

Exam Bank No.: 2506**Last used on an NRC exam:** Never**RO Sequence Number:** 1

The Auxiliary Feedwater system is designed to remove the greatest amount of decay heat load which occurs at the ____ (1) ____ of core life following a reactor trip from ____ (2) ____ reactor power.

- A. (1) end
(2) 10%
- B. (1) end
(2) 100%
- C. (1) beginning
(2) 10%
- D. (1) beginning
(2) 100%

Answer: B (1) end - (2) 100%

Exam Bank No.: 2506**Source:** Bank**Modified from****K/A Catalog Number:** 061 K5.02

Knowledge of the operational implications of the following concepts as they apply to the AFW: Decay heat sources and magnitude

RO Importance: 3.2**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(4)**STP Lesson:** LOT 202.28**Objective Number:** 80167

STATE the relationship of AFW flow to the S/Gs and decay heat removal following a reactor trip.

Reference: LOT202.28 Lesson Plan Rev 11**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible because low reactor power is the point at which feedback from the reactor due to MTC and Fuel Doppler begins to add a significant amount of negative reactivity to the core and it is feasible that a student could choose this.
- B: CORRECT: The history of the core determines the amount of decay heat, high power operations for longer periods of time have the greatest affect
- C: INCORRECT: Plausible because beginning of life conditions do generate greater negative effects on the reactor core in some situations such as a loss of heat removal. Also low reactor power is the point at which feedback from the reactor due to MTC and Fuel Doppler begins to add a significant amount of negative reactivity to the core and it is feasible that a student could choose this.
- D: INCORRECT: Plausible because beginning of life conditions do generate greater negative effects on the reactor core in some situations such as a loss of heat removal.

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

The student must have fundamental knowledge of the design factors for the AFW system.

Exam Bank No.: 2661**Last used on an NRC exam:** Never**RO Sequence Number:** 2

The Primary RO has just completed a routine dilution and is aligning the Makeup system for automatic operation in accordance with OPOP02-CV-0001, Makeup to the Reactor Coolant System.

A second RO will ____ (1) ____ the performance of Form 4, Modes 1-2 Automatic Operation Checklist, which ____ (2) ____ be waived during abnormal operations.

- A. (1) peer check
(2) can
- B. (1) peer check
(2) can NOT
- C. (1) independently verify
(2) can
- D. (1) independently verify
(2) can NOT

Answer: A (1) peer check
(2) can

Exam Bank No.: 2661**Source:** New**Modified from****K/A Catalog Number:** G2.1.37

Knowledge of procedures, guidelines, or limitations associated with reactivity management.

RO Importance: 4.3**Tier:** 3**Group/Category:** 1**10CFR Reference:** 55.41(b)(10)**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: OPOP02-CV-0001 Rev 51 step 4.24 and Form 4**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: Form 4 of POP02-CV-0001 is peer checked. COP Chapter 2 states that peer checks of reactivity manipulations SHALL be performed during routine manipulations but are NOT required during abnormal or unplanned transient conditions. Therefore it can be waived during an abnormal operation.
- B: INCORRECT: The peer check CAN be waived during abnormal operations. Plausible a student may think the Form 4 has to be performed with a peer check since it is a Form that requires reactivity manipulations and is normally peer checked.
- C: INCORRECT: A peer check is required when realigning for auto makeup. Plausible a student may think it needs to be IV since it is a Form in the procedure. Most all line-up forms require an IV. This was does not since it is a reactivity manipulation.
- D: INCORRECT: A peer check is required when realigning for auto makeup. Plausible a student may think it needs to be IV since it is a Form in the procedure. Most all line-up forms require an IV. This was does not since it is a reactivity manipulation. Also it can be waived during abnormal conditions. Plausible a student may think this can NOT be waived since it is a reactivity manipulation,

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

The applicant requires knowledge of the requirements to perform a reactivity manipulation.

Exam Bank No.: 2707**Last used on an NRC exam:** Never**RO Sequence Number:** 3

A liquid radwaste release is in progress when LWPS Radiation Monitor, RT-8038, experiences a HIGH alarm.

The radiation monitor alarm is monitored on (1).

AND

The LWPS discharge valve can be verified in the RECIRC position in the (2) Control Room.

- A. (1) RM-23
(2) Main
- B. (1) RM-11
(2) Main
- C. (1) RM-23
(2) Radwaste
- D. (1) RM-11
(2) Radwaste

Answer: D (1) RM-11
(2) Radwaste

Exam Bank No.: 2707**Source:** New**Modified from**

K/A Catalog Number: APE 059 G2.4.31 Accidental Liquid Radwaste Release:
Knowledge of annunciator alarms, indications, or
response procedures.

RO Importance: 4.2 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(11)

STP Lesson: LOT 202.41 **Objective Number:** 30268

DESCRIBE the Radiation Monitoring System instrumentation.

Reference: LOT 202.41 Lesson Plan Rev 15 on Radiation Monitoring PPT slide #16 and LOT 203.11
Lesson Plan on LWPS Rev 7

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: Plausible because there are radiation monitors that are controlled and/or monitored on both RM-11 and RM-23 in the main control room. Incorrect because RT-8038 is monitored on RM-11. Also, plausible because most major functions are controlled from the Main Control Room making it reasonable to believe that this part of LWPS has indications in the Main Control Room. Incorrect because the remote indications and controls for the LWPS discharge/recirc valve are in the Radwaste Control Room.
- B: INCORRECT: Plausible because most major functions are controlled from the Main Control Room making it reasonable to believe that this part of LWPS has indications in the Main Control Room. Incorrect because the remote indications and controls for the LWPS discharge/recirc valve are in the Radwaste Control Room.
- C: INCORRECT: Plausible because there are radiation monitors that are controlled and/or monitored on both RM-11 and RM-23 in the main control room. Incorrect because RT-8038 is monitored on RM-11.
- D: CORRECT: RT-8038 alarms locally or on RM-11 computers in the Main Control Room or the HP Office Area. The LWPS discharge/recirc valve has indications and controls in the Radwaste Control Room.

Question Level: F **Question Difficulty** 2

Justification:

The student must have fundamental knowledge of where to monitor indications associated with an accidental release of liquid rad waste. NOTE: A liquid radwaste release that involved a high rad alarm would be considered an accidental release because rad levels being released would be higher than expected.

Exam Bank No.: 2651

Last used on an NRC exam: Never

RO Sequence Number: 4

Which train(s) of RHR can supply low pressure letdown?

- A. A ONLY
- B. A and B ONLY
- C. B and C ONLY
- D. A, B, and C

Answer: B A and B ONLY

Exam Bank No.: 2651**Source:** New**Modified from****K/A Catalog Number:** 005 K1.04

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

RO Importance:**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.09**Objective Number:** 3422

DESCRIBE the flowpath of the RHR system including all valves and components in the main flowpath.

Reference: LOT 201.09 rev 11 slide 8**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Low pressure letdown is supplied by A and B trains of RHR. Plausible because the CVCS letdown return is ONLY to Train A.
- B: CORRECT: Low pressure letdown is supplied by A and B trains of RHR.
- C: INCORRECT: Low pressure letdown is supplied by A and B trains of RHR. Plausible because the function of RHR to drain the refueling cavity to the RWST is ONLY on Trains B AND C.
- D: INCORRECT: Low pressure letdown is supplied by A and B trains of RHR. Plausible because several functions of RHR is capable by ALL 3 trains of RHR such as decay heat removal.

Question Level: F**Question Difficulty** 2**Justification:**

Student must recall the flowpath of all 3 trains of RHR.

Exam Bank No.: 2687**Last used on an NRC exam:** Never**RO Sequence Number:** 5

The Unit is in Mode 2 getting ready to enter Mode 1 with the following condition:

- Containment pressure is 0.0 psig.

Subsequently the crew identifies a reactor coolant system leak in containment.

When containment pressure reaches ____ (1) ____ psig the crew will have ____ (2) ____ hour(s) to restore pressure to within limits.

- A. (1) 0.1
(2) one
- B. (1) 0.1
(2) six
- C. (1) 0.3
(2) one
- D. (1) 0.3
(2) six

Answer: C (1) 0.3
(2) one

Exam Bank No.: 2687**Source:** New**Modified from****K/A Catalog Number:** 002 K3.03

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

RO Importance: 4.2 **Tier:** 2 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 503.01**Objective Number:** 92102

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

Reference: LOT 503.01, TS and TRM. PPT LOT50301 3_4.6 Rev 14 Slide 30 to 32. Also see TS 3.6.1.4 Amend 188

Attached Reference ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible because the low pressure limit is -0.1 psig. Incorrect because at 0.1 psig the pressure is still within the TS limit.
- B: INCORRECT: Plausible because the low pressure limit is -0.1 psig. Incorrect because at 0.1 psig the pressure is still within the TS limit. Plausible because if outside the limit of containment internal pressure the Unit must restore pressure to within limits within one hour or be in Mode 3 within SIX hours.
- C: CORRECT: With containment pressure outside the limit pressure must be restored within 1 hour. The TS limit is -0.1 to 0.3 psig.
- D: INCORRECT: Plausible because if outside the limit of containment internal pressure the Unit must restore pressure to within limits within one hour or be in Mode 3 within SIX hours.

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

The student must have fundamental knowledge of how a leak in the RCS effects containment. In this case through the containment TS 3.6.1.4. Note: This TS question uses above the line information and has a one hour action. Therefore it is at the RO knowledge level.

Exam Bank No.: 2682**Last used on an NRC exam:** Never**RO Sequence Number:** 6

Given the following:

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

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

The RCFCs are ____ (1) ____ and Component Cooling Water ____ (2) ____ through the RCFC cooling coils.

