot be operated from the Control Room.
- B: INCORRECT - The valve cannot be operated from the Control Room.
- C: INCORRECT - FV-4077 repositions to recirc, not close.
- D: CORRECT

Question Level: H **Question Difficulty** 3

Justification:

The applicant requires a knowledge of the automatic actions associated with the affected radiation monitor.

Exam Bank No.: 1654

Last used on an NRC exam:

The Reactor has been tripped from 100% power, and the Control Room has been evacuated due to smoke in the Control Room.

The Control Room actions (Steps 1-7 of POP04-ZO-0001, Control Room Evacuation), have been successfully completed, and personnel are arriving at their remote stations (no local actions have been taken).

Which of the following correctly describes expected current plant conditions?

- A. Forced circulation is in operation. RCS T-cold temperatures should be trending at or slightly higher than T_{sat} for SG pressures.
- B. Forced circulation is in operation. RCS T-avg temperatures should be trending at or slightly higher than T_{sat} for SG pressures.
- C. Natural circulation should be in progress. RCS T-cold temperatures should be trending at or slightly higher than T_{sat} for SG pressures.
- D. Natural circulation should be in progress. RCS T-avg temperatures should be trending at or slightly higher than T_{sat} for SG pressures.

Answer: C Natural circulation should be in progress. RCS T-cold temperatures should be trending at or slightly higher than T_{sat} for SG pressures.

Exam Bank No.: 1654 **RO Outline Number:** 1-2-4

K/A Catalog Number: APE 068 AA2.11 **Tier:** 1 **Group/Category:** 2

RO Importance: 4.3 **10CFR Reference:** 55.41(b)(14)

Ability to determine and interpret the following as they apply to the Control Room Evacuation: Indications of natural circulation

STP Lesson: LOT 102.59 **Objective Number:** N99903

Explain the causes of natural circulation.

Reference: POP04-ZO-0001, step 3

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - RCPs are tripped before leaving the Control Room
- B: INCORRECT - RCPs are tripped before leaving the Control Room
- C: CORRECT - RCPs are tripped prior to leaving the Control Room and with natural circ established, SG temperature should trend with Tcold.
- D: INCORRECT - Tavg will be higher than SG Tsat because That must be higher than Tcold for thermal driving force for natural circulation.

Question Level: H **Question Difficulty** 3

Justification:

Based on the initial conditions given, the applicant must determine the plant status and then using their knowledge of thermodynamics, determine the RCS/Sg temperature relationship based on that status.

Exam Bank No.: 1655

Last used on an NRC exam:

Given the following:

- Unit 1 is operating at full power
- The crew has entered POP04-RC-0001, High RCS Activity
- The Cation Demineralizers have been placed in service

Which one of the below correctly describes the PRIMARY reason for using the Cation Demineralizers?

- A. Reduce RCS lithium concentration to prevent a crud burst.
- B. Provide additional mechanical filtration to reduce RCS activity.
- C. Provide additional ion removal to reduce RCS activity.
- D. Allows the Mixed Bed Demineralizers to be removed from service to prevent resin depletion.

Answer: C Provide additional ion removal to reduce RCS activity.

Exam Bank No.: 1655 **RO Outline Number:** 1-2-5

K/A Catalog Number: APE 076 AK3.06 **Tier:** 1 **Group/Category:** 2

RO Importance: 3.2 **10CFR Reference:** 55.41(b)(5)

Knowledge of the reasons for the following responses as they apply to the High Reactor Coolant Activity:
Actions contained in EOP for high reactor coolant activity

STP Lesson: LOT 507.01 **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: POP04-RC-0001 basis page 3

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - reduction in lithium will lower pH and cause a crud burst.
- B: INCORRECT - Cation beds will provide some filtration, but the primary advantage is removal of ions.
- C: CORRECT - the cation bed is effective at removing ionic corrosion and fission products.
- D: INCORRECT - Mixed beds remain in service for additional ion exchange capability.

Question Level: F **Question Difficulty** 3

Justification:

The applicant requires a knowledge of Off-Normal procedure basis and demineralizer fundamentals.

Exam Bank No.: 1656

Last used on an NRC exam:

Given the following:

- Unit 1 is in Mode 5 with the RCS in a water-solid condition.
- RCS pressure is 50 psig and being maintained by low pressure letdown.
- 1A RHR pump is in service and is supplying low pressure letdown.
- 1A RHR pump discharge relief valve fails fully open.

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

- A. Containment Normal Sump level immediately begins rising.
- B. Letdown Pressure Control Valve, PCV-0135, attempts to maintain RCS pressure by closing.
- C. Charging Flow Control Valve, FCV-0205, attempts to maintain RCS pressure by opening.
- D. 1A RHR Pump trips on low indicated discharge flow.

Answer: B Letdown Pressure Control Valve, PCV-0135, attempts to maintain RCS pressure by closing.

Exam Bank No.: 1656 **RO Outline Number:** 2-1-2

K/A Catalog Number: 004 K6.27 **Tier:** 2 **Group/Category:** 1

RO Importance: 3.4 **10CFR Reference:** 55.41(b)(5)

Knowledge of the effect of a loss or malfunction on the following CVCS components: Purpose of RHR relief and isolation valves

STP Lesson: LOT 201.06 **Objective Number:** 48556

EXPLAIN the impact on RCS pressure, while using solid plant pressure control, if the following parameters are changed: 1. RCS temperature, 2. Letdown flow, 3. Charging flow, 4. Starting or stopping a RHR Pump, 5. Starting or stopping a RCP

Reference: LOT201.06, CVCS; LOT201.09, RHR

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT - The RHR relief valves discharge to the PRT, not the containment sumps.
- B: CORRECT - opening of the RHR relief will result in a loss of RCS inventory causing a reduction in RCS pressure. PCV-0135 provides automatic pressure control by closing to reduce letdown flow
- C: INCORRECT - the charging flow control valve, FCV-0205 will not automatically open to control pressure.
- D: INCORRECT - the flow sensing instrument is located upstream of the relief valve, thus will not see a flow reduction when the relief opens.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must determine the effect of the event to the given plant conditions to determine the response of the plant.

Exam Bank No.: 1657

Last used on an NRC exam:

Given the following:

- Unit 1 is at 100% reactor power.
- IA-FV-8565, Instrument Air to Containment, fails closed.

Assuming no operator action, which one of the below correctly describes the effect on Pressurizer level and the appropriate operator response?

Pressurizer level will....

- A. Rise; secure normal Letdown and place Excess Letdown in service.
- B. Rise; dispatch an operator to locally bypass the failed Letdown valve to restore letdown flow.
- C. Lower; take manual control of charging and restore Pressurizer level to program.
- D. Lower; take manual control of the failed Letdown pressure control valve and restore letdown flow to normal.

Answer: A Rise; secure normal Letdown and place Excess Letdown in service.

Exam Bank No.: 1657 **RO Outline Number:** 2-1-3

K/A Catalog Number: 004 A2.11 **Tier:** 2 **Group/Category:** 1

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

Ability to (a) predict the impacts of the following malfunctions or operations on the CVCS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of IAS

STP Lesson: LOT 201.06 **Objective Number:** 50297

Given a valve in the CVCS System, DESCRIBE the fail position of that valve and the reason.

Reference: LOT201.06, CVCS; POP04-IA-0001, Loss of Instrument Air

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: CORRECT - Normal CVCS letdown will isolate causing PZR level to go up (charging still in service). Procedure actions are to secure normal letdown and place excess letdown in service.
- B: INCORRECT - There is no local bypass for the failed letdown isolation valve (FV-0011)
- C: INCORRECT - Pressurizer level will rise, not lower
- D: INCORRECT - Pressurizer level will rise, not lower

Question Level: H **Question Difficulty** 3

Justification:

The applicant must determine the effect of loss of IA to containment on the PZR level control system and have a knowledge of the Off-Normal procedure requirements for this situation.

Exam Bank No.: 1658

Last used on an NRC exam:

Given the following:

- Unit 2 is in Mode 5
- RHR Train 'A' is providing RCS cooling

What would be the effect on RCS temperature if Essential Chiller 12A was started?

RCS Tavg will....

- A. rise significantly because the additional ECW flow required to cool Essential Chiller 12A will reduce flow available to cool the 'A' CCW Heat Exchanger.
- B. rise significantly because the additional ECW flow required to cool Essential Chiller 12A will reduce flow available to cool the 'A' RHR Heat Exchanger.
- C. remain essentially constant because the ECW system is already lined up such that if the train pump is in service, desired flow is being provided to all train ECW loads.
- D. remain essentially constant because RCS temperature is being automatically controlled by Train 'A' RHR Heat Exchanger outlet and bypass valves.

Answer: C remain essentially constant because the ECW system is already lined up such that if the train pump is in service, desired flow is being provided to all train ECW loads.

Exam Bank No.: 1658 **RO Outline Number:** 2-1-4

K/A Catalog Number: 005 K1.08 **Tier:** 2 **Group/Category:** 1

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

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

STP Lesson: LOT 201.13 **Objective Number:** 91199

DISCUSS how the ECW system interfaces with the following plant systems: A. Component Cooling Water, B. EAB HVAC Chillers, C. Diesel Generator

Reference: LOT201.13, ECW; LOT201.09, RHR

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT - There will be no additional flow through the chiller because the system is flow balanced with manual valves.
- B: INCORRECT - ECW does not cool the RHR heat exchanger
- C: CORRECT - When an ECW pump is running, each component that is cooled receives full cooling water flow. There are no regulating valves in the system.
- D: INCORRECT - RHR heat exchanger outlet and bypass valves do not automatically control temperature at any location (they work together to control total RHR flow)

Question Level: H **Question Difficulty** 3

Justification:

Using a knowledge of the ECW system and its operation, the applicant must determine the effect of starting the DG on the ECW system and apply that effect to the RHR train in service.

Exam Bank No.: 1660

Last used on an NRC exam:

Given the following:

- A steam break occurred on SG 1C 2 hrs. ago
- SG 1C has been isolated
- RCP's are OFF
- RCS pressure = 1400 psig
- RCS temperature = 240 °F
- The crew is implementing 0POP05-EO-FRP1, Response to Imminent Pressurized Thermal Shock Condition.

Which one of the following correctly describes the potential cause for Pressurized Thermal Shock (PTS) with these plant conditions AND an action of 0POP05-EO-FRP1 that will help alleviate this potential?

- A. ECCS injection flow can cause significant cooling of the Reactor Vessel inner wall; secure ECCS pumps to stop injection flow if termination criteria are met.
- B. RCS heatup after isolation of SG 1C is re-pressurizing the RCS; continue RCS cooldown to limit the RCS pressure rise.
- C. ECCS injection flow can cause significant cooling of the Reactor Vessel T-cold nozzle welds; secure ECCS pumps to stop injection flow if termination criteria are met.
- D. RCS heatup after isolation of SG 1C is re-pressurizing the RCS; feed SG 1C at no more than 100 gpm of AFW to limit the RCS temperature rise.

Answer: A ECCS injection flow can cause significant cooling of the Reactor Vessel inner wall; secure ECCS pumps to stop injection flow if termination criteria are met.

Exam Bank No.: 1660 **RO Outline Number:** 2-1-6

K/A Catalog Number: 006 K5.04 **Tier:** 2 **Group/Category:** 1

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

Knowledge of the operational implications of the following concepts as they apply to the ECCS: Brittle fracture, including causes and preventative actions

STP Lesson: LOT 504.38 **Objective Number:** 84568

STATE/IDENTIFY the basis for monitoring each of the conditions listed in the Integrity Safety Function Status Tree.

Reference: POP05-EO-FRP1, Response to Imminent Pressurized Thermal Shock Condition

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: CORRECT - without RCPs in service, the ECCS injection water is postulated to run down the inner wall of the vessel causing significant cooling in this critical area. Low temperature in conjunction with high system pressure can lead to PTS
- B: INCORRECT - RCS re-pressurization could occur following SG dryout, but continuing a cooldown is NOT a mitigating action of POP05-EO-FRP1.
- C: INCORRECT - The area of concern for PTS is not the RV nozzles, but the RV wall area.
- D: INCORRECT - RCS re-pressurization could occur following SG dryout, but admitting AFW to a faulted SG is NOT a mitigating action of POP05-EO-FRP1.

Question Level: F **Question Difficulty** 3

Justification:

The applicant requires a knowledge of metallurgy (causes of brittle failure) and the procedural requirements for a response to PTS.

Exam Bank No.: 1661

Last used on an NRC exam:

Given the following conditions:

- Unit 1 is operating at full power
- PRT level is rising due to Reactor Makeup Water inleakage
- The PRT PRESS HI alarm annunciates
- The operator verifies the alarm is valid

If PRT pressure continues to rise, which one of the below correctly describes the NEXT system action that will occur and the prescribed action for the operator to take that will prevent this occurrence from happening?

- A. The PRT relief valve will lift and discharge to the RCB Normal Sump. The operator should lower PRT pressure by venting the PRT.
- B. The PRT relief valve will lift and discharge to the RCB Normal Sump. The operator should lower PRT pressure by cooling the PRT.
- C. The PRT Rupture Disc will relieve to the RCB atmosphere. The operator should lower PRT pressure by cooling the PRT.
- D. The PRT Rupture Disc will relieve to the RCB atmosphere. The operator should lower PRT pressure by venting the PRT.

Answer: D The PRT Rupture Disc will relieve to the RCB atmosphere. The operator should lower PRT pressure by venting the PRT.

Exam Bank No.: 1661 **RO Outline Number:** 2-1-7

K/A Catalog Number: 007 A2.05 **Tier:** 2 **Group/Category:** 1

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

Ability to (a) predict the impacts of the following malfunctions or operations on the PRTS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Exceeding PRT high-pressure limits

STP Lesson: LOT 201.04 **Objective Number:** 91014

DESCRIBE the overpressure protection scheme for the PRT.

Reference: POP09-AN-04M7, window D1

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT - The PRT does not have a relief valve.
- B: INCORRECT - The PRT does not have a relief valve.
- C: INCORRECT - Procedures require the operator to vent the PRT.
- D: CORRECT

Question Level: F **Question Difficulty** 3

Justification:

The applicant requires an knowledge of PRT design and procedural requirements for a high pressure condition.