- A. (1) NOT running
(2) is flowing
- B. (1) NOT running
(2) is NOT flowing
- C. (1) running
(2) is flowing
- D. (1) running
(2) is NOT flowing

Answer: D (1) running
(2) is NOT flowing

Exam Bank No.: 2682**Source:** Modified**Modified from** 1010**K/A Catalog Number:** 022 A3.01Ability to monitor automatic operation of the CCS,
including:
Initiation of safeguards mode of operation**RO Importance:** 4.1**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 202.33**Objective Number:** 30783

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

Reference: LOT 201.12 Rev 14 for CCW Slide 41 and LOT 202.33 for RCFCs Rev 7 Slide 45**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible because the start of the RCFCs comes from the sequencer. The lineup of cooling water (i.e. the CCW and CHWS valves) align upon a signal from SSPS. Depending on the malfunctions/events that occur, there can be different arrangements in RCFC cooling. The fans can be secured and still have flow aligned to them. This is a concept that is commonly confused.
- B: INCORRECT: Plausible because some safety components do not start on a LOOP (Mode II) signal. Incorrect because the RCFCs do get a start on a LOOP.
- C: INCORRECT: Plausible because on a Safety Injection CCW is automatically aligned to the RCFC cooling coils. Incorrect because on a LOOP Chill Water is isolated to the RCFCs and CCW has to be manually aligned if needed.
- D: CORRECT: On a LOOP (Mode II) signal the RCFCs are started and CCW has to be manually aligned to the RCFC cooling coils.

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

The student has to analyze the given conditions to determine the automatic operation for containment cooling.

Exam Bank No.: 1329**Last used on an NRC exam:** 2015**RO Sequence Number:** 7

With the plant in Mode 1 and a train of Essential Cooling Water (ECW) Pump switches in the following positions:

- Controlroom Handswitch – AUTO
- Transfer Switch – CONT RM
- ECW/CCW Train Mode Selector Switch – STANDBY

Which of the following is a DIRECT auto start signal for an ECW Pump?

- A. Sequencer Mode II actuation
- B. Start of the associated ESF DG
- C. ECW pressure in one other ECW Train at 28 psig
- D. CCW common header pressure at 78 psig

Answer: A Sequencer Mode II actuation

Exam Bank No.: 1329**Source:** Bank**Modified from****K/A Catalog Number:** 076 K4.02

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

RO Importance: 2.9**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.13**Objective Number:** 91193

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

Reference: LOT201.13, Essential Cooling Water, Rev 7, slide 40**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: This is a direct auto start signal for an ECW pump. The ECW pumps start after a short time delay (Modes 1, 2, and 3).
- B: INCORRECT: The start of the associated ESF DG is not a DIRECT start signal for ECW. Plausible because ECW pump would be required to be running.
- C: INCORRECT: Plausible because a direct auto start of an ECW pump is when ECW pressure lowers to below 30 psig on BOTH the other TWO trtains. Incorrect because it only states one other train.
- D: INCORRECT: Plausible because a direct auto start of an ECW pump is when CCW header pressure lowers to below 76 psig. Incorrect because it states slightly higher than this setpoint at 78 psig.

Question Level: F**Question Difficulty** 2**Justification:**

Must have knowledge of what auto starts an ECW Pump.

Exam Bank No.: 2712

Last used on an NRC exam: Never

RO Sequence Number: 8

The Unit is at 50% power when the following occurs:

- Control Bank D steps OUT 5 steps over the last 2 minutes.

Which of the following could cause the rod motion?

- A. Leakage through the Emergency Boration valve MOV-CV-0218
- B. VCT boron concentration lower than RCS boron concentration
- C. Loop D Tcold (TI-0440B) slowly failing high.
- D. Turbine impulse pressure channel PT-506 slowly failing high

Answer: A Leakage through the Emergency Boration valve MOV-CV-0218

Exam Bank No.: 2712**Source:** New**Modified from**

K/A Catalog Number: APE 024 AK1.01 Knowledge of the operational implications of the following concepts as they apply to Emergency Boration:
Relationship between boron addition and change in T-ave.

RO Importance: 3.4 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(5)

STP Lesson: LOT 201.18 **Objective Number:** 2410

Given a change in plant or system conditions PREDICT how the rod control system will respond

Reference: LOT201.18 Rev 15 PowerPoint slide #66

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: CORRECT: The boron would add negative reactivity to the core and Tave would lower causing rods to step out.
- B: INCORRECT: This would cause a dilution of the RCS which would add positive reactivity causing Tave to rise and rods to step in.
- C: INCORRECT: This would cause Auctioneered high Tavg to be higher and rods would step in.
- D: INCORRECT: PT-506 is not in the circuitry for control rods. Plausible because this failure of PT-505 would cause rods to step out.

Question Level: H **Question Difficulty** 3

Justification:

The student must be able to analyze the given conditions to determine the effects RCS temperature.

Exam Bank No.: 2689**Last used on an NRC exam:** Never**RO Sequence Number:** 9

In normal conditions, a 'ROD DEVIATION' alarm on DRPI will alert the operator of a rod misalignment if a Control Bank rod is a MINIMUM of \pm _____ step(s) from any other Control Bank rod within the same bank.

- A. 1
- B. 6
- C. 12
- D. 18

Answer: C 12

Exam Bank No.: 2689**Source:** New**Modified from****K/A Catalog Number:** 014 K4.06Knowledge of RPIS design feature(s) and/or interlock(s)
which provide for the following:
Individual and group misalignment**RO Importance:** 3.4**Tier:** 2**Group/Category:** 2**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.19**Objective Number:** 93001

Given a plant or system condition, Predict the operation of the Rod Position Indication System.

Reference: LOT 201.19 Rev 12PPT slide #32 and Lesson Plan document page 4,15 and 22. Handout page 4. Rev 12**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible because a Rod Supervisory Rod Position alarm will come in when one group is plus or minus one step from the other group in the same bank.
- B: INCORRECT: Plausible because a Rod Bottom alarm will come in when any rod is within 6 steps of rod bottom.
- C: CORRECT: Rod Deviation alarm comes in when a Control Bank rod is misaligned plus or minus 12 steps from other rods in the same bank.
- D: INCORRECT: Plausible because a Rod Deviation alarm will come in if a Shut Down Bank rod is NOT within 18 steps of full out position and also plausible because if in half-accuracy (not normal) a Rod Deviation alarm will come in if a Control Bank rod is NOT within plus or minus 18 steps of other associated rods in the bank.

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

The student must have fundamental knowledge of the DRPI design features (alarms) and/or interlocks which indicate a misalignment.

Exam Bank No.: 2560**Last used on an NRC exam:** Never**RO Sequence Number:** 10

The following is observed on CP-004 for Reactor Coolant Pump 1B:



RCP 1B seal cooling is (1) and the RCP 1B (2).

- A. (1) adequate
(2) thermal barrier should be restored
- B. (1) adequate
(2) seal injection should be raised
- C. (1) NOT adequate
(2) thermal barrier should be restored
- D. (1) NOT adequate
(2) seal injection should be raised

Answer: A (1) adequate
(2) thermal barrier should be restored

Exam Bank No.: 2560**Source:** Bank**Modified from****K/A Catalog Number:** 003 A4.08

Ability to manually operate and/or monitor in the control room: RCP cooling water supplies

RO Importance: 3.2**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**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: OPOP09-AN-04M7 D-4 Rev 34**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: CCW to thermal barrier is isolated and needs to be restored.
- B: INCORRECT: Seal injection flow is in normal range. Plausible because in the picture above, seal injection is low in the normal band of 8-13 gpm.
- C: INCORRECT: Seal cooling is adequate. Plausible that the student may think seal cooling is NOT adequate since the thermal barrier isolation valve is closed. However, both the RCP seal injection and thermal barrier cooling would need to be lost.
- D: INCORRECT: Seal cooling is adequate and Seal injection flow is in normal range. Plausible that the student may think seal cooling is NOT adequate since the thermal barrier isolation valve is closed. Also plausible because in the picture above, seal injection is low in the normal band of 8-13 gpm.

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

Student must analyze given conditions and understand the proper response for loss of thermal barrier.

Exam Bank No.: 2693**Last used on an NRC exam:** Never**RO Sequence Number:** 11

The Unit is at 75% power when the following occurs:

- The controlling level channel on one Steam Generator (SG) fails low.

With NO OPERATOR action, feedwater flow to the affected SG will (1) and the Reactor will (2).

- A. (1) rise
(2) NOT trip
- B. (1) rise
(2) trip
- C. (1) lower
(2) NOT trip
- D. (1) lower
(2) trip

Answer: B (1) rise
(2) trip

Exam Bank No.: 2693**Source:** New**Modified from****K/A Catalog Number:** 035 K1.12

Knowledge of the physical connections and/or cause-effect relationships between the S/Gs and the following systems: RPS.

RO Importance: 3.7 **Tier:** 2 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 202.15 **Objective Number:** 19370

DISCUSS the consequences of a loss of any one input to the S/G level control system.

Reference: LOT 202.15 Steam Generator Water Level Control System Rev 9 PPT slide 42 to 47**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible because it is a common misconception as to how the SG water level control system will respond to a given failure (ie - will SG level rise or lower or will feedwater flow rise or lower) and how that failure will affect the coincidence logic to the reactor protection system. (ie - low level on 2 of 4 level instruments on 1 of 4 SGs will trip the reactor and high level on 2 of 4 level instruments on 1 of 4 SGs will cause FWI, trip the main turbine and if above 50%, trip the reactor)
- B: CORRECT: With this failure actual feedwater flow will rise and SG level will rise to the high level set point of 87.5%. A feedwater isolation will occur, the main turbine will trip and with reactor power above 50% the reactor will also trip.
- C: INCORRECT: Plausible because it is a common misconception as to how the SG water level control system will respond to a given failure (ie - will SG level rise or lower or will feedwater flow rise or lower) and how that failure will affect the coincidence logic to the reactor protection system. (ie - low level on 2 of 4 level instruments on 1 of 4 SGs will trip the reactor and high level on 2 of 4 level instruments on 1 of 4 SGs will cause FWI, trip the main turbine and if above 50%, trip the reactor)
- D: INCORRECT: Plausible because it is a common misconception as to how the SG water level control system will respond to a given failure (ie - will SG level rise or lower or will feedwater flow rise or lower) and how that failure will affect the coincidence logic to the reactor protection system. (ie - low level on 2 of 4 level instruments on 1 of 4 SGs will trip the reactor and high level on 2 of 4 level instruments on 1 of 4 SGs will cause FWI, trip the main turbine and if above 50%, trip the reactor)

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

The student has to analyze the given condition to determine the correct response of the SG level control system and how it effects the reactor protection system.

Exam Bank No.: 674

Last used on an NRC exam: 2003

RO Sequence Number: 12

The Unit is at 100% power when the pressurizer master pressure controller fails to zero output while in AUTO.

With no operator action, which of the following will occur?

- A. Pressurizer pressure will rise and cycle at the PORV open setpoint.
- B. Pressurizer pressure will lower and cycle at the PORV blocked setpoint.
- C. The Reactor will trip on the high Pressurizer pressure setpoint.
- D. Safety Injection will actuate on the low Pressurizer pressure setpoint.

Answer: A Pressurizer pressure will rise and cycle at the PORV open setpoint.

Exam Bank No.: 674**Source:** Bank**Modified from**

K/A Catalog Number: APE 027 AK2.03 Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following: controllers and positioners.

RO Importance: 2.6 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

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

Given plant conditions, determine their effects on the pressurizer pressure and level control system.

Reference: LOT 201.14 Rev 14 slide 31

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: CORRECT: The master controller will close both spray valves and turn on all heaters, causing pressure to increase. Correct - The master controller will close both spray valves and turn on all heaters, causing pressure to increase. PORV PCV-656A is controlled by a bistable not the master controller so that when pressure reaches 2235 psig it will open and control pressure.
- B: INCORRECT: The master controller will close both spray valves and turn on all heaters, causing pressure to increase. Plausible the student would think the pressure would lower with the output lowering and that it would lower until the PORV block setpoint is reached.
- C: INCORRECT: The master controller will close both spray valves and turn on all heaters, causing pressure to increase. PORV PCV-656A is controlled by a bistable not the master controller so that when pressure reaches 2335 psig it will open and control pressure, below the reactor trip setpoint. Plausible the student may think the PORV will not operate with the given malfunction and therefore pressure would rise until the reactor trip setpoint is reached.
- D: INCORRECT: The master controller will close both spray valves and turn on all heaters, causing pressure to increase. Plausible the student would think the pressure would lower with the output lowering and that with the given malfunction the pressure would continue to lower until a low pressure reactor trip and SI occurred.

Question Level: H **Question Difficulty** 3

Justification:

Student must analyze the given malfunction and predict the operation of the controller and the pressurizer pressure.

Exam Bank No.: 1844**Last used on an NRC exam:** 2009**RO Sequence Number:** 13

The Unit is operating at 100% when an RCS leak/break occurs.

Per 0POP04-RC-0003, Excessive RCS Leakage, a Reactor Trip and Safety Injection are required with a MAXIMUM leak rate of ____ (1) ____ gpm.

AND

This leak rate is based on the maximum capability of the ____ (2) ____.

- A. (1) 200
(2) Charging Flow Control Valve, FCV-0205
- B. (1) 200
(2) Reactor Makeup Control System
- C. (1) 240
(2) Charging Flow Control Valve, FCV-0205
- D. (1) 240
(2) Reactor Makeup Control System

Answer: B (1) 200
(2) Reactor Makeup Control System

Exam Bank No.: 1844**Source:** Bank**Modified from**

K/A Catalog Number: EPE 009 EK3.03 Knowledge of the reasons for the following responses as they apply to the small break LOCA:
Reactor trip and safety initiation

RO Importance: 4.1 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(5)

STP Lesson: LOT 201.07 **Objective Number:** 32350

STATE the functions of the Reactor Makeup System.

Reference: LOT 201.07 Rev 14 and 0POP04-RC-0003 Rev 22 CIP and Basis for Step 2.

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: Plausible because makeup to the RCS goes through FCV-0205. Incorrect because FCV-0205 can pass enough flow for two charging pumps running which is over 400 gpm.
- B: CORRECT: The makeup capability of the Reactor Makeup Control System in Auto or Manual makeup mode is 200 gpm and is the reason for tripping the reactor and initiating safety injection if the leak rate goes above 200 gpm.
- C: INCORRECT: Plausible because 240 gpm is the runout value for a charging pump. Plausible because makeup to the RCS goes through FCV-0205. Incorrect because FCV-0205 can pass enough flow for two charging pumps running which is over 400 gpm.
- D: INCORRECT: Plausible because 240 gpm is the runout value for a charging pump.

Question Level: F **Question Difficulty** 3

Justification:

The student must have knowledge of the makeup capability of the Reactor Makeup control System.

Exam Bank No.: 1813**Last used on an NRC exam:** 2009**RO Sequence Number:** 14

The Unit is at 100% power with the following condition:

- RCS Inventory indicates a rise in unidentified leak rate.

If a containment entry is required, then the greatest potential radiological hazard to the personnel making entry would be from (1).

AND

Placing the Containment (2) in service could reduce this hazard.

- A. (1) radon
(2) Normal Purge Fans
- B. (1) radon
(2) Carbon Filter Units
- C. (1) iodine
(2) Normal Purge Fans
- D. (1) iodine
(2) Carbon Filter Units

Answer: D (1) iodine
(2) Carbon Filter Units

Exam Bank No.: 1813**Source:** Bank**Modified from****K/A Catalog Number:** G2.3.14

Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.

RO Importance: 3.4**Tier:** 3**Group/Category:** 3**10CFR Reference:** 55.41(b)(12)**STP Lesson:** LOT 202.33**Objective Number:** 92035

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

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

Reference: LOT 202.33 Rev 7 Slide 29**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Iodine is the greater radiological hazard due to its effect on the thyroid. Plausible because it is a radiological concern. Normal Purge Fans can not be ran in Mode 1. Plausible because Normal Purge is designed to reduce activity in RCB but only after shutdown. At power, Supplemental Purge fans and the carbon filter units are used.
- B: INCORRECT: Iodine is the greater radiological hazard due to its effect on the thyroid. Plausible because it is a radiological concern.
- C: INCORRECT: Normal Purge Fans can not be ran in Mode 1. Plausible because Normal Purge is designed to reduce activity in RCB but only after shutdown. At power, Supplemental Purge fans and the carbon filter units are used.
- D: CORRECT: Iodine is a greater radiological hazard than radon due to its effect on the thyroid. The Containment Carbon Units can be placed in service to reduce these iodine levels.

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

Candidate must be able to distinguish between the greater radiological hazards associated iodine due to its effect on the thyroid and the radiological hazards posed by radon. Must also be able to determine that the containment carbon units can be used to lower the iodine levels in the containment and that containment normal purge cannot be used in Mode 1, only Mode 5 or below.

Exam Bank No.: 921**Last used on an NRC exam:** Never**RO Sequence Number:** 15

Given the following:

- ESF DG 12 is paralleled with 4.16 KV bus E1B Offsite power to support surveillance testing.
- A Main Steamline break occurs and Containment pressure rises to 12 psig.

The ____ (1) ____ will trip open and the Train B Sequencer will actuate a ____ (2) ____ sequence.

- A. (1) DG 12 output breaker
(2) Mode I
- B. (1) DG 12 output breaker
(2) Mode III
- C. (1) normal feeder breaker to 4.16 KV bus E1B
(2) Mode I
- D. (1) normal feeder breaker to 4.16 KV bus E1B
(2) Mode III

Answer: A (1) DG 12 output breaker
(2) Mode I

Exam Bank No.: 921**Source:** New**Modified from****K/A Catalog Number:** 064 K4.11

Knowledge of the ED/G system design feature(s) and/or interlock(s) which provide for the following: Automatic load sequencer: safeguards

RO Importance: 3.5**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(8)**STP Lesson:** LOT 201.41**Objective Number:** 98035

GIVEN a plant or system condition, PREDICT the operation of the ESF Load Sequencer.

Reference: LOT201.41 Rev 9 slide 26 and 27**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: When the DG is paralleled and an SI occurs, the DG breaker will open. Since the bus has not lost power, the Mode I sequencer will cycle on the Mode I loads.
- B: INCORRECT: A Mode I sequence is present. Plausible because if DG 12 was carrying the bus then a Mode III would actuate on B Train.
- C: INCORRECT: The DG 12 breaker would open. Plausible because both breakers are closed when paralleled and one opens when a Mode I signal is present. It is a common misconception that the DG 12 breaker would remain closed to power the bus and the normal feeder breaker would open.
- D: INCORRECT: The DG 12 breaker would open and a Mode I logic is present. Plausible because when a Mode II or III logic is present the sequencer strips the normal breaker for 480 V Bus. If the DG was carrying the Bus then a Mode III would actuate on Train B.

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

The applicant must understand the design of the sequencer and DG systems and be able to apply the design characteristics to the given conditions to determine the correct plant response.

Exam Bank No.: 2643**Last used on an NRC exam:** Never**RO Sequence Number:** 16

Following a grid disturbance the Main Generator output is reading as follows:

- 1225 MW
- 200 MVAR IN

The Main Generator is operating (1) the limits of the capability curve.

AND/BUT

The operator would need to (2) Generator current to minimize operation in the VARS IN region.

- A. (1) within
 (2) raise
- B. (1) within
 (2) lower
- C. (1) outside
 (2) raise
- D. (1) outside
 (2) lower

Answer: C (1) outside
 (2) raise

Exam Bank No.: 2643**Source:** New**Modified from**

K/A Catalog Number: APE 077 AA2.03 Ability to determine and interpret the following as they apply to Generator Voltage and Electric Grid
Disturbances: Generator current outside the capability curve

RO Importance: 3.5 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(5)

STP Lesson: LOT 202.17 **Objective Number:** 91965

Explain under and over excitation of the Main Generator and precautions.

Reference: OPOP03-ZG-0008 Rev 65 step 4.48

Attached Reference ☒ **Attachment:** Main Generator Capability Curve

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: With the given conditions, the generator is outside the limits. Plausible the student may misread the curve and its restrictions.
- B: INCORRECT: With the given conditions, the generator is outside the limits. Plausible the student may misread the curve and its restrictions. Also plausible a student may think lowering current would minimize the VARS IN. However, when raising current in the VARS IN region the number actually lowers to get closer to zero.
- C: CORRECT: With the given conditions the generator is outside the allowable limits of the capability curve. Raising current, or excitation, would lower VARS IN to above the capability limitation of 100 MVARs IN.
- D: INCORRECT: Lowering current would put the Generator output to more MVARs IN. Plausible a student may think lowering current would minimize the VARS IN. However, when raising current in the VARS IN region the number actually lowers to get closer to zero.

Question Level: H **Question Difficulty** 3

Justification:

Student must read and interpret given curve and determine the operational limits.