Exam Bank No.: 1662

Last used on an NRC exam:

The Pressurizer Relief Tank (PRT) is being purged to reduce oxygen levels in accordance with POP02-RC-0001, Pressurizer Relief Tank and Reactor Coolant Drain Tank System Operations. The operator opens RMWS to PRT “SPRAY ISOL FV-3650” to begin raising PRT level.

When PRT level reaches 95%, the operator should...

- A. Ensure FV-3650 closes automatically.
- B. Manually close FV-3650.
- C. Manually stop the in-service Reactor Makeup Water Pump.
- D. Ensure RMW to PRT and RCP standpipe valve “OCIV FV-3651” closes automatically.

Answer: B Manually close FV-3650.

Exam Bank No.: 1662 **RO Outline Number:** 2-1-8

K/A Catalog Number: 007 A4.01 **Tier:** 2 **Group/Category:** 1

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

Ability to manually operate and/or monitor in the control room: PRT spray supply valve

STP Lesson: LOT 201.04 **Objective Number:** 4026

STATE the procedural requirements of the PRT System operating procedure.

Reference: POP02-RC-0001, R11, section 6.0

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT - The valve does not auto close.
- B: CORRECT
- C: INCORRECT - Although this will stop flow to the PRT, procedure requires closing FV-3650.
- D: INCORRECT - This valve will not auto close on high PRT level.

Question Level: F **Question Difficulty** 3

Justification:

The applicant requires a knowledge of system operations and auto actions.

Exam Bank No.: 1664**Last used on an NRC exam:**

Given the following:

- Unit 1 was operating at 100% power when a Safety Injection actuation occurred
- During the performance of POP05-EO-EO00, Reactor Trip or Safety Injection, Addendum 5, the secondary operator receives a call from the plant operator stating that 'B' CCW pump motor is very hot to the touch.
- The Unit Supervisor directs the Secondary Operator to secure 'B' CCW pump

Under these plant conditions, which one of the following lists ALL the methods which could be used to secure 'B' CCW pump?

- A. - Placing the pump handswitch to STOP and then back to AUTO
 - Placing the ECW/CCW Mode Select Switch to OFF
 - Placing the pump handswitch to PTL
- B. - Placing the pump handswitch to STOP and then back to AUTO
 - Placing the pump handswitch to PTL
- C. - Placing the ECW/CCW Mode Select Switch to OFF
 - Placing the pump handswitch to PTL
- D. - Placing the pump handswitch to PTL

Answer: D Placing the pump handswitch to PTL

Exam Bank No.: 1664 **RO Outline Number:** 2-1-10

K/A Catalog Number: 008 A4.08 **Tier:** 2 **Group/Category:** 1

RO Importance: 3.1 **10CFR Reference:** 55.41(b)(7)

Ability to manually operate and/or monitor in the control room: CCW pump control switch

STP Lesson: LOT 201.12 **Objective Number:** 80198

DESCRIBE the Instrumentation and Controls available to monitor and operate the CCW System.

Reference: LOT201.12, CCW

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - With a sequencer start signal present, the pump will restart after the switch is returned to AUTO and the mode select switch will not stop the pump under any condition.
- B: INCORRECT - With a sequencer start signal present, the pump will restart after the switch is returned to AUTO
- C: INCORRECT - The mode select switch will not stop the pump under any condition.
- D: CORRECT - Only placing the handswitch in PTL will secure the pump under these conditions.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must determine that under the given conditions, the sequencers will not have been reset yet and because of that, the pump will restart when taken back top auto. The applicant must also have knowledge that the mode select switch does not "stop" any pumps when taken to off.

Exam Bank No.: 1665

Last used on an NRC exam:

Given the following:

- Reactor power is 100%
- Control rods are in AUTO
- Channel II of Pressurizer Pressure is being calibrated and associated bistables have been TRIPPED
- Channel IV T-hot output from QDPS fails high

Which of the following describes the effect of these conditions on the Rod Control System?

- A. Control rods drive in due to auctioneered Tave failed high.
- B. Control rods drive in due to auctioneered ΔT failed high.
- C. Reactor trip breakers open due to two channels of OP ΔT bistables tripped.
- D. Reactor trip breakers open due to two channels of OT ΔT bistables tripped.

Answer: D Reactor trip breakers open due to two channels of OT ΔT bistables tripped.

Exam Bank No.: 1665 **RO Outline Number:** 2-1-12

K/A Catalog Number: 012 K3.01 **Tier:** 2 **Group/Category:** 1

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

Knowledge of the effect that a loss or malfunction of the RPS will have on the following: CRDS

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, Temperature Monitoring

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - An signal will be generated to move rods in, but will not occur due to the reactor trip.
- B: INCORRECT - Failed delta-T will not cause rods to move.
- C: INCORRECT - Only one channel of OPΔT will be tripped (due to the failed T--hot)
- D: CORRECT - Channel II OTΔT will be tripped due to the PZR Pressure channel out of service and the Channel IV OTΔT will trip when thT-hot fails.

Question Level: H **Question Difficulty** 3

Justification:

From the given conditions, the applicant must determine the effect on the reactor protection system and the rod control system and with that knowledge determine the effect on the plant.

Exam Bank No.: 1674

Last used on an NRC exam:

A Loss of Offsite Power (LOOP) has occurred on the unit.

Which of the following describes the effect on containment pressure and the action to be taken by the operator?

- A. Containment pressure will lower because all 3 trains of RCFCs will be running. The operator should secure 1 train of RCFCs.
- B. Containment pressure will lower because cooling has swapped from Component Cooling Water to RCB Chilled Water. The operator should line up Component Cooling Water to the RCFCs.
- C. Containment pressure will rise because there are no RCFCs running. The operator should start at least 2 trains of RCFCs.
- D. Containment pressure will rise because there is no cooling water flow to the RCFCs. The operator should line up cooling to the RCFCs.

Answer: D Containment pressure will rise because there is no cooling water flow to the RCFCs. The operator should line up cooling to the RCFCs.

Exam Bank No.: 1674 **RO Outline Number:** 2-1-14

K/A Catalog Number: 022 A2.02 **Tier:** 2 **Group/Category:** 1

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

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CCS controls including: Containment pressure

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: LOT201.12 PowerPoint slide 39

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - Pressure will rise. It is true all RCFCs will start, but there will be no cooling flow.
- B: INCORRECT - Pressure will rise. There will be no cooling lined up to the RCFCs.
- C: INCORRECT - Although pressure would rise if cooling swaps to CCW since CCW temperature is higher than chilled water temperature, cooling only swaps to CCW on an SI, not LOOP..
- D: CORRECT - A LOOP will isolate chilled water flow to the RCFCs (which is normally lined up). Although all RCFCs will start, there is no cooling so RCB pressure will rise and the operator should line up cooling flow.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must determine the effect of the LOOP on containment cooling (RCFCs and cooling water) and determine what this effect will have on RCB pressure. A knowledge of post LOOP procedure requirements is also needed.

Exam Bank No.: 1675

Last used on an NRC exam:

Given the following:

- Unit 1 is in Mode 3
- Steam Dumps are in Steam Pressure Mode controlling at 1185 psig.
- All RCP's are running
- All Steam Dump Valves fail open causing the RCS to cool at >100 °F/hr.

Which one of the following correctly describes the MINIMUM operator action/s that would ensure all Steam Dumps are closed and the reason cooldown limits are established?

- A. Place EITHER Steam Dump Interlock Selector Switch to 'OFF/RESET'. Excessive cooldown can result in non-ductile failure of the Reactor Vessel.
- B. Place BOTH Steam Dump Interlock Selector Switches to 'OFF/RESET'. Excessive cooldown can result in ductile failure of the Reactor Vessel.
- C. Place EITHER Steam Dump Interlock Selector Switch to 'BYPASS INTERLOCK'. Excessive cooldown can result in non-ductile failure of the Reactor Vessel.
- D. Place BOTH Steam Dump Interlock Selector Switches to 'BYPASS INTERLOCK'. Excessive cooldown can result in ductile failure of the Reactor Vessel.

Answer: A Place EITHER Steam Dump Interlock Selector Switch to 'OFF/RESET'. Excessive cooldown can result in non-ductile failure of the Reactor Vessel.

Exam Bank No.: 1675 **RO Outline Number:** 2-1-16

K/A Catalog Number: 039 K5.05 **Tier:** 2 **Group/Category:** 1

RO Importance: 2.7 **10CFR Reference:** 55.41(b)(2)

Knowledge of the operational implications of the following concepts as they apply to the MRSS: Bases for RCS cooldown limits

STP Lesson: LOT 102.61 **Objective Number:** N99926

Describe and differentiate between the stresses induced in a reactor vessel wall during heatup and cooldown.

Reference: LOT 202.09, Steam Dumps, and LOT102.61, Brittle Fracture and Vessel Thermal Stress

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: CORRECT - the Steam Dump Interlock Selector Switches are redundant control devices such that either one being positioned to 'Off/Reset' will remove the control signal from all steam dumps, closing them. Cooldown limits are based on non-ductile failure (brittle) failure.
- B: INCORRECT: Either Selector Sw. is sufficient to close the Steam Dumps, both are not needed. Also, cooldown limits are based on non-ductile failure (brittle) failure, not ductile failure.
- C: INCORRECT - The 'Bypass Interlock' position of the Steam Dump Selector Switches will not close the steam dumps.
- D: INCORRECT -The 'Bypass Interlock' position of the Steam Dump Selector Switches will not close the steam dumps. Also, cooldown limits are based on non-ductile failure (brittle) failure, not ductile failure.

Question Level: F **Question Difficulty** 3

Justification:

A knowledge of Steam Dump Controls and Tech Spec bases is required.

Exam Bank No.: 1676

Last used on an NRC exam:

Preparations are being made to synchronize the Main Generator to the grid in accordance with POP03-ZG-0005, Plant Startup to 100%.

Which of the following describes the electrical bus lineup to be implemented at this time?

- A. Ensure all 13.8 kv Auxiliary bus to Standby bus cross-tie breakers are open.
- B. Ensure all 13.8 kv Auxiliary bus to Standby bus cross-tie breakers are closed.
- C. Ensure all 13.8 kv Standby busses are transferred to the Auxiliary Transformer.
- D. Ensure all 13.8 kv Auxiliary busses are transferred to a Standby Transformer.

Answer: D Ensure all 13.8 kv Auxiliary busses are transferred to a Standby Transformer.

Exam Bank No.: 1676 **RO Outline Number:** 2-1-19

K/A Catalog Number: 062 G2.1.20 **Tier:** 2 **Group/Category:** 1

RO Importance: 4.3 **10CFR Reference:** 55.41(b)(10)

A.C. Electrical Distribution System: Ability to execute procedure steps.

STP Lesson: LOT 506.01 **Objective Number:** 92160

Given a plant condition, STATE whether it is in violation of a precaution or step as allowed by the referenced procedure and DESCRIBE and/or INTERPRET the requirements and/or limits of the precaution or step.

Reference: POP03-ZG-0005, R52, step 6.73

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT - In order to attain the required lineup, these breakers must be closed.
- B: INCORRECT - Just closing these breakers does not satisfy the requirement since the in service transformer could be the Auxiliary Transformer.
- C: INCORRECT - The requirement is to have the Aux busses on the Standby Transformer.
- D: CORRECT

Question Level: F **Question Difficulty** 3

Justification:

A knowledge of the procedural requirements for synchronizing the main generator is required.

Exam Bank No.: 1677

Last used on an NRC exam:

Given the following:

- The E1C11 battery breaker is open to allow maintenance to jumper out a cell.
- An overcurrent lockout causes 4 KV ESF Bus E1C to de-energize.

Based on these conditions, Class 1E 120 VAC Distribution Panel DP-1204 will remain:

- A. energized through its associated Inverter/Rectifier.
- B. energized through its associated Voltage Regulating Transformer.
- C. de-energized until the E1C11 battery breaker is closed locally.
- D. de-energized until ESF Diesel Generator #13 output breaker automatically closes.

Answer: C remain de-energized until the E1C11 battery breaker is closed locally.

Exam Bank No.: 1677 **RO Outline Number:** 2-1-20

K/A Catalog Number: 063 K1.02 **Tier:** 2 **Group/Category:** 1

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

Knowledge of the physical connections and/or cause-effect relationships between the D.C. Electrical System and the following systems: AC electrical system

STP Lesson: LOT 201.38 **Objective Number:** 91528

DESCRIBE the Class 1E Vital 120 VAC System showing normal breaker alignment and identifying its interconnections with other electrical systems by providing a sketch.

Reference: LOT201.38 PowerPoint slides 58 and 64

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - With the given conditions, both the AC and DC supplies to the inverter/rectifier are de-energized.
- B: INCORRECT - With the given conditions, the supply to the voltage regulating transformer is de-energized.
- C: CORRECT - Closing the battery breaker will energize the DP panel through its inverter.
- D: INCORRECT - With the given conditions, the diesel output breaker will not close.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must apply the given conditions to the Class 1E AC and DC systems to determine the effect overall effect. A detailed knowledge of component power supplies is then needed to determine the the correct response.

Exam Bank No.: 1678

Last used on an NRC exam:

Because of mechanical problems, the fuel oil transfer pumps located at the Auxiliary Fuel Oil Storage Tank (AFOST) are unavailable.

Due to this condition, which one of the following describes the design capability associated with the ESF Diesel Generators?

Under these conditions, the ESF Diesels are designed to operate at full load...

- A. indefinitely using gravity feed.
- B. up to 7 days.
- C. up to 10 days.
- D. up to 14 days.

Answer: B up to 7 days under this condition.

Exam Bank No.: 1678 **RO Outline Number:** 2-1-21

K/A Catalog Number: 064 K6.08 **Tier:** 2 **Group/Category:** 1

RO Importance: 3.2 **10CFR Reference:** 55.41(b)(4)

Knowledge of the effect of a loss or malfunction of the following will have on the ED/G System: Fuel oil storage tanks

STP Lesson: LOT 201.39 **Objective Number:** 44273

DESCRIBE the flowpath of the Emergency Diesel Generator systems, sub systems, and interconnections with other systems.

Reference: LOT201.39 lesson handout page 31

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT - The DG FOSTs are located at a higher elevation than the AFOST, so gravity feed will not work.
- B: CORRECT
- C: INCORRECT - The DG FOSTs have a 7 day design capacity.
- D: INCORRECT - The DG FOSTs have a 7 day design capacity.

Question Level: F **Question Difficulty** 3

Justification:

A knowledge of the fuel oil transfer system and DG design is required.

Exam Bank No.: 1679

Last used on an NRC exam:

Given the following:

- The Control Room has been evacuated due to heavy smoke.
- Equipment control has been established at each remote shutdown station (Addendums 2, 3, 4, and 5 of POP04-ZO-0001, Control Room Evacuation, have been completed).

Under these conditions, which of the following correctly describes how an Essential Cooling Water pump is placed into service?

- A. The pump is started by a control switch located on a Transfer Panel in the 4KV ESF Switchgear room and the discharge valve will automatically open when the pump starts.
- B. The pump is started by a control switch located on a Transfer Panel in the 4KV ESF Switchgear room and the discharge valve is opened by a control switch located on the MCC at the ECW Intake Structure.
- C. The pump is started by a control switch located on the MCC at the ECW Intake Structure and the discharge valve will automatically open when the pump starts.
- D. The pump is started and the discharge valve is opened by control switches located on the MCC at the ECW Intake Structure.

Answer: B The pump is started by a control switch located on a Transfer Panel in the 4KV ESF Switchgear room and the discharge valve is opened by a control switch located on the MCC at the ECW Intake Structure.

Exam Bank No.: 1679 **RO Outline Number:** 2-1-24

K/A Catalog Number: 076 G2.1.30 **Tier:** 2 **Group/Category:** 1

RO Importance: 3.9 **10CFR Reference:** 55.41(b)(4)

Service Water System (SWS): Ability to locate and operate components, including local controls.

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: POP04-ZO-0001, R29, step 21

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT - Although the valve normally automatically opens upon pump start, after local control is established the valve must be manually opened.
- B: CORRECT
- C: INCORRECT - All local controls for ECW are located on the MCC except for the pump itself which is in the switchgear room. After local control is established the valve must be manually opened.
- D: INCORRECT - All local controls for ECW are located on the MCC except for the pump itself which is in the switchgear room.

Question Level: H **Question Difficulty** 3

Justification:

The applicant requires a knowledge of the procedure to determine what has been completed based on the given conditions. A knowledge of system design is also required to determine how the system must be operated based on the initial conditions.

Exam Bank No.: 1680

Last used on an NRC exam:

Which of the following describes Instrument Air System operation during normal plant conditions?

- A. Compressor 14 is running, cycling between 'Load' and 'Idle' modes to maintain system pressure between 117 and 127 psig. Compressors 11, 12, and 13 are in REMOTE Control from the Master Controller (MC) Computer and will start and load to maintain system pressure greater than 115 psig.
- B. Compressor 14 is running, cycling between 'Load' and 'Idle' modes to maintain system pressure between 122 and 132 psig. Compressors #11, 12, and 13 are off-line in LOCAL Control and will start and load to maintain system pressure greater than 120 psig.
- C. Compressors 11, 12 and 13 are in REMOTE Control from the Master Controller (MC) Computer and the first compressor will cycle between "Load' and 'Idle' modes to maintain system pressure between 117 and 127 psig. Compressor 14 normally does not run.
- D. Compressors 11, 12 and 13 are off-line in LOCAL Control and they will cycle between "Load' and 'Idle' modes to maintain system pressure between 122 and 132 psig. Compressor 14 normally does not run.

Answer: C Compressors 11, 12 and 13 are in REMOTE Control from the Master Controller (MC) Computer and the first compressor will cycle between "Load' and 'Idle' modes to maintain system pressure between 117 and 127 psig. Compressor 14 normally does not run.

Exam Bank No.: 1680 **RO Outline Number:** 2-1-26

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:** 80556

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

Reference: POP02-IA-0003, R9, steps 4.10-4.13

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT - Compressor 14 normally does not run.
- B: INCORRECT - Compressor 14 normally does not run.
- C: CORRECT
- D: INCORRECT - Compressors are normally run in the Remote Mode.

Question Level: F **Question Difficulty** 3

Justification:

Requires a knowledge of the IA compressor control scheme and normal lineup.

Exam Bank No.: 1681

Last used on an NRC exam:

Given the following:

- The unit is shutdown with core reload in progress.
- A Plant Operator contacts the Control Room to report that both doors in the Auxiliary Airlock (AAL) are open.

In accordance with Technical Specifications, which of the following is true for this condition?

- A. Containment integrity exists, core reload IS permitted.
- B. Containment integrity exists, core reload is NOT permitted.
- C. Containment integrity does NOT exist, core reload IS permitted.
- D. Containment integrity does NOT exist, core reload is NOT permitted.

Answer: D Containment integrity does NOT exist, core reload is NOT permitted.

Exam Bank No.: 1681 **RO Outline Number:** 2-1-28

K/A Catalog Number: 103 K3.03 **Tier:** 2 **Group/Category:** 1

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

Knowledge of the effect that a loss or malfunction of the Containment System will have on the following:
Loss of containment integrity under refueling operations

STP Lesson: LOT 503.01 **Objective Number:** 80056

Given a system scenario, DETERMINE the applicable Technical Specification and/or the Technical Requirements Manual (TRM) for the system and APPLY the specification(s)

Reference: TS 3.9.4

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT - Integrity does not exist.
- B: INCORRECT - Integrity does not exist
- C: INCORRECT - Core alterations are not allowed without containment integrity.
- D: CORRECT - TS requires at least one door closed for containment integrity requirements. Without containment integrity, core alterations cannot proceed.

Question Level: H **Question Difficulty** 3

Justification:

From the given conditions, the applicant must determine that the Tech Spec for containment penetrations is applicable. The applicant must also have a knowledge of the specification itself to determine the appropriate action.

Exam Bank No.: 1682

Last used on an NRC exam:

Given the following:

- A power reduction from 100% to 75% has just been completed in accordance with POP03-ZG-0008, Power Operations, and power has been stabilized.
- Two hours later, the Reactor Operator notices a trend in RCS temperature.

Which of the following describes the trend seen by the operator and the action to be taken?

- A. RCS Tavg is trending down due to negative reactivity added by Xenon. The operator should ensure rods are in automatic and drive out to control Tavg within 3° of Tref.
- B. RCS Tavg is trending down due to negative reactivity added by Xenon. The operator should dilute the RCS to control Tavg within $\sim 0.5^\circ$ of Tref.
- C. RCS Tavg is trending up due to positive reactivity added by Xenon. The operator should ensure rods are in automatic and drive in to control Tavg within 3° of Tref.
- D. RCS Tavg is trending up due to positive reactivity added by Xenon. The operator should borate the RCS to control Tavg within $\sim 0.5^\circ$ of Tref.

Answer: B RCS Tavg is trending down due to negative reactivity added by Xenon. The operator should dilute the RCS to control Tavg within $\sim 0.5^\circ$ of Tref.

Exam Bank No.: 1682 **RO Outline Number:** 2-2-1

K/A Catalog Number: 001 A2.06 **Tier:** 2 **Group/Category:** 2

RO Importance: 3.4 **10CFR Reference:** 55.41(b)(1)

Ability to (a) predict the impacts of the following malfunctions or operations on the CRDS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Effects of transient xenon on reactivity

STP Lesson: LOT 506.01 **Objective Number:** 92160

Given a plant condition, STATE whether it is in violation of a precaution or step as allowed by the referenced procedure and DESCRIBE and/or INTERPRET the requirements and/or limits of the precaution or step.

Reference: POP03-ZG-0008, R44, step 5.2

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - Procedures require Tavg to be maintained within ~.5 of Tref if possible, and always within 1.5 (which the rods cannot do).
- B: CORRECT - Xe will build in initially causing Tavg to lower. The operator should dilute to maintain Tavg within .5 of Tref.
- C: INCORRECT - Tavg will trend down. Tavg should be maintained within .5 of Tref.
- D: INCORRECT - Tavg will trend down.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must determine the effect of Xe based on power history and have a knowledge of the procedural requirements for steady state operation.

Exam Bank No.: 1683**Last used on an NRC exam:**

Two reactors have tripped with the following indications:

Reactor #1: RVWL Plenum level - 100%
 RCS pressure - 1425 psig
 Core Exit Thermocouples (CET) - 585°F

Reactor #2: RVWL Plenum level - 100%
 RCS pressure - 1585 psig
 Core Exit Thermocouples (CET) - 605°F

Decay heat is being added to each reactor that is in excess of the heat being removed.

Which of the following indicates the response of the CETs for each reactor to the decay heat addition?

	Reactor #1 CETs	Reactor #2 CETs
A.	Increase	Increase
B.	Remain the same	Remain the same
C.	Increase	Remain the same
D.	Remain the same	Increase

Answer: C Increase, Remain the same

Exam Bank No.: 1683 **RO Outline Number:** 2-2-4

K/A Catalog Number: 017 K5.02 **Tier:** 2 **Group/Category:** 2

RO Importance: 3.7 **10CFR Reference:** 55.41(b)(14)

Knowledge of the operational implications of the following concepts as they apply to the ITM System:
Saturation and subcooling of water

STP Lesson: LOT 502.01 **Objective Number:** 50212

DETERMINE the core coolant thermodynamic states, using saturation curves.

Reference: LOT502.01, Handout 2, page 17

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - Reactor #2 is saturated so its temperature will remain the same as liquid is boiled.
- B: INCORRECT - Reactor #1 is subcooled, so its temperature will rise due to the addition of sensible heat.
- C: CORRECT - Reactor #1 is subcooled so its temperature will rise, reactor #2 is saturated so its temperature will remain the same.
- D: INCORRECT - These are opposite, #1 will rise and #2 will remain the same.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must determine the thermodynamic state of each reactor and using knowledge of the effect of heat addition in each state determine the correct response.

Exam Bank No.: 1686

Last used on an NRC exam:

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

- A. Class 1E 4KV
- B. Class 1E 480V
- C. Non-Class 1E 4KV
- D. Non-Class 1E 480V

Answer: B Class 1E 480V

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Exam Bank No.: 1686 **RO Outline Number:** 2-2-5

K/A Catalog Number: 028 K2.01 **Tier:** 2 **Group/Category:** 2

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

Knowledge of 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 #20

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

A: INCORRECT - It is class 1E 480V

B: CORRECT

C: INCORRECT - It is class 1E 480V

D: INCORRECT - It is class 1E 480V

Question Level: F **Question Difficulty** 2

Justification:

Requires a basis knowledge of system design.

Exam Bank No.: 1687

Last used on an NRC exam:

Given the following:

- The unit is at 100% power.
- SFP WATER LEVEL HI/LO annunciator is received.

In response to this alarm, the Control Room operator should:

- A. Dispatch a Plant Operator to the SFP to locally monitor level. If level is greater than 67 feet, then the actions of POP04-FC-0001, Loss of Spent Fuel Pool Level or Cooling, should be performed due to the concern of boron dilution in the SFP.
- B. Dispatch a Plant Operator to the SFP to locally monitor level. If level is less than 66 feet, then immediately begin filling the SFP with Reactor Makeup Water (RMW) using the hose connection on the 68' elevation of the FHB.
- C. Check SFP level indication located on CP-022 in the Control Room. If level is greater than 67 feet, then the actions of POP04-FC-0001, Loss of Spent Fuel Pool Level or Cooling, should be performed due to the concern of boron dilution in the SFP.
- D. Check SFP level indication located on CP-022 in the Control Room. If level is less than 66 feet, then immediately begin filling the SFP with Reactor Makeup Water (RMW) using the hose connection on the 68' elevation of the FHB.

Answer: A Dispatch a Plant Operator to the SFP to locally monitor level. If level is greater than 67 feet, then the actions of POP04-FC-0001, Loss of Spent Fuel Pool Level or Cooling, should be performed due to the concern of boron dilution in the SFP.

Exam Bank No.: 1687 **RO Outline Number:** 2-2-6

K/A Catalog Number: 033 G2.4.10 **Tier:** 2 **Group/Category:** 2

RO Importance: 3.0 **10CFR Reference:** 55.41(b)(10)

Spent Fuel Pool Cooling System (SFPCS): Knowledge of annunciator response procedures.

STP Lesson: LOT 201.42 **Objective Number:** 81452

DESCRIBE the instrumentation and controls available to monitor and operate Spent Fuel Pool Cooling.

Reference: POP09-An-22M2, R18, page 46; POP04-FC-0001, R20, Purpose

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

- A: CORRECT - The annunciator response directs a local check of level. If it is greater than 67', then actions of the POP04 are performed.
- B: INCORRECT - The POP04 is entered if level is less than 66', but demin water makeup is only used if normal means are unavailable.
- C: INCORRECT - There is no indication of SFP level in the control room.
- D: INCORRECT - There is no indication of SFP level in the control room.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must have a knowledge of the instrumentation available for SFP monitoring. The applicant must also have a knowledge of the response to off-normal level indications for the SFP.

Exam Bank No.: 1688

Last used on an NRC exam:

Which one of the following actions should be communicated to plant personnel via the Public Address (PA) system in accordance with the Conduct of Operations Manual?

- A. Adjusting the setpoint on the steam dump controller.
- B. Starting a condensate pump.
- C. Removing the BTRS demineralizers from service (bypassing).
- D. Dilution of the RCS to maintain 100% power.

Answer: B Starting a condensate pump.

Exam Bank No.: 1688 **RO Outline Number:** 3-1-3

K/A Catalog Number: G2.1.14 **Tier:** 3 **Group/Category:** 1

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

Conduct of Operations: Knowledge of system status criteria which require the notification of plant personnel.

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: Conduct of Operations, Chapter 3, step 3.2.3.1

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: INCORRECT - Does not meet the threshold identified in the Conduct of Operation Manual.
- B: CORRECT
- C: INCORRECT - Does not meet the threshold identified in the Conduct of Operation Manual.
- D: INCORRECT - Does not meet the threshold identified in the Conduct of Operation Manual.

Question Level: F **Question Difficulty** 3

Justification:

The applicant requires a knowledge of the requirements of the Conduct of Operations manual for PA system usage (which is only done by control room personnel).