Exam Bank No.: 2694

Last used on an NRC exam: Never

RO Sequence Number: 17

The Unit is at 100% power with the following condition:

- Main Generator hydrogen purity has dropped to 76%.

The operating crew should...

- A. stop the Main Generator Hydrogen Side Seal Oil pump.
- B. start a Main Generator Hydrogen feed and bleed operation.
- C. place the Main Generator Single Tower Hydrogen Dryer in service.
- D. perform a fast load reduction to take the Main Generator off line.

Answer: D perform a fast load reduction to take the Main Generator off line

Exam Bank No.: 2694**Source:** New**Modified from****K/A Catalog Number:** 045 K5.01

Knowledge of the operational implications of the following concepts as they apply to the MT/B System:
Possible presence of explosive mixture in generator if hydrogen purity deteriorates.

RO Importance: 2.8 **Tier:** 2 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 202.19 **Objective Number:** 5620

DISCUSS the current operating procedures for the generator hydrogen gas system. INCLUDE purpose, scope, precautions, limitations, notes and cautions.

Reference: OPOP09-AN-0119, Generator Seal Oil/Stator Cooling Water Annunciator Lampbox 1(2)-119 Response Instructions, Rev 40 Window A-1, B-1, C-3 & C-10

Attached Reference ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible because low H2 purity in the Main Generator can be caused by a H2 drain tank level low. Incorrect because low H2 purity can be caused by other abnormal conditions and with no indication of low H2 drain tank level and with H2 purity already below 80%, performing a fast load reduction to take the Main Generator offline is the correct response.
- B: INCORRECT: Plausible because the annunciator response procedure has the crew perform a feed and bleed operation to raise hydrogen purity when purity lowers below 90%.
- C: INCORRECT: Plausible because a high moisture content in the Main Generator could affect the H2 density detector which feeds the H2 purity meter. Placing the single tower H2 dryer inservice could lower H2 moisture content. Incorrect because low H2 purity can be caused by other abnormal conditions and with no indication of high H2 moisture content and with H2 purity already below 80%, performing a fast load reduction to take the Main Generator offline is the correct response.
- D: CORRECT: The stem implies with hydrogen purity at 76% that it is approaching an explosive mixture. So for an issue where H2 purity is below 80% the correct action per the annunciator response is for the crew to as quickly as possible lower Main Generator load so that it can be taken offline.

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

The student has to analyze the given condition and have knowledge of procedures that are associated with Main Generator H2 Gas.

Exam Bank No.: 1359**Last used on an NRC exam:** 2015**RO Sequence Number:** 18

Ten minutes after a LOCA, containment pressure indicates the following:

- PT-934 = 9.5 psig
- PT-935 = 9.6 psig
- PT-936 = 9.3 psig
- PT-937 = 9.4 psig

Which of the following describes the response of the Containment Spray System 10 seconds after containment pressure reaches the listed values, assuming no ESF systems have been reset?

Containment Spray Pumps (1) started and their discharge valves are (2) .

- A. (1) have
 (2) closed
- B. (1) have
 (2) open
- C. (1) have NOT
 (2) open
- D. (1) have NOT
 (2) closed

Answer: B (1) have
 (2) open

Exam Bank No.: 1359**Source:** Bank**Modified from****K/A Catalog Number:** 026 A3.01

Ability to monitor automatic operation of the CSS, including: Pump starts and correct MOV positioning.

RO Importance: 4.3**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.11**Objective Number:** 2009

GIVEN a plant or system condition, PREDICT the operation of the Containment Spray System

Reference: LOT201.11 Rev 14 handout, page 9**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: The valves directly open from the actuation signal. Plausible since the pumps get a start signal from the sequencer and the valves do not open until the Hi-3 signal and the student may not recognize the Hi-3 actuation has been reached.
- B: CORRECT: Containment Spray actuates on a 2/4 logic at 9.5 psig. The valves directly open from the actuation signal. The pumps will start providing there is still a Sequencer signal present which locks in a 40 seconds after the sequencer started. The sequencer started on the initial Safety Injection. (RCB pressure at 3.0 psig)
- C: INCORRECT: The pumps will auto start. Plausible because the pumps would not auto start if the sequencer has been reset.
- D: INCORRECT: The pumps will auto start. Plausible because the pumps would not auto start if the sequencer has been reset. Also, the valves directly open from the actuation signal. Plausible since the pumps get a start signal from the sequencer and the valves do not open until the Hi-3 signal and the student may not recognize the Hi-3 actuation has been reached.

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

The candidate must have a knowledge of the conditions required to actuate both the spray pumps and discharge valves. This knowledge must then be applied to the conditions given to determine the correct response.

Exam Bank No.: 2692**Last used on an NRC exam:** Never**RO Sequence Number:** 19

The Unit is at 100% power.

A malfunctioning Power Range NI needs to be placed in BYPASS.

The Power Range NI will be placed in BYPASS at (1), and an Operator can monitor the respective channel's 'NIS BYPASS ENABLED' alarm from the annunciator panels on (2).

- A. (1) CP-011 in the Control Room
(2) CP-026
- B. (1) CP-011 in the Control Room
(2) CP-005
- C. (1) SSPS Panel in Relay Room
(2) CP-026
- D. (1) SSPS Panel in Relay Room
(2) CP-005

Answer: B (1) CP-011 in the Control Room
(2) CP-005

Exam Bank No.: 2692**Source:** New**Modified from****K/A Catalog Number:** 015 A4.03

Ability to manually operate and/or monitor in the control room:
Trip bypasses.

RO Importance: 3.8**Tier:** 2**Group/Category:** 2**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.16**Objective Number:** 32388

LIST the Nuclear Instrumentation System bistables that have block features and explain when and how these blocks are accomplished.

Reference: LOT 201.16 Lesson Plan Rev 13 Pages 36 and 54**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible because annunciators on CP-026 have alarms for SSPS which does get signals from the Power Range NIs. Incorrect because because if the Power Range NIs bypassed the annunciator is on CP-005.
- B: CORRECT: Each NI channel has its own set of bypass switches on CP-011 where the controls for the excore NIs are located. The Power Range 'BYPASS ENABLED' annunciators for each of the 4 Power Range channels are located on the Annunciator Panel on CP-005.
- C: INCORRECT: Plausible because most of the systems that can cause a reactor trip feed into SSPS and are bypassed at SSPS. Incorrect because the Power Range NIs are bypassed at CP-011 in the Control Room. Plausible because annunciators on CP-026 have alarms for SSPS which does get signals from the Power Range NIs. Incorrect because because if the Power Range NIs bypassed the annunciator is on CP-005.
- D: INCORRECT: Plausible because most of the systems that can cause a reactor trip feed into SSPS and are bypassed at SSPS. Incorrect because the Power Range NIs are bypassed at CP-011 in the Control Room.

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

The student needs to have fundamental knowledge of how to operate and monitor the Power Range NIs.

Exam Bank No.: 1113**Last used on an NRC exam:** 2011**RO Sequence Number:** 20

The Unit is in Mode 5 with the following conditions:

- RHR Trains 'A' and 'B' are in service maintaining RCS temperature at 170°F.
- Both RHR trains are equally sharing the RCS heat removal, although only 1 train would be sufficient for the current decay heat generation.
- The RHR HX BYP FLOW CONT valves in RHR Trains 'A' and 'B' are in AUTO.

If Train 'A' RHR HX OUTL TEMP CONT valve, HCV-0864, fully CLOSES due to a malfunction, then 'A' RHR system total flowrate will stabilize at (1) flowrate, and 'B' RHR HX inlet temperature will (2) the original temperature.

(Assume no operator actions are taken.)

- A. (1) a lower
(2) rise above
- B. (1) a lower
(2) remain at
- C. (1) the same
(2) rise above
- D. (1) the same
(2) remain at

Answer: C (1) the same
(2) rise above

Exam Bank No.: 1113**Source:** Bank**Modified from****K/A Catalog Number:** 005 K6.03

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

RO Importance: 2.5**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(14)**STP Lesson:** LOT 201.09**Objective Number:** 4245

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

Reference: LOT 201.09 Rev 11**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: the flow thru the 'A' RHR train lowers, but total train flow remains the same because the Hx bypass valve has an automatic feature to maintain total flow in the train constant. Plausible to think there is not an automatic feature to maintain flow since there is not an automatic feature to maintain temperature. The RCS temperature response is correct since less heat will be removed by RHR train 'A' and this will cause a rise in RCS temperature.
- B: INCORRECT: the flow response is incorrect as explained above. Plausible to think there is not an automatic feature to maintain flow since there is not an automatic feature to maintain temperature. Additionally, the inlet temperature of 'B' RHR train will rise since there is less overall cooling of the RCS and the RCS hot legs are where the RHR trains take a suction.
- C: CORRECT: When the Train 'A' Hx outlet valves closes, total system flow will begin lowering. The Hx bypass valve will automatically open to maintain a given total flow therefore Train 'A' total flow remains the same. With less flow going thru the 'A' Hx and more bypassing the 'A' Hx, heat removal by Train 'A' will be less causing RCS temperature to rise. The inlet for the RHR trains comes from the RCS hot legs, therefore as RCS temperature goes up, the 'B' RHR train inlet temperature will also go up. The RHR Hx Outlet Valves (temperature control valves) have no automatic function therefore the 'B' RHR Hx temperature control valve will not change position and RCS temperature will remain higher than it originally was.
- D: INCORRECT: Total Train 'A' flow will remain the same as stated. However, RHR train 'B' inlet temperature will rise as described in answer 'C' above. Plausible to think there is an automatic feature for temperature control since there is one to maintain total flow rate.

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

Student must determine how the RHR system responds to the given failure and how that response affects RCS heat removal and the condition of the other operating RHR train.

Exam Bank No.: 2700**Last used on an NRC exam:** Never**RO Sequence Number:** 21

The Unit is at 100% power with Condensate Pump #13 OOS for maintenance.

Subsequently:

- Condensate Pump #12 trips and cannot be restarted.

This condition will cause low flow to the ____ (1) ____ seals.

AND

The Crew should ____ (2) ____.