Exam Bank No.: 1691

Last used on an NRC exam:

Which of the following are controls/indications found ONLY in the Unit 1 control room?

1. Wind Speed and direction on CP-022
 2. Main reservoir level indication on CP-009
 3. ESF DG FOST level indication on CP-003
 4. SEISMIC EVENT annunciator on CP-009
 5. AFOST Fuel Oil Transfer Pump control switches on CP-018
- A. 3, 4, 5
- B. 1, 2, 4
- C. 1, 2, 5
- D. 1, 3, 4

Answer: B 1, 2, 4

Exam Bank No.: 1691 **RO Outline Number:** 3-2-1

K/A Catalog Number: G2.2.4 **Tier:** 3 **Group/Category:** 2

RO Importance: 2.8 **10CFR Reference:** 55.41(b)(4)

Equipment Control: (multi-unit) Ability to explain the variations in control board layouts, systems, instrumentation and procedural actions between units at a facility.

STP Lesson: LOT 203.21 **Objective Number:** N0060

DESCRIBE the control room design and instrument location differences between Unit 1 and Unit 2.

Reference: LOT203.21 student handout

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - Both units have ESF DG FOST level indication, neither unit has AFOST transfer pump control switches.
- B: CORRECT
- C: INCORRECT - Neither unit has AFOST transfer pump control switches.
- D: INCORRECT - Both units have ESF DG FOST level indication.

Question Level: F **Question Difficulty** 3

Justification:

The applicant requires a knowledge of the differences between the unit 1 and 2 control rooms.

Exam Bank No.: 1693

Last used on an NRC exam:

Given the following:

- A Large Break LOCA has occurred on Unit 1
- All equipment operated as designed.

If a Containment Spray Pump trips, what would be the result?

- A. pH in the Containment Emergency Sumps will be more acidic.
- B. RCB pressure will exceed design pressure.
- C. RCFC differential temperatures will rise.
- D. Containment Hydrogen concentration will rise.

Answer: C RCFC differential temperatures will rise.

Exam Bank No.: 1693 **RO Outline Number:** 2-1-15

K/A Catalog Number: 026 K3.01 **Tier:** 2 **Group/Category:** 1

RO Importance: 3.9 **10CFR Reference:** 55.41(b)(8)

Knowledge of the effect that a loss or malfunction of the CSS will have on the following: CCS

STP Lesson: LOT 201.11 **Objective Number:** 5001

STATE the function of the Containment Spray System, major components, controls, and/or instrumentation.

Reference: Principles of Heat Transfer

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT - the Containment Spray System no longer controls pH in the Containment during accident conditions
- B: INCORRECT - the minimum Containment cooling required is 2 Containment Spray Pumps and 3 RCFC's
- C: CORRECT - With the loss of a Containment Spray Pump, the heat removal in Containment has been reduced resulting in higher Containment pressure and temperatures. This will raise the temperature differential across the RCFC's as they work to transfer more energy.
- D: INCORRECT - Containment Spray does not control Containment Hydrogen

Question Level: F **Question Difficulty** 3

Justification:

The applicant must have a knowledge of how the RCFCs and containment spray systems function together in a post-LOCA environment.

Exam Bank No.: 1695**Last used on an NRC exam:**

RT-8039, Failed Fuel Monitor, has gone into HIGH Alarm. Local surveys indicate that a 20 foot section of 3-inch letdown piping is emitting a radiation field of 300 mr/hr at 1-foot.

An individual with a to-date annual exposure (TEDE) of 4500 mr must perform a job in the area.

Which one of the following indicates a distance from the pipe and job duration that will cause the individual to exceed the 10CFR20 Total Effective Dose Equivalent (TEDE) limit?

	Distance - feet	Time - hours
A.	2	3
B.	3	4
C.	4	7
D.	5	8

Answer: C 4, 7

Exam Bank No.: 1695 **RO Outline Number:** 2-1-23

K/A Catalog Number: 073 K5.03 **Tier:** 2 **Group/Category:** 1

RO Importance: 2.9 **10CFR Reference:** 55.41(b)(12)

Knowledge of the operational implications of the following concepts as they apply to the PRM System:
Relationship between radiation intensity and exposure limits

STP Lesson: LOT 103.04 **Objective Number:** N91826

CALCULATE dose rates at different distances from point sources, line sources, plane sources, and tank sources.

Reference: 10CFR20.1201

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT - results in a total exposure of 4950 mr
- B: INCORRECT - results in a total exposure of 4900 mr
- C: CORRECT - results in a total exposure of 5025 mr
- D: INCORRECT - results in a total exposure of 4980 mr

Question Level: H **Question Difficulty** 3

Justification:

The applicant must apply a knowledge of line source exposure to calculate what the dose rate will be at each distance and then calculate a total exposure based on the time frame given and compare it to the 10CFR20 limit to determinet the correct response.

Exam Bank No.: 1733**Last used on an NRC exam:**

Unit 1 is at 15% reactor power during a plant startup.

A large transient on the grid causes a switchyard underfrequency condition (frequency drops to 56.5 Hz).

Assuming no operator action, which ONE of the following correctly identifies the status of the reactor coolant pump breakers and reactor trip breakers following the grid transient?

	Reactor Coolant Pump Breakers	Reactor Trip Breakers
A.	Open	Open
B.	Open	Closed
C.	Closed	Closed
D.	Closed	Open

Answer: A Open, Open

Exam Bank No.: 1733 **RO Outline Number:** 1-1-1

K/A Catalog Number: EPE 007 EK2.02 **Tier:** 1 **Group/Category:** 1

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

Knowledge of the interrelations between a reactor trip and the following: Breakers, relays and disconnects.

STP Lesson: LOT 201.20 **Objective Number:** 26026

Given a description of plant conditions DETERMINE if an automatic reactor trip signal would be generated.

Reference: LOT201.20, Handout #2, page 3

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified from**

Distractor Justification

- A: CORRECT - The reactor trip setpoint for underfrequency is 57.2 Hz. If reactor power is greater than P-7, then the underfrequency trip will open the reactor trip breakers and the reactor coolant pump breakers.
- B: INCORRECT - Above P-7, a reactor trip will be generated.
- C: INCORRECT - Above P-7, a reactor trip will be generated and all reactor coolant pumps will trip.
- D: INCORRECT - An underfrequency signal will trip all reactor coolant pumps in anticipation of a loss of flow.

Question Level: H **Question Difficulty** 3

Justification:

From the given conditions, the applicant must use their knowledge of reactor trip setpoints (underfrequency), permissives (P-7) and interlocks (tripping of all RCPs) to determine the correct response.

Exam Bank No.: 1734

Last used on an NRC exam:

Unit 1 was operating at 100% when a reactor trip occurred.

- Safety Injection initiated on low pressurizer pressure due to overfeeding SGs
- SI has been reset and the SI Pumps stopped and placed in standby (AUTO)

Two (2) minutes later a steam line break occurs

- Steam Line pressure decreases to 800 psig
- Containment Pressure is 12 psig and increasing

Which ONE of the following describes the automatic actions that occur in response to the steam break?

	MSIVs Close	Phase B Valves Close
A.	No	No
B.	Yes	Yes
C.	No	Yes
D.	Yes	No

Answer: B Yes Yes

Exam Bank No.: 1734 **RO Outline Number:** 1-1-12

K/A Catalog Number: APE 040 AK2.01 **Tier:** 1 **Group/Category:** 1

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

Knowledge of the interactions between the Steam Line Rupture and the following: Valves

STP Lesson: LOT 201.20 **Objective Number:** 3832

Describe the reactor protection system control and permissive interlocks including inputs, setpoints, coincidence, and functions.

Reference: LOT 201.20 handout pages 7 and 8; handout section 3.9.1.a

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified from**

Distractor Justification

- A: INCORRECT: MSIV and Phase 'B' valves WILL Close
- B: CORRECT
- C: INCORRECT: MSIV's WILL close
- D: INCORRECT: Phase 'B' Valves WILL Close

Question Level: H **Question Difficulty** 3

Justification:

Exam Bank No.: 1735

Last used on an NRC exam:

Given the following:

- A SGTR of 300 gpm has occurred on 1A SG
- All SG MSIV's are open
- #11 AFW pump is in PTL
- 1A SG NR level is rising
- The crew is performing the actions of OPOP05-EO-EO30, SGTR and is at the step to close the MSIV on 1A Steam Generator.

Which one of the below correctly describes the response of 1A SG pressure?

SG 1A pressure BEFORE closing 1A MSIV is _____ the other SG's and is _____ the other SG's AFTER closing 1A MSIV.

- A. the same as, the same as
- B. greater than, the same
- C. greater than, greater than
- D. the same, greater than

Answer: D the same, greater than

Exam Bank No.: 1735 **RO Outline Number:** 2-2-7

K/A Catalog Number: 035 A1.02 **Tier:** 2 **Group/Category:** 2

RO Importance: 3.5 **10CFR Reference:** 55.41(b)(4)

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the S/GS controls including: SG Pressure

STP Lesson: LOT 202.09 **Objective Number:** 93002

Reference: LOT504.15 PowerPoint slide #15

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified from

Distractor Justification

- A: INCORRECT: pressure will rise in the ruptured SG after the MSIV is closed due to rising level
- B: INCORRECT: before the MSIV is closed on the ruptured SG, all SG pressures will be the same because they are cross-connected to one another thru the main steam equalizing header. Once the ruptured SG MSIV is closed, the increasing level from the tube rupture will cause pressure to up in the ruptured SG
- C: INCORRECT: before the MSIV is closed on the ruptured SG, all SG pressures will be the same because they are cross-connected to one another thru the main steam equalizing header.
- D: CORRECT: will all MSIV's open, all SG pressures will be the same because they are cross-connected to one another thru the main steam equalizing header. Once the ruptured SG MSIV is closed, the increasing level from the tube rupture will cause pressure to up in the ruptured SG

Question Level: H **Question Difficulty** 3

Justification:

Exam Bank No.: 120

Last used on an NRC exam: 1999

A License Compliance Review (LCR) is being performed in accordance with 0PAP01-ZA-0103, License Compliance Review, for a proposed change to procedure POP02-SB-0001, Steam Generator Blowdown System.

The individual preparing the LCR has completed the '10CFR50.59 Screening Questions' and has answered Question #2 "Does the proposed activity involve a change to a procedure that adversely affects how UFSAR described SSC (System, Structure or Component) design functions are performed or controlled?" as YES.

Which one of the below correctly describes how the LCR Form and proposed change are to be processed?

The MINIMUM qualifications for the individual completing the '10CFR50.59 Screening Questions'...

- A. does not have to be an SRO, but does have to be 50.59 Screener qualified.
Because Question #2 was answered 'yes', a 10CFR50.59 Evaluation will now be performed per 0PGP05-ZA-0002, 10CFR50.59 Evaluations.
- B. has to be an SRO AND has to be 50.59 Screener qualified.
Because Question #2 was answered 'yes', a 10CFR50.59 Evaluation will now be performed per 0PGP05-ZA-0002, 10CFR50.59 Evaluations.
- C. does not have to be an SRO, but does have to be 50.59 Screener qualified.
Because Question #2 was answered 'yes', a change to the UFSAR will be prepared per 0PGP05-ZN-0004, Changes to Licensing Basis Documents.
- D. has to be an SRO AND has to be 50.59 Screener qualified.
Because Question #2 was answered 'yes', a change to the UFSAR will be prepared per 0PGP05-ZN-0004, Changes to Licensing Basis Documents.

Answer: A does not have to be an SRO, but does have to be 50.59 Screener qualified. Because Question #2 was answered 'yes', a 10CFR50.59 Evaluation will now be performed per 0PGP05-ZA-0002, 10CFR50.59 Evaluations.

Exam Bank No.: 120 **SRO Outline Number:** 3-2-1

K/A Catalog Number: G2.2.6 **Tier:** 3 **Group/Category:** 2

SRO Importance: 3.3 **10CFR Reference or SRO Objective:** 55.43(b)(3)

Knowledge of the process for making changes in procedures as described in the safety analysis report.

STP Lesson: LOT 802.13 **Objective Number:** SRO-65074

DESCRIBE the procedural requirements of the License Compliance Review Procedure.

Reference: 0PAP01-ZA-0103, Rev 7, Form 1

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified From**

Distractor Justification

- A: Correct; 0PGP05-ZA-0103, Form 1 states that an individual answering the 10CFR50.59 Screener Questions must be a qualified 50.59 Screener and that a 10CFR50.59 Evaluation must be done if any of these questions are answered YES.
- B: Incorrect. An individual answering the 10CFR50.59 Screener Questions must be a qualified 50.59 Screener, but doesn't have to be an SRO.
- C: Incorrect; a 10CFR50.59 Evaluation is to be done if any of the Screening Questions are answered YES, not a change to the UFSAR.
- D: Incorrect; An individual answering the 10CFR50.59 Screener Questions must be a qualified 50.59 Screener, but doesn't have to be an SRO. Additionally, a 10CFR50.59 Evaluation is to be done if any of the Screening Questions are answered YES, not a change to the UFSAR.

Question Level: F **Question Difficulty** 3

Justification:

The candidate must understand the procedure change review process as it relates to 10CFR50.59 and maintaining the licensing basis upon which the operating license was issued. The candidate should comprehend that changes to procedures described in the SAR must be further evaluated by a 10CFR50.59 Evaluation.

The following Unit 2 conditions exist:

- The plant is in Mode 6
- CRDM latching is in progress following core reload
- Steam generator secondary manways are removed for sludge lancing
- Steam generator primary side manways are open, with nozzle dams installed
- Refueling cavity level is 27 feet above the reactor vessel flange
- Two RHR Trains are operable; RHR Train 'A' is in operation providing heat removal
- Both Source Range NIs are operable

In accordance with POP08-FH-0009, Core Refueling, which ONE of the following activities requires a suspension of Core Alterations?

- A. An Extended Range Neutron Flux Monitor fails.
- B. One of the operable trains of RHR is taken out of service to test motor operator valve settings.
- C. An unexplained 10 ppm decrease in boron concentration in the operating RHR loop between two successive samples.
- D. Steam generator safety valves are removed for bench testing of lift setpoints.

Answer: D Steam generator safety valves are removed for bench testing of lift setpoints.

Exam Bank No.: 189**SRO Outline Number:** 3-1-2**K/A Catalog Number:** G2.1.12**Tier:** 3 **Group/Category:** 1**SRO Importance:** 4.0 **10CFR Reference or SRO Objective:** 55.43(b)(7)

Ability to apply technical specifications for a system.

STP Lesson: LOT 801.01**Objective Number:** SRO-60040

DISCUSS the requirements of the Core Refueling, OPOP08-FH-0009 to include: A. Prerequisites, B. Notes and Precautions, C. Major Procedural Steps, D. Checklists

Reference: POP08-FH-0009, R31, step 5.5.12; TS 3.9.4**Attached Reference** **Attachment:****NRC Reference Req'd** **Attachment:****Source:** Bank**Modified From****Distractor Justification**

- A: INCORRECT - Core alterations do not need to be suspended provided 2 core monitoring NIs are operable.
- B: INCORRECT - Core alterations do not need to be suspended provided there is more than 23 feet of water above the vessel flange.
- C: INCORRECT - Core alterations do not need to be suspended unless the decrease in boron is greater than 25 ppm.
- D: CORRECT - With secondary SG manways and SG safety removed, a direct path between containment and the outside atmosphere exists.

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

From the given conditions, the applicant must determine that a pathway will exist from inside to outside containment if secondary manways and SG safeties are removed and that it is also a violation of the refueling containment integrity TS which requires suspension of core alterations.

Exam Bank No.: 692

Last used on an NRC exam:

Given the following:

- Unit 1 was at 100% power.
- An earthquake resulted in the rupture of the main steam header to the steam dumps.
- The operating crew was unable to close the MSIVs and is currently in 0POP05-EO-EC21, Uncontrolled Depressurization of All Steam Generators.
- AFW flow to each SG has been throttled to 100 gpm.
- SI Termination is in progress per 0POP05-EO-EC21.
- A Plant Operator was able to locally close Loop 1C MSIV.
- The Secondary RO observes SG 1C pressure and level increasing slowly.

Based on this information, the Unit Supervisor should:

- A. Immediately transition to 0POP05-EO-ES11, SI Termination, to isolate AFW flow to SG's 'A', 'B', and 'D'.
- B. Immediately transition to 0POP05-EO-ES11, SI Termination, to restore the Safety Injection Systems to standby status.
- C. Remain in 0POP05-EO-EC21, Uncontrolled Depressurization of All Steam Generators, until RHR is in service.
- D. Remain in 0POP05-EO-EC21, Uncontrolled Depressurization of All Steam Generators, until SI termination is complete.

Answer: D Remain in 0POP05-EO-EC21, Uncontrolled Depressurization of All Steam Generators, until SI is terminated.

Exam Bank No.: 692**SRO Outline Number:** 1-1-6**K/A Catalog Number:** EPE E12 EA2.1**Tier:** 1 **Group/Category:** 1**SRO Importance:** 3.4 **10CFR Reference or SRO Objective:** 55.43(b)(5)

Ability to determine and interpret the following as they apply to the Uncontrolled Depressurization of all Steam Generators: Facility conditions and selection of appropriate procedures during abnormal and emergency operations

STP Lesson: LOT 504.14**Objective Number:** 92407

From memory, STATE/IDENTIFY the criteria on the conditional information page of 0POP05-EO-EC21 to include operator response, initiating parameter(s) and values.

Reference: POP05-EO-EC21, R12, CIP**Attached Reference** **Attachment:****NRC Reference Req'd** **Attachment:****Source:** Bank**Modified From****Distractor Justification**

- A: INCORRECT - Transition to ES11 is inappropriate (i.e. no procedure provision for this transition).
- B: INCORRECT - EC21 will secure SI pumps. A transition to ES11 is inappropriate (i.e. no procedure provision for this transition).
- C: INCORRECT - The US should remain in EC21, but only until SI termination is complete.
- D: CORRECT - Since SI termination is in progress, it should be completed before transition out of EC21.

Question Level: H **Question Difficulty** 4**Justification:**

To correctly respond to this question, the applicant requires specific knowledge of the E20 transition criteria found on the Conditional Information Page for EC21.

Exam Bank No.: 1007

Last used on an NRC exam:

In accordance with OPGP03-ZA-0116, Overtime, which ONE of the following situations will require an Overtime Exceedance Request form?

- A. A Plant Operator, in the middle of his 7 days off, is called out to work a 12 hour shift. He stays an additional 4 hours to complete the job.
- B. A Unit Supervisor works 7 a.m. to 3 p.m. in Training, then starts a Night Shift a 7 p.m. the same day and works until 7 a.m. the following morning.
- C. A Reactor Operator is called out to work for 4 hours beginning at 5 p.m. after leaving the site at 7 a.m. following his normal shift.
- D. A Field Supervisor works 7 a.m. to 7 p.m. for 6 continuous days.

Answer: B A Unit Supervisor works 7 a.m. to 3 p.m. in Training, then starts a Night Shift a 7 p.m. the same day and works until 7 a.m. the following morning.

Exam Bank No.: 1007 **SRO Outline Number:** 3-1-1

K/A Catalog Number: G2.1.4 **Tier:** 3 **Group/Category:** 1

SRO Importance: 3.4 **10CFR Reference or SRO Objective:** 55.43(b)(2)

Knowledge of shift staffing requirements.

STP Lesson: LOT 802.32 **Objective Number:** SRO-50528

Identify the requirements of Technical Specification 6.2.2.D.

Reference: 0PGP03-ZA-0116, R7; Tech Spec 6.2.2.d

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified From**

Distractor Justification

- A: INCORRECT - Working up to 16 hours straight is permissible and with 3 days off on either side, no limits will be violated.
- B: CORRECT - Working more than 16 hours in a 24 hour period requires an exceedance form.
- C: INCORRECT - Standing approval has been given for this situation per step 3.2.2.1 of PGP03-ZA-0116.
- D: INCORRECT - Working up to 72 hours in a 7 day period is permissible.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must be familiar with limits on hours of work.

Exam Bank No.: 1091

Last used on an NRC exam: 2001

A loss of reactor coolant accident occurred 1 hour ago. You are currently performing procedure 0POP05-EO-EO10, "Loss of Reactor or Secondary Coolant," and you are at Step 21, 'Check if RCS Cooldown and Depressurization is Required'

Plant conditions are as follows:

- RCS pressure = 650 psig
- Pressurizer level = 10%
- Containment pressure = 3.0 psig
- RCS subcooling = 34°F
- Containment radiation levels = 1.05E6 R/hr
- RWST Level = 185,000 gallons

Given the above conditions, describes the action the Unit Supervisor should take?

- A. Continue with procedure 0POP05-EO-EO10. Cooldown the RCS at > 100 °F/hr. to ensure the plant is placed on RHR cooling before the RWST reaches a Lo-Lo level.
- B. Continue with procedure 0POP05-EO-EO10. Cooldown the RCS at < 100 °F/hr. and establish subcooling margin to secure ECCS pumps.
- C. Transition to 0POP05-EO-ES12, Post LOCA Cooldown and Depressurization. Cooldown the RCS at a rate of > 100 °F/hr. to ensure the plant is placed on RHR cooling before the RWST reaches a Lo-Lo level.
- D. Transition to 0POP05-EO-ES12, Post LOCA Cooldown and Depressurization. Cooldown the RCS at a rate of < 100 °F/hr. and establish subcooling margin to secure ECCS pumps.

Answer: D Transition to 0POP05-EO-ES12, Post LOCA Cooldown and Depressurization. Cooldown the RCS at a rate of < 100 °F/hr. and establish subcooling margin to secure ECCS pumps.

Exam Bank No.: 1091 **SRO Outline Number:** 1-2-4

K/A Catalog Number: EPE E03 EA2.2 **Tier:** 1 **Group/Category:** 2

SRO Importance: 4.1 **10CFR Reference or SRO Objective:** 55.43(b)(5)

Ability to determine and interpret the following as they apply to the LOCA Cooldown and Depressurization: Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments

STP Lesson: LOT 504.09 **Objective Number:** 81187

DISCUSS the indications available to determine plant status during a loss of primary or secondary coolant accident.

Reference: POP05-EO-EO10, R18, step 21

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified From**

Distractor Justification

- A: INCORRECT - continuing in E10 would only be done if RCS pressure were less than 415 psig. Also, a cooldown rate of > 100 deg F/hr. is not allowed by EO10.
- B: INCORRECT - continuing in E10 would only be done if RCS pressure were less than 415 psig.
- C: INCORRECT - Transitioning to ES12 would be correct, but ES12 stipulates a cooldown rate of less than 100 deg F/hr.
- D: CORRECT - Information given would indicate a need to cooldown and depressurize the RCS. ES12 stipulates a cooldown rate of less than 100 deg F/hr.

Question Level: H **Question Difficulty** 3

Justification:

Specific knowledge of the procedural requirements of E10 are required to correctly respond to this question.

Exam Bank No.: 1199

Last used on an NRC exam:

In accordance with POP08-FH-0009, Core Refueling, which of the following is correct concerning the Core Load Supervisor (CLS)?

The CLS:

- A. can be any licensed individual and is required to be on site during all core alterations.
- B. must be an SRO or SRO Limited to Fuel Handling and is required to be on site during all core alterations.
- C. can be any licensed individual and is required to observe and directly supervise all core alterations.
- D. must be an SRO or SRO Limited to Fuel Handling and is required to observe and directly supervise all core alterations.

Answer: D must be an SRO or SRO Limited to Fuel Handling and is required to observe and directly supervise all core alterations.

Exam Bank No.: 1199 **SRO Outline Number:** 3-2-2

K/A Catalog Number: G2.2.27 **Tier:** 3 **Group/Category:** 2

SRO Importance: 3.5 **10CFR Reference or SRO Objective:** 55.43(b)(7)

Knowledge of the refueling process.

STP Lesson: LOT 801.01 **Objective Number:** SRO-50501

STATE the proper personnel locations for fuel transfer operations.

Reference: POP08-FH-0009, R31, step 5.2

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified From**

Distractor Justification

- A: INCORRECT - Must be an SRO and directly observe core alterations
- B: INCORRECT - Must directly observe core alterations
- C: INCORRECT - Must be an SRO
- D: CORRECT - Must be an SRO and directly observe core alterations

Question Level: F **Question Difficulty** 3

Justification:

The applicant requires a knowledge of the qualification and responsibilities of the core load supervisor.

Exam Bank No.: 1277

Last used on an NRC exam: 2005

Unit 1 is operating at power when the following occur IN SEQUENCE:

- A Loss of Coolant Accident (LOCA) occurs
- All ESF equipment is functioning as designed
- Containment Phase 'A' Isolation is reset
- ESF Load Sequencers are reset in the Control Room only
- Containment Pressure increases to 9.8 psig.
- OPOP05-EO-EO00, Reactor Trip or Safety Injection, is complete including Addendum 5.
- A Reactor Operator reports that no Containment Spray Pumps are running, but their discharge valves are open.

Based on these conditions, the Unit Supervisor would implement....

- A. OPOP05-EO-FRZ1, Response to High Containment Pressure, and direct the Reactor Operator to manually start the Containment Spray Pumps using their respective pump control switches.
- B. OPOP05-EO-FRZ1, Response to High Containment Pressure, and direct the Reactor Operator to manually actuate Containment Spray by using the Containment Spray Manual Actuation Switches.
- C. OPOP05-EO-EO10, Loss of Reactor or Secondary Coolant, and direct the Reactor Operator to manually actuate Containment Spray by using the Containment Spray Manual Actuation Switches.
- D. OPOP05-EO-EO10, Loss of Reactor or Secondary Coolant, and direct the Reactor Operator to manually start the Containment Spray Pumps using their respective pump control switches.

Answer: A OPOP05-EO-FRZ1, Response to High Containment Pressure, and direct the Reactor Operator to manually start the Containment Spray Pumps using their respective pump control switches.

Exam Bank No.: 1277 **SRO Outline Number:** 2-1-5

K/A Catalog Number: 103 G2.4.4 **Tier:** 2 **Group/Category:** 1

SRO Importance: 4.3 **10CFR Reference or SRO Objective:** 55.43(b)(5)

Containment System: Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.

STP Lesson: LOT 504.40 **Objective Number:** 92191

STATE/IDENTIFY the conditions under which POP05-EO-FRZ1 is entered.

Reference: 0POP05-EO-FRZ1, Response to High Containment Pressure (Rev 7, Step 3)

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: Bank **Modified From**

Distractor Justification

- A: CORRECT - Entry conditions for FRZ1 have been met. The pumps must be started by their control switches since the sequencers are reset.
- B: INCORRECT - Spray actuation will not start the pumps since the sequencers are reset.
- C: INCORRECT - Entry conditions for FRZ1 (Functional Restoration procedure) has been met and transition must be made. Spray actuation will not start the pumps since the sequencers are reset.
- D: INCORRECT - Entry conditions for FRZ1 (Functional Restoration procedure) has been met and transition must be made.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must recognize that the ESF Load Sequencers were reset before Containment pressure increased to above the Containment Spray actuation setpoint thereby disabling the actuation logic both automatically and manually. Thus the Containment Spray Pumps would have to be started manually with their control switches. Applicant must also recognize that entry requirements for FRZ1 have been met.

Exam Bank No.: 1627

Last used on an NRC exam:

Core offload is in progress on Unit 2 when the following occur:

- CNTMT NORMAL SUMP LVL HI-HI alarm actuates
- CNTMT SEC NORM SUMP LVL HI-HI alarm actuates
- Personnel in the Fuel Handling Building report lowering level in the Spent Fuel Pool

Based on this information, which of the following correctly identifies the location of the leak AND the procedure to be entered by the Unit Supervisor?