- A. (1) SGFPT
(2) lower power to <50%
- B. (1) SGFPT
(2) trip the RX & ensure Main Turbine tripped
- C. (1) Condensate Pump
(2) lower power to <50%
- D. (1) Condensate Pump
(2) trip the RX & ensure Main Turbine tripped

Answer: A (1) SGFPT
(2) lower power to <50%

Exam Bank No.: 2700**Source:** New**Modified from****K/A Catalog Number:** 056 G2.1.7

Condensate:
Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.

RO Importance: 4.4 **Tier:** 2 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(10)**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: LOT 505.01 Lesson Plan Rev 7 and 0POP04-CD-0001, Loss of Condensate Flow Rev 22**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: With one Condensate Pump running at 100% power, condensate flow to the SGFPT seaals will lower and bring in the associated alarms. Operators are required to lower flow to the DA to restore flow to the SGFPT seals and then lower power to less than 50% to maintain DA level.
- B: INCORRECT: Plausible because if only one FWBP is running with power above 85% the Unit would be tripped. Incorrect because when only one Condensate pump is running above 85% power a down power to 50% can be achieved without taking the unit off-line.
- C: INCORRECT: Plausible because the Condensate Pump seals are supplied by the condensate discharge header. Incorrect because if flow starts to lower on the Condensate Pump seals the back up supply from Condensate makeup will automatically supply the Condensate Pump seals.
- D: INCORRECT: Plausible because the Condensate Pump seals are supplied by the condensate discharge header. Incorrect because if flow starts to lower on the Condensate Pump seals the back up supply from Condensate makeup will automatically supply the Condensate Pump seals. Plausible because if only one FWBP is running with power above 85% the Unit would be tripped. Incorrect because when only one Condensate pump is running above 85% power a down power to 50% can be achieved without taking the unit off-line.

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

The student must analyze the given condition and have fundamental knowledge of systems supported by the Condensate System to be able to determine the correct answer.

Exam Bank No.: 2677**Last used on an NRC exam:** Never**RO Sequence Number:** 22

The Unit is at 100% power with the following condition:

- QDPS APC A2 is denergized for maintenance.

Subsequently;

- An inadvertent Safety Injection occurs.

The Train 'A' AFW Reg Valve will be (1).

AND

The Train 'A' AFW Flow Indicator, FI-7525, will indicate (2).

- A. (1) throttled
(2) no flow
- B. (1) throttled
(2) actual flow
- C. (1) full open
(2) no flow
- D. (1) full open
(2) actual flow

Answer: C (1) full open
(2) no flow

Exam Bank No.: 2677**Source:** New**Modified from****K/A Catalog Number:** 061 K6.01

Knowledge of the effect of a loss or malfunction of the following will have on the AFW components:
Controllers and positioners.

RO Importance: 2.5**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 202.44**Objective Number:** 7667

Given a change in plant or system condition, EXPLAIN the operation and indications of the QDPS System.

Reference: LOT 202.44 Lesson on AFW, Rev 12 PPT slide #56, Logic Drawing 5S149Z40140

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: Plausible because a failure of different parts of QDPS affect different systems in different ways. The student has to know what systems are affected by QDPS and how a specific failure affects the system.
- B: INCORRECT: Plausible because a failure of different parts of QDPS affect different systems in different ways. The student has to know what systems are affected by QDPS and how a specific failure affects the system.
- C: CORRECT: A QDPS A2 being denegized will cause the AFW flow control valve for that train to fail as is and cause the flow indication to read zero gpm. At 100% power the AFW Reg valves are aligned full open.
- D: INCORRECT: Plausible because a failure of different parts of QDPS affect different systems in different ways. The student has to know what systems are affected by QDPS and how a specific failure affects the system.

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

The student must be able to analyze the given condition to determine the effect on the AFW system.

Exam Bank No.: 516**Last used on an NRC exam:** 2014**RO Sequence Number:** 23

The Unit is operating at 92% power with the Control Rod system in AUTOMATIC.

Subsequently;

- First Stage Turbine Pressure PT-505 fails high.
- When the failure occurred, Tavg was indicating 1°F below program Tavg on the T AVG AUCT recorder on CP-005.

How will the Control Rod system respond?

(A copy of 0POP04-TM-0004, Failure of Turbine Impulse Pressure Transmitter, Addendum 1, Percent Power VS Program Tave, is provided for reference)

Control Rods will...

- A. not move from their current position.
- B. begin to step at 6 steps per minute.
- C. begin to step at 39 steps per minute.
- D. begin to step at 72 steps per minute.

Answer: B begin to step at 6 steps per minute

Exam Bank No.: 516**Source:** Bank**Modified from**

K/A Catalog Number: APE 001 AK2.06 Knowledge of the interrelations between the Continuous Rod Withdrawal and the following: T-ave./ref. deviation meter

RO Importance: 3.0 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.18 **Objective Number:** 3160

Describe the operation of the rod control system and components, including design features, limitations, and interlocks (setoints and coincidences).

Reference: LOT201.18 Rev 15 handout 2 (page 3); OPOP04-TM-0004, Addendum 1 Rev 16

Attached Reference ☒ **Attachment:** OPOP04-TM-0004, Addendum 1 Rev 16 Percent Power VS Program Tave

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: Plausible because the control rod system will not respond to a temperature error <1 °F, so the student must accurately determine what actual temperature is.
- B: CORRECT - At 92% power, programmed Tavg is 590 °F. Tavg is 1 °F low, so Tavg is 589 °F. A high failure of PT-505 will cause Tref to go to the high limit of 592 °F. This will result in a 3 °F mismatch between Tavg and Tref. Rod speed for this mismatch is 6 spm.
- C: INCORRECT: Plausible because this is the speed for a temperature error of 4 °F, so the student must accurately determine what actual temperature is.
- D: INCORRECT: Plausible because this is the speed for a temperature error of 5 °F, so the student must accurately determine what actual temperature is.

Question Level: H **Question Difficulty** 3

Justification:

The applicant must determine what actual Tave is based on the given conditions and then use that information to determine what the indicated error for rod control would be. Once the error is determined, knowledge of the rod control system is needed to determine what the rod speed will be.

Exam Bank No.: 2647**Last used on an NRC exam:** Never**RO Sequence Number:** 24

When an ESF DG experiences an Emergency start following a Loss of Off-Site Power, the DG governor is operating in the (1) mode, and its frequency will (2) if the operator goes to raise on the "GOV" switch.

- A. (1) parallel
(2) rise
- B. (1) parallel
(2) remain the same
- C. (1) isochronous
(2) rise
- D. (1) isochronous
(2) remain the same

Answer: C (1) isochronous
(2) rise

Exam Bank No.: 2647**Source:** New**Modified from**

K/A Catalog Number: APE 056 AA1.04 Ability to operate and/or monitor the following as they apply to the Loss of Offsite Power: Adjustment of speed of ED/G to maintain frequency and voltage levels

RO Importance: 3.2 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.39 **Objective Number:** 44845

PREDICT the effect of adjusting the DG Governor and/or voltage controls when interconnecting an ESF DG in the parallel or isochronous modes.

Reference: LOT 201.39 Rev 16 slide 280 and student handout page 77

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: The DG would be operating in emergency mode which means the governor is operating in isochronous mode. Plausible because other times the DG would be operating it would normally be in parallel mode.
- B: INCORRECT: The DG would be operating in emergency mode which means the governor is operating in isochronous mode. Plausible because other times the DG would be operating it would normally be in parallel mode. Also plausible because when a DG is running in parallel in isochronous mode, then the DG will try to maintain constant speed regardless of the load on the generator. So frequency will remain the same if the governor switch is taken to the raise position.
- C: CORRECT: The DG would be operating in emergency mode which means the governor is operating in isochronous mode. When the DG experiences an emergency start then the GOV switch will change the frequency of the DG because in an emergency mode the raise/lower circuits are not blocked.
- D: INCORRECT: Plausible because when a DG is running in parallel in isochronous mode, then the DG will try to maintain constant speed regardless of the load on the generator. So frequency will remain the same if the governor switch is taken to the raise position.

Question Level: F **Question Difficulty** 3

Justification:

Student must know the different modes of operation of the governor for different situations.

Exam Bank No.: 2658**Last used on an NRC exam:** Never**RO Sequence Number:** 25

When swapping Letdown orifices with “PRESS CONT PCV-0135” in manual per 0POP02-CV-0004, Chemical and Volume Control System Subsystem, the operator will ____ (1) ____ PCV-135 to lower letdown pressure to avoid lifting the relief at ____ (2) ____.

- A. (1) open
(2) 300 psig
- B. (1) close
(2) 300 psig
- C. (1) open
(2) 600 psig
- D. (1) close
(2) 600 psig

Answer: C (1) open
(2) 600 psig

Exam Bank No.: 2658**Source:** New**Modified from****K/A Catalog Number:** 004 K4.11

Knowledge of CVCS design feature(s) and/or interlock(s) which provide for the following: temperature/pressure control in letdown line: prevent boiling, lifting reliefs, hydraulic shock, piping damage, and burst

RO Importance: 3.1**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.06**Objective Number:** 32413

DESCRIBE the design features associated with the Chemical and Volume Control System and its major components.

Reference: LOT201.06 handout Rev 14 p17-18**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: The normal letdown line relief opens at 600 psig. Plausible because the Low Pressure Letdown line relief lifts at 300 psig.
- B: INCORRECT: The operator would open the valve to lower pressure in the letdown line. Plausible because PCV-135 is a backpressure valve and is a common misconception for the operation of this valve. Also, plausible because the Low Pressure Letdown line relief lifts at 300 psig.
- C: CORRECT: PCV-135 is a backpressure control valve. The operator would open the valve to lower pressure in the letdown line. The letdown line relief opens at 600 psig.
- D: INCORRECT: The operator would open the valve to lower pressure in the letdown line. Plausible because PCV-135 is a backpressure valve and is a common misconception for the operation of this valve.

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

Student must know the proper operation of letdown pressure control valve and the setpoints for the associated relief valve.

Exam Bank No.: 2650**Last used on an NRC exam:** Never**RO Sequence Number:** 26

The Unit is at 100% power when the following occurs:

- VCT level transmitter LT-113 fails high.

Auto makeup to the VCT will initiate when level on LT-112 lowers to (1) and the charging pump suction will be aligned from the (2).