- A. Spent Fuel Pool Cooling leak in the Fuel Handling Building; POP04-RC-0007, Mode 5 Or Mode 6 LOCA With The Reactor Vessel Head On
- B. Spent Fuel Pool Cooling leak in the Fuel Handling Building; POP04-FC-0002, Refueling LOCA
- C. Residual Heat Removal System leak in containment; POP04-RC-0007, Mode 5 Or Mode 6 LOCA With The Reactor Vessel Head On
- D. Residual Heat Removal System leak in containment; POP04-FC-0002, Refueling LOCA

Answer: D Residual Heat Removal System leak in containment; POP04-FC-0002, Refueling LOCA

Exam Bank No.: 1627 **SRO Outline Number:** 1-1-1

K/A Catalog Number: APE 025 AA2.02 **Tier:** 1 **Group/Category:** 1

SRO Importance: 3.8 **10CFR Reference or SRO Objective:** 55.43(b)(5)

Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System: Leakage of reactor coolant from RHR into closed cooling water system or into reactor building atmosphere

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

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

Reference: POP04-FC-0002, R11, page 2

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified From**

Distractor Justification

- A: INCORRECT - The leak is from RHR in the containment. The head is off during fuel offload.
- B: INCORRECT - The leak is from RHR in the containment.
- C: INCORRECT - The head is off during fuel offload.
- D: CORRECT - Sump alarms given are in the containment, SFP level is lowering because the transfer tube is open during core offload. The correct procedure to use during a LOCA with the head off is POP-4-FC-0002

Question Level: H **Question Difficulty** 3

Justification:

The applicant must determine that the leak is from RHR in containment (sump alarms) even though SFP level is lowering (which it will with an RHR leak while the transfer tube is open). The applicant must also have a knowledge of the entry conditions (Refueling LOCA vs Mode 5 or 6 LOCA) of the referenced procedures.

Exam Bank No.: 1628

Last used on an NRC exam:

Given the following initial conditions:

- The Unit is in Mode 3 at no-load temperature and pressure
- Pressurizer Pressure Control Selector Switch is in the 455/458 position

A pressurizer pressure channel fails high and the reactor operator reports:

- Pressurizer PORV PCV-0656A is open
- Both normal Pressurizer Spray Valves are closed

Which of the following identifies the failed pressurizer pressure channel AND the action taken by the Unit Supervisor to address the failure?

- A. PT-0455 failed high, POP04-RP-0001, Loss of Automatic Pressurizer Pressure Control, is entered.
- B. PT-0455 failed high, POP04-RP-0005, COMS Actuation or Failure, is entered.
- C. PT-0458 failed high, POP04-RP-0001, Loss of Automatic Pressurizer Pressure Control, is entered.
- D. PT-0458 failed high, POP04-RP-0005, COMS Actuation or Failure, is entered.

Answer: C PT-0458 failed high, POP04-RP-0001, Loss of Automatic Pressurizer Pressure Control, is entered.

Exam Bank No.: 1628 **SRO Outline Number:** 1-1-2

K/A Catalog Number: APE 027 G2.4.47 **Tier:** 1 **Group/Category:** 1

SRO Importance: 3.7 **10CFR Reference or SRO Objective:** 55.43(b)(5)

Pressurizer Pressure Control (PZR PCS) Malfunction - Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.

STP Lesson: LOT 505.01 **Objective Number:** 92107

DISCUSS automatic actions expected to occur on entry conditions for the reference procedure.

Reference: LOT201.14 PowerPoint slide #18; POP04-RP-0001, R13, Symptoms and Entry Conditions (page2)

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified From

Distractor Justification

- A: INCORRECT - If PT-0455 failed, PCV-0655A and both spray valves would be open.
- B: INCORRECT - If PT-0455 failed, PCV-0655A and both spray valves would be open. Although POP04-RP-0005 is applicable in modes 3, 4 and 5, COMS would not be in service under the given conditions and would not be the correct procedure to enter.
- C: CORRECT - PT-0458 failed and the correct procedure is POP04-RP-0001
- D: INCORRECT - If PT-0455 failed, PCV-0655A and both spray valves would be open. Although POP04-RP-0005 is applicable in modes 3, 4 and 5, COMS would not be in service under the given conditions and would not be the correct procedure to enter.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must use their knowledge of the PZR pressure control system to determine the failure based on the symptoms given, and then using their knowledge of off-normal procedures determine the correct procedure entry.

Exam Bank No.: 1629

Last used on an NRC exam:

Unit 1 was at 100% power, steady state conditions.

The Unit Supervisor directed a manual reactor trip and safety injection due to indications of a large Steam Generator tube leak.

After verifying the turbine trip, the secondary reactor operator reports the following:

- All steam generator narrow range levels are ~10%
- All steam generator pressures are ~1180 psig
- All MSIV's are open

Which of the following explains the steam generator level indication seen by the reactor operator and describes the action to be taken by the Unit Supervisor?

- A. Steam generator levels are low due to a steam line break following the trip; the Unit Supervisor should immediately transition to POP05-EO-EO20, Faulted Steam Generator Isolation.
- B. Steam generator levels are low due to the rise in steam generator pressure following the trip, the Unit Supervisor should continue in POP05-EO-EO00, Reactor Trip or Safety Injection.
- C. Steam generator levels are low due to failure of the Auxiliary Feedwater system, the Unit Supervisor should immediately transition to POP05-EO-FRH1, Response to Loss of Secondary Heat Sink.
- D. Steam generator levels are low due to a failure of the MSIV's to close; the Unit Supervisor should direct a manual Main Steam Isolation and then continue in POP05-EO-EO00, Reactor Trip or Safety Injection.

Answer: B Steam generator levels are low due to the rise in steam generator pressure following the trip, the Unit Supervisor should continue in POP05-EO-EO00, Reactor Trip or Safety Injection.

Exam Bank No.: 1629 **SRO Outline Number:** 1-1-3

K/A Catalog Number: EPE 038 EA2.05 **Tier:** 1 **Group/Category:** 1

SRO Importance: 2.9 **10CFR Reference or SRO Objective:** 55.43(b)(5)

Ability to determine and interpret the following as they apply to a SGTR: Causes and consequences of shrink and swell in S/Gs

STP Lesson: LOT 502.02 **Objective Number:** 50241

DESCRIBE how the steam generator water level indication, both narrow and wide range, can be used to monitor heat sink conditions.

Reference: LOT502.02 student handout page 27

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified From

Distractor Justification

- A: INCORRECT - SG pressures given are not indicative of a steam line break large enough to cause a large reduction in SG level. Regardless of any other breaks, the US would not transition from EO until directed later in the procedure.
- B: CORRECT - The rise in SG pressure following a trip collapses steam bubbles in the SG allowing downcomer level to drop and give indication of narrow range levels decreasing. Since this is a normal response of the plant, the US should continue in EO.
- C: INCORRECT - Although a failure of the AFW system is indeterminate from the information given, the US would not transition from EO until attempts are made to establish AFW flow.
- D: INCORRECT - From the information given, the need for a main steam isolation is not indicated. SG pressures are above the main steam isolation setpoint and a large SG tube leak would not require a main steam isolation.

Question Level: F **Question Difficulty** 3

Justification:

The applicant must understand that SG levels normally shrink following a trip and that this is normal, resulting in normal performance of the EOPs (no additional procedure transitions required).

Exam Bank No.: 1630

Last used on an NRC exam:

The IAS HDR PRESS LO annunciator has been received with the unit in Mode 6 and Train A RHR pump in service.

The reactor operator reports the following information from ICS display IA-001:

- DGB Flow 4 CFM
- MEAB Flow 25 CFM
- RCB Flow 410 CFM
- FHB Flow 14 CFM
- IVC Flow 7 CFM
- TGB Flow 170 CFM
- IA HDR Press 87 psig

Based on this information, the Unit Supervisor should:

- A. direct closure of FV-8565, IA OCIV, per POP04-IA-0001, Loss of Instrument Air, which will cause a heat-up of the RCS.
- B. direct closure of FV-8565, IA OCIV per POP04-IA-0001, Loss of Instrument Air, which will cause a cooldown of the RCS.
- C. direct closure of MOV-0031A, LOOP A Tc INJ, per POP04-RH-0001, Loss of Residual Heat Removal, due to the low flow trip of the running RHR pump.
- D. direct closure of MOV-0031A, LOOP A Tc INJ, per POP04-RH-0001, Loss of Residual Heat Removal, due to the high flow trip of the running RHR pump.

Answer: B direct closure of FV-8565, IA OCIV per POP04-IA-0001, Loss of Instrument Air, which will cause a cooldown of the RCS.

Exam Bank No.: 1630 **SRO Outline Number:** 1-1-5

K/A Catalog Number: APE 065 G2.4.48 **Tier:** 1 **Group/Category:** 1

SRO Importance: 3.8 **10CFR Reference or SRO Objective:** 55.43(b)(5)

Loss of Instrument Air: Ability to interpret control room indications to verify the status and operation of system, and understand how operator actions and directives affect plant and system conditions.

STP Lesson: **Objective Number:** SRO-10500

Given that an off-normal situation has occurred, SUPERVISE response to off-normal operating situations, such that the condition creating the off-normal operating situation has been terminated and mitigating operator actions to stabilize the plant have been successful.

Reference: POP04-IA-0001, R11, step 10

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified From**

Distractor Justification

- A: INCORRECT - IA should be isolated to the RCB, but the effect will be a cooldown (not heat-up) of the RCS.
- B: CORRECT - High indicated flow to the RCB would required isolating IA to the RCB which in turn will cause RHR valves to fail to the full cooling mode.
- C: INCORRECT - When RHR valves fail due to loss of IA, RHR flow should be maintained ~3000 gpm which will not cause a trip of the pump.
- D: INCORRECT - When RHR valves fail due to loss of IA, RHR flow should be maintained ~3000 gpm which will not cause a trip of the pump.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must use the information given to determine the correct procedural flowpath and must have a knowledge of the RHR system to determine the effects of a loss of IA to containment.

Exam Bank No.: 1631

Last used on an NRC exam:

A plant startup is in progress on Unit 1 per POP03-ZG-0005, Plant Startup to 100%, when control rods begin to withdraw in automatic.

The following plant conditions are reported by the Primary Operator:

- Power range channels are 27% and rising
- Power Range Hi Flux Lo Setpoint trip is NOT blocked
- Tave is 573° and rising
- Control rods are withdrawing at 72 steps per minute in automatic

Based on plant conditions, which of the following actions should be taken by the Unit Supervisor?

- A. Continue in POP03-ZG-0005 and monitor Tave to ensure proper operation of the Rod Control System.
- B. Enter POP04-RS-0001, Rod Control Malfunction, and direct the Primary Reactor Operator to place rod control in Manual.
- C. Enter POP05-EO-EO00, Reactor Trip or Safety Injection, direct a manual reactor trip and performance of immediate actions.
- D. Enter POP05-EO-FRS1, Response to Nuclear Power Generation - ATWS, and then direct a manual trip of the reactor.

Answer: C Enter POP05-EO-EO00, Reactor Trip or Safety Injection, direct a manual reactor trip and performance of immediate actions.

Exam Bank No.: 1631 **SRO Outline Number:** 1-2-1

K/A Catalog Number: APE 001 AA2.03 **Tier:** 1 **Group/Category:** 2

SRO Importance: 4.8 **10CFR Reference or SRO Objective:** 55.43(b)(5)

Ability to determine and interpret the following as they apply to the Continuous Rod Withdrawal: Proper actions to be taken if automatic safety functions have not taken place.

STP Lesson: LOT 504.04 **Objective Number:** 92216

STATE/IDENTIFY from memory the criteria which require entry into POP05-EO-EO00.

Reference: LOT201.20, handout 2, page 3; POP05-EO-EO00, Symptoms or Entry Conditions

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified From

Distractor Justification

- A: INCORRECT - Tave is ~0.5 degrees low for the given power and does not warrant rods withdrawing in automatic.
- B: INCORRECT - This would be the correct action if the given conditions did not require and a reactor trip.
- C: CORRECT - Conditions given warrant an automatic reactor trip. If it has not occurred, it must be directed by the US and E0 entered.
- D: INCORRECT - Although an automatic reactor trip should have occurred, entry into FRS1 is not warranted unless a manual trip is not successful.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must first determine what the condition of the plant is from the indications given. Then a knowledge of procedure hierarchy is needed to determine the correct course of action

Exam Bank No.: 1632**Last used on an NRC exam:**

Given the following:

- Unit 1 was operating at full power when a Feedwater line break inside the Containment Building occurred.
- SG level 1A is currently at 30% NR Level and lowering at a rate of 5%/min.
- Containment pressure is currently at +1.0 psig and rising at a rate of 0.75 psi/min.
- An automatic reactor trip occurs
- The crew takes 5 minutes to complete their immediate actions of 0POP05-EO-EO00 (including the 'read-through').

Based on this information, and assuming these rates continue, which one of the below correctly describes the expected INITIAL Reactor Trip First Out Annunciator and the procedure implementation for this event AFTER the immediate actions of 0POP05-EO-EO00, Reactor Trip or Safety Injection, have been performed?

- A. SG 1A LVL LO-LO, continue to step 5 of 0POP05-EO-EO00.
- B. SG 1A LVL LO-LO, transition to 0POP05-EO-ES01, Reactor Trip Response.
- C. CNTMT PRESS HI-1 SI, continue to step 5 of 0POP05-EO-EO00.
- D. CNTMT PRESS HI-1 SI, transition to 0POP05-EO-ES01, Reactor Trip Response.

Answer: A SG 1A LVL LO-LO, continue to step 5 of 0POP05-EO-EO00.

Exam Bank No.: 1632 **SRO Outline Number:** 1-1-4

K/A Catalog Number: APE 054 AA2.07 **Tier:** 1 **Group/Category:** 1

SRO Importance: 3.9 **10CFR Reference or SRO Objective:** 55.43(b)(5)

Ability to determine and interpret the following as they apply to the Loss of Main Feedwater (MFW):
Reactor trip first-out panel indicator

STP Lesson: LOT 504.05 **Objective Number:** 80483

Given a copy of a subsequent step or from memory an immediate action step from POP05-EO-EO00, STATE/IDENTIFY how the action is performed and the basis for the action to include the action itself, its purpose and result.

Reference: POP05-EO-EO00, Step 4; LOT201.20, handout 2, pages 3 and 7

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified From**

Distractor Justification

- A: CORRECT - The Lo-Lo SG level Rx trip will be reached first (20% level vs 3 psig in containment), however by the time the crew completes the immediate actions of E0, an SI will have occurred and the US will continue on in E0 to step 5.
- B: INCORRECT - By the time the crew completes the immediate actions of E0 (5 minutes after the trip), an SI will have occurred due to high containment pressure (3 psig) which would require continuing on to step 5 in E0.
- C: INCORRECT - A Rx trip would be caused first by SG level in 2 minutes (20% level), then at 2.7 minutes by containment pressure (SI @3 psig).
- D: INCORRECT - A Rx trip would be caused first by SG level in 2 minutes (20% level), then at 2.7 minutes by containment pressure (SI @3 psig). 5 minutes later (completion of immediate actions), an SI will be present requiring further completion of E0.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must correctly determine which signal will initiate a Rx trip first using their knowledge of safety system setpoints and the rates of change given. The applicant must also realize that an SI signal will be present when the read thru of step 4 in E0 is performed requiring continuation to step 5.

Exam Bank No.: 1633

Last used on an NRC exam:

Given the following:

- The plant is stable at 10^{-8} amps to record critical data during a startup
- The NIS Channel I instrument power breaker on 120 VAC Class 1E distribution panel DP-1201 trips open

Which one of the following describes the Technical Specification limitation on the plant startup caused by the above conditions?

- A. All operations involving positive reactivity changes must be suspended.
- B. Power is restricted to less than the P-6 setpoint.
- C. Thermal power is restricted to less than or equal to 10% or Rated Thermal Power.
- D. Thermal power is restricted to less than or equal to 85% or Rated Thermal Power.

Answer: C Thermal power is restricted to less than or equal to 10% or Rated Thermal Power.

Exam Bank No.: 1633 **SRO Outline Number:** 1-2-2

K/A Catalog Number: APE 033 G2.2.23 **Tier:** 1 **Group/Category:** 2

SRO Importance: 3.8 **10CFR Reference or SRO Objective:** 55.43(b)(2)

Loss of Intermediate Range Nuclear Instrumentation: Ability to track limiting conditions for operations.

STP Lesson: LOT 503.01 **Objective Number:** 80056

Given a system scenario, DETERMINE the applicable Technical Specification and/or the Technical Requirements Manual (TRM) for the system and APPLY the specification(s).

Reference: T.S. 3.3.1 action 3

Attached Reference **Attachment:** T.S. 3.3.1 (pages 3/4 3-1 through 3/4 3-8)

NRC Reference Req'd **Attachment:**

Source: New

Modified From

Distractor Justification

- A: INCORRECT - This is the action if a source range channel is inoperable below P-6 (this power level is greater than P-6). N31 will not have instrument power available, but at this power level it will have been de-energized.
- B: INCORRECT - This is the action if an Intermediate range channel is inoperable with power less than P-6. N35 will not have instrument power, but reactor power is greater than P-6.
- C: CORRECT - With an IR channel inoperable above P-6, power is restricted to less than or equal to 10%.
- D: INCORRECT - N41 will not have instrument power. The action for this is to maintain reactor power less than 75% (not 85%). It is required to set the high flux trip to less than 85%.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must understand that after a trip of this breaker, the Channel I source, intermediate and power range instruments will not have instrument power available and that the given power level is greater than P-6. The applicant must then use this knowledge to determine what Tech Spec actions may apply using the given reference.

Exam Bank No.: 1634

Last used on an NRC exam:

Given the following:

- The Control Room has been evacuated due to a fire in the relay room
- You are the Shift Supervisor at the Aux Shutdown Panel
- A natural circulation cooldown is in progress
- One Control Rod Drive Mechanism Fan is in operation
- The reactor operator reports Core Exit Thermocouple (CET) temperatures are 400°F and Reactor Coolant System (RCS) pressure is 700 psig

Based on these conditions, the Shift Supervisor should:

- A. continue in POP04-ZO-0001, Control Room Evacuation, and direct the RO to energize pressurizer heaters to raise RCS subcooling.
- B. continue in POP04-ZO-0001, Control Room Evacuation, and direct the RO to open the Steam Dumps to raise RCS subcooling.
- C. transition to POP04-RC-0006, Shutdown LOCA, due to loss of subcooling margin and direct the RO to initiate Containment Evacuation.
- D. transition to POP04-RC-0006, Shutdown LOCA, due to loss of subcooling margin and direct the RO to start one HHSI pump.

Answer: A continue in POP04-ZO-0001, Control Room Evacuation, and direct the RO to energize pressurizer heaters to raise RCS subcooling.

Exam Bank No.: 1634 **SRO Outline Number:** 1-2-3

K/A Catalog Number: APE 068 AA2.03 **Tier:** 1 **Group/Category:** 2

SRO Importance: 4.2 **10CFR Reference or SRO Objective:** 55.43(b)(5)

Ability to determine and interpret the following as they apply to the Control Room Evacuation: T-hot, T-cold, and in-core temperatures

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: POP04-ZO-0001, Addendum 12, step 4.b

Attached Reference **Attachment:** POP04-ZO-0001, Addendum 14, page 1 or 1 (procedure page 98 in Rev. 29)

NRC Reference Req'd **Attachment:**

Source: New **Modified From**

Distractor Justification

- A: CORRECT - The Shift Supervisor should remain in ZO-01 even though conditions are present for entry into RC-06. The correct action to take is raising RCS pressure to raise subcooling.
- B: INCORRECT - Although raising the cooldown rate may increase subcooling, natural circ cooldown is limited to 50 degrees an hour in ZO-01.
- C: INCORRECT - Even though entry conditions for RC-06 are met, the Shift Supervisor should remain in ZO-01.
- D: INCORRECT - Even though entry conditions for RC-06 are met, the Shift Supervisor should remain in ZO-01.

Question Level: H **Question Difficulty** 3

Justification:

The applicant should determine that subcooling is less than 35 degrees which is entry conditions for RC-06 and is also unacceptable for natural circ cooldown in ZO-01. Using a knowledge of procedure hierarchy, the applicant should determine that staying in ZO-01 and raising RCS pressure is the correct course of action.

Exam Bank No.: 1635

Last used on an NRC exam:

Given the following:

- Unit 1 is at 100% power
- The Primary Reactor Operator reports the breaker for Pressurizer Heater Group 'C' has tripped.
- PRZR PRESS DEV LO B/U HTRS ON alarm annunciates

Which one of the following correctly describes the response of the Pressurizer Pressure Control System AND the appropriate action for the Unit Supervisor to take?

Pressurizer Pressure has lowered until the Backup Heaters energized at...

- A. 2220 psig at which time the Unit Supervisor should enter 0POP04-RP-0001, Loss of Pressurizer Pressure Control to ensure proper pressure control is established.
- B. 2220 psig. The Unit Supervisor should enter Tech Spec 3.4.3, Pressurizer, and restore Pressurizer Heater Group 'C' to operable status within 72 hr.
- C. 2210 psig at which time the Unit Supervisor should enter 0POP04-RP-0001, Loss of Pressurizer Pressure Control to ensure proper pressure control is established.
- D. 2210 psig. The Unit Supervisor should enter Tech Spec 3.4.3, Pressurizer, and restore Pressurizer Heater Group 'C' to operable status within 72 hr.

Answer: C 2210-2218 psig. The Unit Supervisor should enter 0POP04-RP-0001, Loss of Pressurizer Pressure Control to ensure proper pressure control is established.

Exam Bank No.: 1635 **SRO Outline Number:** 2-1-2

K/A Catalog Number: 010 A2.01 **Tier:** 2 **Group/Category:** 1

SRO Importance: 3.6 **10CFR Reference or SRO Objective:** 55.43(b)(5)

Ability to (a) predict the impacts of the following malfunctions or operations on the PZR PCS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Heater failures

STP Lesson: LOT 507.01 **Objective Number:** 92106

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

Reference: T.S 3.4.3; POP04-RP-0001; LOT201.14

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified From**

Distractor Justification

- A: INCORRECT - The given pressure range is where heater group "C" would normally control.
- B: INCORRECT - The given pressure range is where heater group "C" would normally control. Tech Spec 3.4.3 does not apply to heater group "C".
- C: CORRECT - Without heater group "C", the master controller will cycle backup heaters on at 2210 psig and off at 2218 psig. Receiving the given annunciater is an entry condition for RP01.
- D: INCORRECT - Tech Spec 3.4.3 does not apply to heater group "C".

Question Level: H **Question Difficulty** 3

Justification:

The applicant must determine what affect the loss of the control group of heaters will have on how the master controller will maintain pressurizer pressure and that entry requirements for the off-normal procedure have been met.

Exam Bank No.: 1636

Last used on an NRC exam:

Given the following:

- The unit is at 100% power, the ECW PUMP 1B TRIP alarm is received.
- The reactor operator reports that the previously running ECW Pump 1B is now stopped.

Which of the following describes the action to be taken by the Unit Supervisor?

- A. Declare ECW Pump 1B inoperable. 'B' Train ESF Diesel Generator and Essential Chiller may remain operable provided the ESSENTIAL CHILLER X-CONN valves are opened per POP02-EW-0001, Essential Cooling Water Operations.
- B. Declare 'B' Train ESF Diesel Generator, Essential Chiller and ECW Pump inoperable. Place the ESF Diesel Generator in 'PULL-TO-STOP' and the ECW Pump and Essential Chiller in 'PULL-TO-LOCK' per the annunciator response procedure.
- C. Declare 'B' Train ECW Pump and ESF Diesel Generator inoperable. 'B' Train Essential Chiller may remain operable provided the ESSENTIAL CHILLER X-CONN valves are opened per POP02-EW-0001, Essential Cooling Water Operations.
- D. Declare 'B' Train ESF Diesel Generator, Essential Chiller and ECW Pump inoperable. Place the ECW Pump in 'PULL-TO-LOCK' but leave the ESF Diesel Generator and Essential Chiller functional and available for emergency use per the annunciator response procedure.

Answer: B Declare 'B' Train ESF Diesel Generator, Essential Chiller and ECW Pump inoperable. Place the ESF Diesel Generator in 'PULL-TO-STOP' and the ECW Pump and Essential Chiller in 'PULL-TO-LOCK' per the annunciator response procedure.

Exam Bank No.: 1636 **SRO Outline Number:** 2-1-4

K/A Catalog Number: 076 A2.01 **Tier:** 2 **Group/Category:** 1

SRO Importance: 3.7 **10CFR Reference or SRO Objective:** 55.43(b)(2)

Ability to (a) predict the impacts of the following malfunctions or operations on the SWS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of SWS

STP Lesson: LOT 503.01 **Objective Number:** 80056

Given a system scenario, DETERMINE the applicable Technical Specification and/or the Technical Requirements Manual (TRM) for the system and APPLY the specification(s).

Reference: POP02-EW-0001, R40, step 4.11; POP09-AN-02M4, R20, page 19

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified From**

Distractor Justification

- A: INCORRECT - The DG and chiller are supported equipment and must be declared inoperable. Opening the x-tie valves would supply cooling to these components and POP02-EW-0001 allows the x-tie valves to be opened, but only for system fill.
- B: CORRECT - ECW is a support system for both the ESF DG and Essential Chiller so they are inoperable when ECW is inoperable. The annunciator response procedure has the operators place the ECW pump and any supported equipment in PTL to prevent operation without cooling.
- C: INCORRECT - The chiller is supported equipment and must be declared inoperable. Opening the x-tie valves would supply cooling to the chiller and POP02-EW-0001 allows the x-tie valves to be opened, but only for system fill.
- D: INCORRECT - The annunciator directs placing all supported equipment in PTL to prevent operation without cooling.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must have knowledge that supported equipment is inoperable and what the supported equipment is. Knowledge of the normal operating procedure and annunciator response procedure is also required to direct the proper actions of the RO.

Exam Bank No.: 1637

Last used on an NRC exam:

Given the following:

- Control rod D4 in control bank D stops moving during a power increase when DRPI indication for all control bank D rods was at 192 steps.
- The reactor operator reports DRPI indication for all rods in control bank D (except D4) is currently at 210 steps.
- Power is stabilized at 87%.

Which of the following describes the alarm indication on the DRPI panel AND the action to be taken by the Unit Supervisor?

- A. Rod Deviation AND Urgent alarms; Enter POP04-CV-0003, Emergency Boration, and commence boration to recover lost shutdown margin.
- B. Rod Deviation alarm ONLY; Enter POP04-CV-0003, Emergency Boration, and commence boration to recover lost shutdown margin.
- C. Rod Deviation AND Urgent alarms; Enter POP04-RS-0001, Control Rod Malfunction, and notify I&C to determine if the rod is trippable.
- D. Rod Deviation alarm ONLY; Enter POP04-RS-0001, Control Rod Malfunction, and notify I&C to determine if the rod is trippable.

Answer: D Rod Deviation alarm ONLY; Enter POP04-RS-0001, Control Rod Malfunction, and notify I&C to determine if the rod is trippable.

Exam Bank No.: 1637 **SRO Outline Number:** 2-2-1

K/A Catalog Number: 014 A2.04 **Tier:** 2 **Group/Category:** 2

SRO Importance: 3.9 **10CFR Reference or SRO Objective:** 55.43(b)(6)

Ability to (a) predict the impacts of the following malfunctions or operations on the RPIS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Misaligned rod

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: LOT201.19 PowerPoint slide 30; POP04-RS-0001, R18

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified From**

Distractor Justification

- A: INCORRECT - An urgent alarm will not be received. The given conditions do not warrant entry into CV03.
- B: INCORRECT - The given conditions do not warrant entry into CV03
- C: INCORRECT - An urgent alarm will not be received.
- D: CORRECT - A deviation alarm will be received. Based on these conditions, RS01 should be entered.

Question Level: H **Question Difficulty** 3

Justification:

The given conditions must be analyzed by the applicant to determine the correct DRPI panel response. From the given conditions, the applicant must determine the correct procedure flowpath.

Exam Bank No.: 1638

Last used on an NRC exam:

Given the following:

- The reactor tripped from 100% power
- A loss of instrument air occurred due to a pipe break
- It was determined at step 4 of POP05-EO-EO00, Reactor Trip or Safety Injection, that a safety injection has not occurred and is not required.