- A. (1) 28%
(2) VCT
- B. (1) 28%
(2) RWST
- C. (1) 48%
(2) VCT
- D. (1) 48%
(2) RWST

Answer: A (1) 28%
(2) VCT

Exam Bank No.: 2650**Source:** New**Modified from****K/A Catalog Number:** 004 A3.09

Ability to monitor automatic operation of the CVCS, including: VCT level.

RO Importance: 3.3**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.06**Objective Number:** 507226

Given a description of plant conditions, ANALYZE the conditions and PREDICT how the CVCS will respond.

Reference: LOT 201.06 Rev 16 slide 51**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: Auto makeup starts when LT-112 reaches 28% and is secured automatically at 48%. In the given condition, charging would be aligned from the VCT. If the failure was a low failure then charging would be aligned to the RWST. Suction swaps to the RWST when either LT-112 or LT-113 is at 3%.
- B: INCORRECT: In the given condition, charging would be aligned from the VCT. Plausible because if the failure was a low failure then charging would be aligned to the RWST. Suction swaps to the RWST when either LT-112 or LT-113 is at 3%.
- C: INCORRECT: Auto makeup starts when LT-112 reaches 28%. Plausible because 48% VCT level is when auto makeup is automatically secured.
- D: INCORRECT: Auto makeup starts when LT-112 reaches 28%. Plausible because 48% VCT level is when auto makeup is automatically secured. Also in the given condition, charging would be aligned from the VCT. Plausible because if the failure was a low failure then charging would be aligned to the RWST. Suction swaps to the RWST when either LT-112 or LT-113 is at 3%.

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

Student must analyze the given condition and predict the operation of the CVCS including VCT and charging.

Exam Bank No.: 2729**Last used on an NRC exam:** Never**RO Sequence Number:** 27

The Unit is at 45% power when 2 RCS flow detectors on Loop A detect low flow.

The reactor (1) automatically trip.

AND

The setpoint for a loss of flow on a RCS loop is (2) .

- A. (1) will
 (2) 91.8%
- B. (1) will
 (2) 87.5%
- C. (1) will NOT
 (2) 91.8%
- D. (1) will NOT
 (2) 87.5%

Answer: A (1) will
 (2) 91.8%

Exam Bank No.: 2729**Source:** New**Modified from****K/A Catalog Number:** EPE 007 G2.4.2Reactor Trip/Stabilization:
Knowledge of system set points interlocks and automatic
actions associated with EOP entry conditions.**RO Importance:** 4.5**Tier:** 1**Group/Category:** 1**10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 201.20**Objective Number:** 507227

Given a description of plant conditions, ANALYZE the conditions and PREDICT how the Solid State Protection System will respond.

Reference: LOT 201.20 Rev 18 HO page 40**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: When the reactor is above 40% power, then 2/3 detectors on one loop will cause an auto trip at 91.8%.
- B: INCORRECT: The reactor will auto trip. However the setpoint is 91.8%. Plausible because 87.5% is the setpoint for P-14.
- C: INCORRECT: This is the correct setpoint. However, the reactor will auto trip with 2 detectors on one loop when above 45%. Plausible because if reactor power was below 40% then the reactor would not auto trip.
- D: INCORRECT: Plausible because if reactor power was below 40% then the reactor would not auto trip. Also plausible because 87.5% is the setpoint for P-14.

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

Student must be able to analyze the given condition of SSPS and determine the plant response.

Exam Bank No.: 2705**Last used on an NRC exam:** Never**RO Sequence Number:** 28

When running an ESF D/G for surveillance credit, the D/G should be loaded to ____ (2) ____ when paralleling to offsite power to prevent a(n) ____ (1) ____ trip.

- A. (1) 0 to 100 KW
(2) Underfrequency
- B. (1) 0 to 100 KW
(2) Reverse Power
- C. (1) 100 to 200 KW
(2) Underfrequency
- D. (1) 100 to 200 KW
(2) Reverse Power

Answer: D (1) 100 to 200 KW
(2) Reverse Power

Exam Bank No.: 2705**Source:** New**Modified from****K/A Catalog Number:** 064 A1.08

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ED/G system controls including:
Maintaining minimum load on ED/G (to prevent reverse power)

RO Importance: 3.1 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(8)**STP Lesson:** LOT 201.39 **Objective Number:** 30701

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

Reference: LOT 201.39 Lesson on ESF D/Gs Rev 16 and 0PSP03-DG-0001/2/3 Rev 53 NOTE in step 5 prior to closing the DG Output Breaker with offsite power.

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: Plausible because the underfrequency trip is associated with the speed of the ESF D/G. Speed is controlled by the GOV but only when the DG is the only source of power to the bus. NOT when it is paralleled to the bus. Incorrect because when paralleled to the bus the GOV controls power and frequency remains constant. Plausible because 0 to 100 KW would keep the reverse trip from actuating. Incorrect because the procedure requires 100 to 200 KW of power because it would be less likely for a power excursion on the bus to cause amps to exceed 1008 amperes from the ESF Bus to the Stanby Bus.
- B: INCORRECT: Plausible because 0 to 100 KW would keep the reverse trip from actuating. Incorrect because the procedure requires 100 to 200 KW of power because it would be less likely for a power excursion on the bus to cause amps to exceed 1008 amperes from the ESF Bus to the Stanby Bus.
- C: INCORRECT: Plausible because the underfrequency trip is associated with the speed of the ESF D/G. Speed is controlled by the GOV but only when the DG is the only source of power to the bus. NOT when it is paralleled to the bus. Incorrect because when paralleled to the bus the GOV controls power and frequency remains constant.
- D: CORRECT: It is the Reverse Power trip that is less likely to actuate if a load of at least 100 to 200 KW is loaded on the ESF D/G when paralleling to offsite power. There is a note in section 5 of the surveillance procedure just prior to closing the DG output breaker.

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

The student must have fundamental knowledge of ESF D/G trips and procedural requirements associated with ESF D/Gs.

Exam Bank No.: 2039

Last used on an NRC exam: Never

RO Sequence Number: 29

Which of the following is a 480V MCC power supply for a Containment Carbon Filter Unit Fan in Unit 1?

- A. 1A1
- B. 1B1
- C. 1K1
- D. 1N1

Answer: C 1K1

Exam Bank No.: 2039**Source:** Bank**Modified from****K/A Catalog Number:** 027 K2.01Containment Iodine Removal System
Knowledge of the bus power supplies to the following:
Fans**RO Importance:** 3.1 **Tier:** 2 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 202.33 **Objective Number:** 51319

STATE the power supplies for the RCB-HVAC systems

Reference: LOT202.33, RCB HVAC, handout Rev 7 page 16**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible if the student thought the containment carbon filter unit fans were class powered.
- B: INCORRECT: Plausible if the student thought the containment carbon filter unit fans were class powered.
- C: CORRECT: The power supplies is 1K1 for the Containment Carbon filter units fans 12A.
- D: INCORRECT: Plausible because this is a 480 V MCC that powers a FHB HVAC supply fan 11B.

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

Applicant requires a knowledge of the power supply to the identified equipment.

Exam Bank No.: 2704**Last used on an NRC exam:** Never**RO Sequence Number:** 30

A HIGH alarm on RT-8041, TGB Sump #1 Radiation Monitor, will (1) .

AND

The indications for the monitor can be read on (2) in the Control Room.

- A. (1) close the discharge to Oily Waste
 (2) radiation panel RM-11 ONLY
- B. (1) stop all TGB Sump #1 Sump Pumps
 (2) radiation panel RM-11 ONLY
- C. (1) close the discharge to Oily Waste
 (2) radiation panels RM-11 and RM-23
- D. (1) stop all TGB Sump #1 Sump Pumps
 (2) radiation panels RM-11 and RM-23

Answer: B (1) stop all TGB Sump #1 Sump Pumps
 (2) radiation panel RM-11 ONLY

Exam Bank No.: 2704**Source:** New**Modified from****K/A Catalog Number:** 073 A4.01Ability to manually operate and/or monitor in the control room:
Effluent release.**RO Importance:** 3.9**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(11)**STP Lesson:** LOT 203.10**Objective Number:** 98076

Given a set of plant conditions, PREDICT the effect(s) and/or response(s) on the Equipment & Floor Drains system.

Reference: LOT 203.10 Lesson Plan on Equipment Drains Rev 7 PPT slides 62-73 and LOT 202.41 Lesson Plan on Radiation Monitoring Rev 15 PPT slide 74-82**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible because there are other process discharges that are stopped on high rad alarms by closing the discharge valve. Incorrect because the TGB Sump #1 discharge is stopped on high rad alarm by stopping the sump pumps.
- B: CORRECT: RT-8041 samples the contents of TGB Sump #1 by drawing the sample from the sump itself. On a high alarm the TGB Sump #1 sump pumps are tripped. RT-8041 only feeds into the RM-11 Radiation Monitor Computer in the Control Room.
- C: INCORRECT: Plausible because there are other process discharges that are stopped on high rad alarms by closing the discharge valve. Incorrect because the TGB Sump #1 discharge is stopped on high rad alarm by stopping the sump pumps. Plausible because there are some non-TS rad monitors that are controlled and/or monitored from both RM-11 and RM-23. Incorrect because RT-8041 is only controlled and/or monitored from RM-11.
- D: INCORRECT: Plausible because there are some non-TS rad monitors that are controlled and/or monitored from both RM-11 and RM-23. Incorrect because RT-8041 is only controlled and/or monitored from RM-11.

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

Student must have fundamental knowledge of the different types of radiation monitors and where they are monitored.

Exam Bank No.: 2645**Last used on an NRC exam:** Never**RO Sequence Number:** 31

The Unit was at 100% power when the following occurred:

- Due to a leak, CCW Surge Tank level lowered to 64% and is now slowly rising.
- A Safety Injection occurred simultaneous to the CCW Surge Tank level reaching 64%.

As a result CCW to the ____ (1) ____ heat exchanger is isolated due to the ____ (2) ____.