Based on these conditions, the Unit Supervisor should transition to:

- A. POP05-EO-ES01, Reactor Trip Response, and verify the steam generator PORVs are controlling temperature due to the steam dump valves failing closed.
- B. POP05-EO-ES01, Reactor Trip Response, and establish local control of the steam dump valves due to the steam dump valves and the steam generator PORVs failing closed.
- C. POP05-EO-FRH2, Response to Steam Generator Overpressure, to lower the high steam generator pressure caused by the steam dump valves and the steam generator PORVs failing closed.
- D. POP05-EO-FRH4, Response to Loss of Normal Steam Release Capabilities, to establish local control of the failed closed steam dump valves.

Answer: A POP05-EO-ES01, Reactor Trip Response, and verify the steam generator PORVs are controlling temperature due to steam dump valves failing closed.

Exam Bank No.: 1638 **SRO Outline Number:** 2-2-3

K/A Catalog Number: 041 A2.03 **Tier:** 2 **Group/Category:** 2

SRO Importance: 3.1 **10CFR Reference or SRO Objective:** 55.43(b)(5)

Ability to (a) predict the impacts of the following malfunctions or operations on the SDS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of IAS

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: POP05-EO-ES01, R23, step 1 RNO; LOT202.09 PowerPoint slide 17

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified From**

Distractor Justification

- A: CORRECT - A loss of IA will cause the steam dump valves to fail closed. The appropriate action is to ensure the PORVs are functioning per ES01
- B: INCORRECT - The PORVs will not fail closed.
- C: INCORRECT - FRH2 is entered based upon SG pressure only. Under these conditions, a high pressure will not occur because the PORVs are available.
- D: INCORRECT - FRH4 is entered upon a loss of both steam dumps and PORVs

Question Level: H **Question Difficulty** 3

Justification:

The applicant must determine from the given conditions that the steam dumps will not function and use their knowledge of the procedures involved to determine the correct flowpath.

Exam Bank No.: 1641

Last used on an NRC exam:

Given the following:

- The reactor has tripped
- Safety injection and Main Steam Isolation have actuated
- The crew is performing the action of POP05-EO-EO00, Reactor Trip or Safety Injection

After verifying Secondary Pressure Boundaries, SG Tubes and RCS intact, the following conditions exist:

- RCS pressure is 1820 psig and trending up
- Pressurizer level is 15% and trending up
- Steam generator pressures are approximately 790 psig and trending up
- Tave is 540°F and trending up
- Steam generator narrow range levels are off scale low
- AFW flow is approximately 200 gpm to EACH steam generator
- Containment pressure is 0.1 psig and stable

Based on these conditions, the Unit Supervisor will transition to:

- A. POP05-EO-ES01, Reactor Trip Response
- B. POP05-EO-ES11, SI Termination
- C. POP05-EO-EO10, Loss of Reactor or Secondary Coolant
- D. POP05-EO-FRH1, Response to Loss of Secondary Heat Sink

Answer: B POP05-EO-ES11, SI Termination

Exam Bank No.: 1641 **SRO Outline Number:** 3-4-1

K/A Catalog Number: G2.4.4 **Tier:** 3 **Group/Category:** 4

SRO Importance: 4.3 **10CFR Reference or SRO Objective:** 55.43(b)(5)

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

STP Lesson: LOT 504.07 **Objective Number:** 92225

Given the conditions under which POP05-EO-ES11 is entered, STATE the basis for entry.

Reference: POP05-EO-EO00, R19, step 15

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified From**

Distractor Justification

- A: INCORRECT - Although SI is no longer required, once SI is actuation transition is not made to ES01
- B: CORRECT - Conditions given meet the requirements for SI termination
- C: INCORRECT - RCS LOCA is not indicated by the given conditions
- D: INCORRECT - the entry conditions of FRH1 are not met because there is > 576 gpm total AFW flow.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must conclude from the information given that SI and main steam isolation was actuated due to low steamline pressure and that the break was downstream of the MSIVs and therefore isolated by the main steam isolation. The applicant must also have a knowledge of the SI termination criteria.

Exam Bank No.: 1642

Last used on an NRC exam:

During an ongoing event at the site, the Acting Radiological Manager has just given you, the Shift Supervisor and Emergency Director, a Protective Action Recommendation (PAR).

You are responsible for:

- A. ensuring the PAR is approved by the TSC Manager and then notifying the State and County within 15 minutes.
- B. ensuring the PAR is approved by the TSC Manager and then notifying the State and County within 1 hour.
- C. approving the PAR and then notifying the State and County within 15 minutes.
- D. approving the PAR and then notifying the State and County within 1 hour.

Answer: C approving the PAR and then notifying the State and County within 15 minutes.

Exam Bank No.: 1642 **SRO Outline Number:** 3-4-2

K/A Catalog Number: G2.4.44 **Tier:** 3 **Group/Category:** 4

SRO Importance: 4.0 **10CFR Reference or SRO Objective:** Objective SRO-47030

Knowledge of emergency plan protective action recommendations.

STP Lesson: LOT 803.14 **Objective Number:** SRO-47030

DISCUSS the duties and responsibilities of the Shift Supervisor as delineated in 0ERP01-ZV-SH01, Shift Supervisor.

Reference: ERP01-ZV-SH01, R21, steps 2.1.3 and 5.5.2

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified From

Distractor Justification

- A: INCORRECT - must be approved by the emergency director
- B: INCORRECT - must be approved by the emergency director and notification made within 15 minutes (the NRC must be notified within 1 hour)
- C: CORRECT - these are both responsibilities of the shift supervisor when acting as the emergency director.
- D: INCORRECT - notification must be made within 15 minutes (the NRC must be notified within 1 hour)

Question Level: F **Question Difficulty** 3

Justification:

The applicant requires a knowledge of the shift supervisor responsibilities during a declared emergency and the notification times required.

Exam Bank No.: 1643

Last used on an NRC exam:

Following a LOCA, the crew is performing the actions of POP05-EO-EO10, Loss of Reactor or Secondary Coolant, when the following conditions were noted:

- RCS pressure is 600 psig
- Core exit thermocouples (CETs) are reading 710°F
- Pressurizer level is off scale low
- RVWL Plenum level indicates 0%

Based on these conditions, the Unit Supervisor should:

- A. Transition to POP05-EO-FRC1, Response to Inadequate Core Cooling, because core uncover is likely occurring.
- B. Transition to POP05-EO-FRC2, Response to Degraded Core Cooling, because core uncover is likely occurring.
- C. Transition to POP05-EO-FRC1, Response to Inadequate Core Cooling, because core damage is occurring.
- D. Transition to POP05-EO-FRC2, Response to Degraded Core Cooling, because core damage is occurring.

Answer: B Transition to POP05-EO-FRC2, Response to Degraded Core Cooling, because core uncover is likely occurring.

Exam Bank No.: 1643 **SRO Outline Number:** 2-2-2

K/A Catalog Number: 017 A2.02 **Tier:** 2 **Group/Category:** 2

SRO Importance: 4.1 **10CFR Reference or SRO Objective:** 55.43(b)(5)

Ability to (a) predict the impacts of the following malfunctions or operations on the ITM System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Core damage

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

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

Reference: POP05-EO-FO02

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New **Modified From**

Distractor Justification

- A: INCORRECT - Entry criteria for FRC1 is 1200 degrees.
- B: CORRECT - Entry criteria for FRC2 are met. With the given conditions, core uncover is likely but fuel damage should not be occurring.
- C: INCORRECT - Entry criteria for FRC1 is 1200 degrees, core damage should not be occurring.
- D: INCORRECT - Core damage should not be occurring.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must use the given conditions and a knowledge of the Core Cooling critical safety function status tree to determine which entry criteria is met. A knowledge of accident analysis is needed to determine if the given conditions will result in core uncover or fuel damage.

Exam Bank No.: 1715

Last used on an NRC exam:

An event has occurred resulting in core damage with a radioactive release to the environment.

In accordance with ERP01-ZV-SH01, Shift Supervisor, which of the following is a non-delegateable responsibility of the Emergency Director?

- A. Authorizing the use of Potassium Iodide (KI).
- B. Approving exposures in excess of STP administrative limits.
- C. Approving press releases prior to issuance.
- D. Approving commitments to the NRC.

Answer: A Authorizing the use of Potassium Iodide (KI).

Exam Bank No.: 1715 **SRO Outline Number:** 3-1-1

K/A Catalog Number: G2.3.10 **Tier:** 3 **Group/Category:** 1

SRO Importance: 3.3 **10CFR Reference or SRO Objective:** 55.43(b)(4)

Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.

STP Lesson: LOT 803.14 **Objective Number:** SRO-47030

Discuss the duties and responsibilities of the Shift Supervisor as delineated in ERP01-ZV-SH01, Shift Supervisor.

Reference: ERP01-ZV-SH01, R21, step 5.5

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified From

Distractor Justification

- A: CORRECT
- B: INCORRECT - The ED responsibility for exposure approval is at levels greater than 10CFR limits.
- C: INCORRECT - This is a delegatable responsibility.
- D: INCORRECT - This is a delegatable responsibility.

Question Level: F **Question Difficulty** 3

Justification:

Requires a knowledge of the Emergency Director responsibilities delineated in the procedure.

Exam Bank No.: 1716

Last used on an NRC exam:

Given the following:

- RHR Train A is in service with Trains 'B' and 'C' in standby
- RCS temperature is 180°F
- The crew is draining the RCS to mid-loop conditions with RCS level currently at 39 feet
- The RHR PUMP 1A(2A) DISCH FLOW LO alarm is received
- Automatic actions have occurred, as designed

Based on these conditions, the Unit Supervisor should:

- A. direct the RO to raise RHR Train 'A' flow by opening the RHR heat exchanger outlet flow control valve in accordance with the annunciator response procedure.
- B. direct the RO to place RHR Train 'B' in service in accordance with the annunciator response procedure.
- C. Enter POP04-RH-0001, Loss of Residual Heat Removal and direct the RO to raise RHR Train 'A' flow by opening the RHR heat exchanger outlet flow control valve.
- D. Enter POP04-RH-0001, Loss of Residual Heat Removal, and direct the RO to place RHR Train 'B' in service.

Answer: D place RHR Train B in service in accordance with POP04-RH-0001, Loss of Residual Heat Removal.

Exam Bank No.: 1716 **SRO Outline Number:** 2-1-1

K/A Catalog Number: 005 G2.4.11 **Tier:** 2 **Group/Category:** 1

SRO Importance: 3.6 **10CFR Reference or SRO Objective:** 55.43(b)(5)

Residual Heat Removal System (RHRS): Knowledge of abnormal condition procedures.

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

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

Reference: POP04-RH-0001, R18, Step 1 and 23

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified From

Distractor Justification

- A: INCORRECT - Under the given conditions, the RHR pump will trip, therefore opening the valve will not raise flow.
- B: INCORRECT - The given conditions indicate a loss of all RHR has occurred which requires entry into the POP04.
- C: INCORRECT - The pump has tripped so, opening the valve will not raise flow.
- D: CORRECT - Entry into the POP04 is required and with the RCS level given an RHR pump can be started.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must determine that a loss of all RHR has occurred based on the given conditions, choose the correct procedure and action based on this determination.

Exam Bank No.: 1727

Last used on an NRC exam:

Given the following:

- ESF DG #11 is out of service
- A loss of offsite power (LOOP) resulted in a reactor trip
- The crew has entered 0POP05-EO-ES01, Reactor Trip Response
- AFW Pump 14 trips on overspeed
- SG NR Levels are 16-21 %

Assuming no operator actions have been taken with AFW, which one of the below correctly describes the effect on the AFW system AND the actions to be taken by the Unit Supervisor?

The loss of AFW Pumps # 11 and 14...

- A. could cause runout conditions on AFW Pumps 12 and 13. The Unit Supervisor should continue in 0POP05-EO-ES01 and throttle flow through AFW Pumps 12 and 13 to prevent runout.
- B. will have no effect on the flow of AFW Pumps 12 and 13. The Unit Supervisor should continue in 0POP05-EO-ES01 and have the operator cross-tie AFW to feed SG's 'A' and 'D'.
- C. could cause runout conditions on AFW Pumps 12 and 13. The Unit Supervisor MUST transition to 0POP05-EO-FRH1, Loss of Secondary Heat Sink, to re-establish heat sink requirements for AFW flow and SG levels.
- D. will have no effect on the flow of AFW Pumps 12 and 13. The Unit Supervisor MUST transition to 0POP05-EO-FRH5, Response to Steam Generator Low Level, to re-establish AFW to SG's 'A' and 'D'.

Answer: B will have no effect on the flow of AFW Pumps 12 and 13. The Unit Supervisor should continue in 0POP05-EO-ES01 and have the operator cross-tie AFW to feed SG's 'A' and 'D'.

Exam Bank No.: 1727 **SRO Outline Number:** 2-1-3

K/A Catalog Number: 061 A2.04 **Tier:** 2 **Group/Category:** 1

SRO Importance: 3.8 **10CFR Reference or SRO Objective:** 55.43(b)(5)

Ability to (a) predict the impacts of the following malfunctions or operations on the AFW System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: pump failure or improper operation

STP Lesson: LOT 504.33 **Objective Number:** 92206

STATE the entry conditions for 0POP05-EO-FRH1

Reference: POP05-EO-FO03, R5; LOT202.28, AFW

Attached Reference **Attachment:**

NRC Reference Req'd **Attachment:**

Source: New

Modified From

Distractor Justification

- A: INCORRECT - The AFW Trains are independant following an actuation, thus the loss of two pumps will not affect the operation of the remaining two (which would not be true if the trains were cross-tied).
- B: CORRECT - The AFW Trains are independant following an actuation. Based on these conditions, the US should continue in ES01.
- C: INCORRECT - The AFW Trains are independant following an actuation, thus the loss of two pumps will not affect the operation of the remaining two (which would not be true if the trains were cross-tied). The given conditions do not warrant entry into FRH1.
- D: CORRECT - The given conditions do not warrant entry into FRH5 (SG levels are greater than 14%).

Question Level: H **Question Difficulty** 3

Justification:

The applicant is required to determine from the given conditions that flow from the operating AFW pumps will be un-affected. From the given conditions, the determination must be made that ES01 is the correct procedure flowpath.