- A. (1) Spent Fuel Pool
(2) Safety Injection signal
- B. (1) Seal Water
(2) Safety Injection signal
- C. (1) Spent Fuel Pool
(2) CCW Surge Tank low level isolation
- D. (1) Seal Water
(2) CCW Surge Tank low level isolation

Answer: A (1) Spent Fuel Pool
(2) Safety Injection signal

Exam Bank No.: 2645**Source:** New**Modified from**

K/A Catalog Number: APE 026 AK3.02 Loss of Component Cooling Water
Knowledge of the reasons for the following responses as they apply to the Loss of component Cooling Water: The automatic actions (alignments) within the CCWS resulting from the actuation of the ESFAS

RO Importance: 3.6 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.12 **Objective Number:** 5213

GIVEN a plant or system condition, PREDICT the operation of the Component Cooling Water System.

Reference: LOT 201.12 CCW Power Point Lesson. Rev. 14. Slides 15 & 39

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: CORRECT: With the given conditions the safety injection signal would close the CCW MOV isolation valves to the SFP heat exchangers.
- B: INCORRECT: Because CCW to the seal water heat exchanger would not be isolated for a safety injection or due to the first CCW level isolation which occurs at 64.6%. Plausible because of the complexity of what heat exchangers lose CCW flow during the CCW Surge Tank level isolation signals and on a safety injection signal.
- C: INCORRECT: Because the first level isolation signal from the CCW Surge Tank (64.6%) does not close the CCW MOVs to the SFP heat exchangers. Plausible because of the complexity of what heat exchangers lose CCW flow during the CCW Surge Tank level isolation signals.
- D: INCORRECT: Because CCW to the seal water heat exchanger would not be isolated for a safety injection or due to the first CCW level isolation which occurs at 64.6%. Plausible because of the complexity of what heat exchangers lose CCW flow during the CCW Surge Tank level isolation signals and on a safety injection signal. Second part of question is incorrect because the first level isolation signal from the CCW Surge Tank (64.6%) does not close the CCW MOVs to the SFP heat exchangers. Plausible because of the complexity of what heat exchangers lose CCW flow during the CCW Surge Tank level isolation signals.

Question Level: H **Question Difficulty** 3

Justification:

The student must analyze the given conditions to determine where the CCW system response.

Exam Bank No.: 2716**Last used on an NRC exam:** Never**RO Sequence Number:** 32

The Unit is at 100% power with the following condition:

- CCW Train A is in service.
- CCW heat exchanger outlet temperature has been steadily lowering over the past several hours.

The reactor operator should slowly OPEN the CCW HX 1A ____ (1) ____ in order to prevent CCW temperature lowering below the design limit of ____ (2) ____.

- A. (1) TEMP CONT MOV-0643
(2) 60°F
- B. (1) TEMP CONT MOV-0643
(2) 80°F
- C. (1) FLOW CONT MOV-0642
(2) 60°F
- D. (1) FLOW CONT MOV-0642
(2) 80°F

Answer: C (1) FLOW CONT MOV-0642
(2) 60°F

Exam Bank No.: 2716**Source:** New**Modified from****K/A Catalog Number:** 008 A1.02

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

RO Importance: 2.9 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(5)**STP Lesson:** LOT 201.12 **Objective Number:** 57126

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

Reference: LOT 201.12 Rev 14 slide 8 and POP02-CC-0001 Rev 50 step 11.1**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible because the operator would have to operate the temperature control valve in order to maintain the correct system parameters. Incorrect because they would close this valve.
- B: INCORRECT: Plausible because the operator would have to operate the temperature control valve in order to maintain the correct system parameters. Incorrect because they would close this valve. Also, the lower design limit temperature of CCW is 60 degrees. Plausible because the lower design pressure limit of CCW is 80 psig.
- C: CORRECT: In order to raise CCW temperature, the operator would open the CCW HX flow control valve. This would bypass more flow around the CCW HX. The lower design limit temperature of CCW is 60 degrees.
- D: INCORRECT: The lower design limit temperature of CCW is 60 degrees. Plausible because the lower design pressure limit of CCW is 80 psig.

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

Student understand the operation of the CCW HW controls and their effects on CCW temperatures.

Exam Bank No.: 1479**Last used on an NRC exam:** 2011**RO Sequence Number:** 33

The Unit is in Mode 5 when Pressurizer level unexpectedly starts lowering.

What is the makeup capability of the Safety Injection (SI) pumps under these plant conditions?

____(1)____ SI pumps are available and can be started ____ (2) ____.

- A. (1) BOTH High Head and Low Head
(2) automatically or manually
- B. (1) BOTH High Head and Low Head
(2) manually ONLY
- C. (1) ONLY Low Head
(2) automatically or manually
- D. (1) ONLY Low Head
(2) manually ONLY

Answer: D (1) ONLY Low Head
(2) manually ONLY

Exam Bank No.: 1479**Source:** Bank**Modified from****K/A Catalog Number:** G2.4.9

Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.

RO Importance: 3.8**Tier:** 3**Group/Category:** 4**10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 201.10**Objective Number:** 29419

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

Reference: OPOP03-ZG-0007, Plant Cooledown Rev 78 step 7.4 and 7.6**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Auto SI cannot occur and the HHSI pumps are not available due to Tech Spec restrictions on their use at low temperatures. OPOP03-ZG-0007 section 7 for cooling down to Mode 5 has the LHSI placed in PTL and the HHSI tagged out by an ECO. Plausible because during Modes 1-4 HHSI and LHSI pumps are available and auto SI is available.
- B: INCORRECT: The HHSI pumps are not available due to Tech Spec restrictions on their use at low temperatures. OPOP03-ZG-0007 section 7 for cooling down to Mode 5 has the LHSI placed in PTL and the HHSI tagged out by an ECO. Plausible because during Modes 1-4 HHSI and LHSI pumps are available.
- C: INCORRECT: Auto SI cannot occur. OPOP03-ZG-0007 section 7 for cooling down to Mode 5 has the LHSI placed in PTL. Plausible because during Modes 1-4 auto SI is available.
- D: CORRECT - With the given plant conditions, an automatic SI is not possible due to the lack of energy in the RCS and all LHSI are placed in PTL per OPOP03-ZG-0007. In Mode 5, all HHSI pumps are required to be disabled due to Tech Spec restrictions on their use at low temperatures.

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

From the given conditions, the applicant must determine that an auto SI from high RCB pressure cannot occur with the RCS less than 200 degrees. The applicant must also have knowledge of the procedural requirements for HHSI pumps in Mode 5.

Exam Bank No.: 2702**Last used on an NRC exam:** Never**RO Sequence Number:** 34

The Unit is at 100% Power when the following occurs:

- The pressure sensing line to a controlling Pressure channel for a Steam Generator (SG) ruptures.

This will cause the SG's controlling Steam Flow channel to read (1) than the actual Steam Flow value.

AND

With no Operator action, SGFPT speed will go (2) .

- A. (1) lower
 (2) down
- B. (1) lower
 (2) up
- C. (1) higher
 (2) down
- D. (1) higher
 (2) up

Answer: A (1) lower
 (2) down

Exam Bank No.: 2702**Source:** New**Modified from****K/A Catalog Number:** 016 A3.02

Ability to monitor automatic operation of the NNIS,
including:
Relationship between meter readings and actual
parameter value

RO Importance: 2.9 **Tier:** 2 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 202.15 **Objective Number:** 19370

DISCUSS the consequences of a loss of any one input to the S/G level control system.

Reference: LOT 202.15 Lesson Rev 9 on SG Level Control and SGFPT Speed Control**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: A ruptured controlling steam pressure sensing line to a SG will cause indicated controlling steam pressure to read lower than actual steam pressure. This will cause the steam flow channel to read lower than actual steam flow because the Steam flow is pressure compensated. The controlling steam flow channel feeds into the deltaP set point for the SGFPT speed control. With a lower total steam flow, a lower deltaP will be generated. SGFPT speeds will lower to try to match the lower set point deltaP.
- B: INCORRECT: Plausible because other inputs failing low to the SGFPT speed control, such as FW pressure, will make the SGFPT speeds go up.
- C: INCORRECT: Plausible because there is often a misconception on how pressure compensation affects indicated steam flow readings and students often get the concept backwards.
- D: INCORRECT: Plausible because there is often a misconception on how pressure compensation affects indicated steam flow readings and students often get the concept backwards.

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

The student must analyze the given condition and have fundamental knowledge of how instrument failures affect SG level control and SGFPT speed control to determine the correct answer.

Exam Bank No.: 704**Last used on an NRC exam:** 2014**RO Sequence Number:** 35

Unit 1 is in Mode 4 with the following conditions:

- RCS Temperature is 275°F.
- RCS Pressure is 650 psig.
- An inadvertent SI signal is actuated.

Which of the following correctly describes the response of the Safety Injection Accumulators?

The SI Accumulators...

- A. will NOT discharge into the RCS because the outlet valves are interlocked to close when RCS pressure is less than P-11.
- B. will NOT discharge into the RCS because the outlet valves are shut with control power removed in accordance with 0POP03-ZG-0007, Plant Cooldown.
- C. WILL discharge into the RCS because the outlet valves are interlocked to open when a Safety Injection signal occurs.
- D. WILL discharge into the RCS because the outlet valves are open with control power removed in accordance with 0POP03-ZG-0007, Plant Cooldown.

Answer: B will NOT discharge into the RCS because the outlet valves are shut with control power removed in accordance with 0POP03-ZG-0007, Plant Cooldown.

Exam Bank No.: 704**Source:** Bank**Modified from****K/A Catalog Number:** 006 K1.03

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

RO Importance: 4.2 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.10 **Objective Number:** 29419

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

Reference: OPOP03-ZG-0007 Rev 78, LOT 201.10**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible because the P-11 interlock does have an effect on the accumulator valves, but it acts to open the valves on rising pressure when P-11 is reached if they are not already open.
- B: CORRECT: The Accumulator outlet valves are closed during a plant cooldown when RCS pressure is 900-1000 psig.
- C: INCORRECT: Plausible because it reasonable to think the accumulator valves would receive an actuation signal upon an SI. The Accumulator valves are NOT interlocked to open on an SI signal.
- D: INCORRECT: Plausible because this is the normal configuration in Mode 3 and above. The Accumulator outlet valves are CLOSED during a plant cooldown when RCS pressure is 900-1000 psig.

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

Must be able to determine the response of the Accumulator outlet valves based on the given plant conditions.

Exam Bank No.: 83**Last used on an NRC exam:** 1999**RO Sequence Number:** 36

The Unit is performing a power ascension when the operator notices the following conditions:

- C-7 TURB IMP PRESS STM DUMP PERMISSIVE lampbox is illuminated
- TURBINE POWER P-13 CH 1 bistable light is illuminated
- TURBINE POWER P-13 CH 2 bistable light is extinguished
- STM DUMP UNBLOCK AVAILABLE light is illuminated
- Tave is 587.75 °F
- Tref is 586.25 °F

Turbine Impulse Pressure Transmitter (1) failed low causing the steam dumps to (2) .

- A. (1) PT-505
 (2) arm ONLY
- B. (1) PT-505
 (2) arm and open
- C. (1) PT-506
 (2) arm ONLY
- D. (1) PT-506
 (2) arm and open

Answer: C (1) PT-506
 (2) arm ONLY

Exam Bank No.: 83**Source:** Bank**Modified from****K/A Catalog Number:** 039 K3.06

Knowledge of the effects that a loss or malfunction of the MRSS will have on the following: SDS.

RO Importance: 2.8**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 202.09**Objective Number:** 93002

Given plant conditions, DETERMINE their effects on the Steam Dump System.

Reference: OPOP04-TM-0004, Rev 16 page 3 symptoms and entry conditions**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: The given indications represent a failure of PT-506. Plausible because the P-13 CH1 and CH2 bistables are indicating a failure of one channel. The student must know that these bistables are normally illuminated although the majority of bistables are normally extinguished.
- B: INCORRECT: The given indications represent a failure of PT-506. Plausible because the P-13 CH1 and CH2 bistables are indicating a failure of one channel. The student must know that these bistables are normally illuminated although the majority of bistables are normally extinguished. Also plausible because the dumps have a 3 degree deadband when a load rejection is sensed; therefore, dumps would be armed but remain closed in this condition. Plausible, because a 1.5 degree difference is the deadband associated with rods moving in automatic.
- C: CORRECT: The associated Steam Dump System lights indicate a rapid decrease in the output of PT-506 causing its bistable to trip and provide C-7. TURBINE POWER P-13 CH 2 bistable light also indicates PT-506 output is below 30% of rated first stage pressure. Steam dumps arm on this failure but do not open. The dumps have a 3 degree deadband when a load rejection is sensed.
- D: INCORRECT: The dumps have a 3 degree deadband when a load rejection is sensed; therefore, dumps would be armed but remain closed in this condition. Plausible, because a 1.5 degree difference is the deadband associated with rods moving in automatic.

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

The candidate must analyze the conditions presented and based on their knowledge of the Main Steam inputs to the SDS, Rod Control, and AMSAC, identify the indications that are not common to PT-505 to conclude that PT-506 has failed low.

Exam Bank No.: 2666

Last used on an NRC exam: Never

RO Sequence Number: 37

The Unit 1 Startup Steam Generator Feed Pump is powered by 13.8 KV Bus ____.

- A. 1F
- B. 1G
- C. 1H
- D. 1J

Answer: C 1H

Exam Bank No.: 2666**Source:** New**Modified from****K/A Catalog Number:** 062 K2.01

Knowledge of bus power supplies to the following: Major system loads.

RO Importance: 3.3**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(4)**STP Lesson:** LOT 202.13**Objective Number:** 5840

List the systems that interface with the feedwater system and the function of each interface.

Reference: LOT 202.13 Rev 18 Slide 58 or LP page 29**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: S/U SGFP 14 is powered by 13.8 KV Bus 1H. Plausible because pumps in the secondary are powered by various 13.8 KV Buses.
- B: INCORRECT: S/U SGFP 14 is powered by 13.8 KV Bus 1H. Plausible because pumps in the secondary are powered by various 13.8 KV Buses.
- C: CORRECT: S/U SGFP 14 is powered by 13.8 KV Bus 1H.
- D: INCORRECT: S/U SGFP 14 is powered by 13.8 KV Bus 1H. Plausible because pumps in the secondary are powered by various 13.8 KV Buses.

Question Level: F**Question Difficulty** 2**Justification:**

Student must recall the power supply for the SU SGFP.

Exam Bank No.: 2640

Last used on an NRC exam: Never

RO Sequence Number: 38

Which of the following would require the reactor to be tripped and the affected Reactor Coolant Pump to be secured per the CIP of OPOP04-RC-0002, Reactor Coolant Pump Off Normal?

- A. Case Vibration is 2 mils
- B. Shaft Vibration is 12 mils
- C. Number 1 Seal DP is 200 psid
- D. Number 1 Seal Leakoff is 4 gpm

Answer: C Number 1 Seal DP is 200 psid

Exam Bank No.: 2640**Source:** New**Modified from**

K/A Catalog Number: APE 015 G2.1.23 Reactor Coolant Pump Malfunctions:
Ability to perform specific system and integrated plant
procedures during all modes of operation.

RO Importance: 4.3 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(10)

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-RC-0002 Rev. 40 CIP

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: The RCP trip criteria per the CIP is GREATER than or equal to 3 mils and rate of vibration increase greater than or equal to 0.2 mil per hour OR case vibration GREATER than or equal to 5 mils. All distractors are plausible because they all require a RCP to be tripped under certain conditions and all of them are listed on the CIP.
- B: INCORRECT: The RCP trip criteria per the CIP is GREATER than or equal to 15 mils and a rate of vibration increase greater than or equal to 1 mil per hour OR shaft vibration GREATER than or equal to 20 mils. All distractors are plausible because they all require a RCP to be tripped under certain conditions and all of them are listed on the CIP.
- C: CORRECT: The RCP trip criteria per the CIP is the Number 1 Seal DP is LESS THAN 220 psid.
- D: INCORRECT: The RCP trip criteria per the CIP is the Number 1 Seal leakoff GREATER than 6 gpm OR pegged high. All distractors are plausible because they all require a RCP to be tripped under certain conditions and all of them are listed on the CIP.

Question Level: H **Question Difficulty** 3

Justification:

Student must analyze each RCP condition and determine if the RCP trip criteria apply.

Exam Bank No.: 2698**Last used on an NRC exam:** Never**RO Sequence Number:** 39

A Fire Protection System Deluge Valve actuation has caused Fire Ring Header pressure to lower.

After 10 minutes the following conditions are observed:

- Fire Ring Header pressure is 105 psig.

As a result, (1) Diesel Driven Fire Pumps will be running.

AND

They can be monitored in the Control Room from (2).

- A. (1) Three
(2) CP-018
- B. (1) Three
(2) CP-002
- C. (1) Two
(2) CP-018
- D. (1) Two
(2) CP-002

Answer: A (1) Three
(2) CP-018

Exam Bank No.: 2698**Source:** New**Modified from****K/A Catalog Number:** 086 A1.01

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with Fire Protection System operating the controls including: Fire header pressure.

RO Importance: 2.9 **Tier:** 2 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.29 **Objective Number:** 31250

EXPLAIN how the following components operate:

- A. Closed Head Sprinkler
- B. Deluge Valve - Including Reset
- C. Alarm Check Valve
- D. Diesel Fire Pump Controller

Reference: LOT 201.29 Lesson Plan Rev 7 PPT Slides 59 and the Lesson Plan Handout Rev 7**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: Diesel Driven Fire Pumps will auto start on lowering main ring header pressure. Below 110 psig all 3 pumps will be running. The pumps can be started remotely from CP-018 in either control room along with monitoring main ring header pressure.
- B: INCORRECT: Plausible because on CP-002 operators can control the Fire Protection Isolation Valve to containment. Incorrect because pump operation and header pressure are on CP-018.
- C: INCORRECT: Plausible because 2 Fire Pumps would be running if main ring header pressure was above 110 psig and less than 120 psig. Incorrect because the given header pressure is below 110 psig.
- D: INCORRECT: Plausible because 2 Fire Pumps would be running if main ring header pressure was above 110 psig and less than 120 psig. Incorrect because the given header pressure is below 110 psig. Plausible because on CP-002 operators can control the Fire Protection Isolation Valve to containment. Incorrect because pump operation and header pressure are on CP-018.

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

The student has to analyze the given condition and have knowledge of the Diesel Driven Fire Pump start logic. Also, the student must have fundamental knowledge of the location of controls and indications for the Diesel Driven Fire Pumps.

Exam Bank No.: 870**Last used on an NRC exam:** 2001**RO Sequence Number:** 40

The Unit is at 100% power. The Control Room staff and Plant Operators are working together to isolate a system water leak by operating valves.

Which of the following correctly describes how the valve manipulations done DURING the shift are documented in accordance with the Conduct of Operations Manual, Chapter 8, Equipment Configuration Management?

Valve manipulations done during the shift are tracked by

- A. using a system lineup.
- B. using the ECO process.
- C. making a Temporary Log.
- D. making a Control Room Log entry.

Answer: D making a Control Room Log entry.

Exam Bank No.: 870**Source:** Bank**Modified from****K/A Catalog Number:** G2.2.14

Knowledge of the process for controlling equipment configuration or status.

RO Importance: 3.9**Tier:** 3**Group/Category:** 2**10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 507.01**Objective Number:** 92186

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

Reference: Conduct of Operations, Chapter 8, Rev. 19, Section 3.1.5**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT - Plausible because there are many instances that a system valve lineup is performed following valve manipulations.
- B: INCORRECT - Plausible because per section 3.1.5 of COP chapter 8, if these manipulations are not restored by the end of the shift then they must be documented by a formal config management process such as an ECO.
- C: INCORRECT - Plausible because several things are documented using Temp Logs in the Control Room.
- D: CORRECT - Section 3.1.5 of COP chapter 8 states that manipulations that occur during a shift that are separate from procedures or tagouts must be documented in the Operator Logs.

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

Must know the administrative requirements for temporary valve manipulations done during a shift to facilitate diagnostic operations.

Exam Bank No.: 790

Last used on an NRC exam: Never

RO Sequence Number: 41

A Field Change (FC) is being written against a Plant Operating Procedure that does NOT require review by the Plant Operations Review Committee (PORC).

In accordance with OPAP01-ZA-0102, Plant Procedures, when is the FC considered “Effective?”

As soon as it is approved by the:

- A. Senior Reactor Operator
- B. Technical Reviewer
- C. Cognizant Manager
- D. Plant Manager

Answer: A Senior Reactor Operator

Exam Bank No.: 790**Source:** Bank**Modified from****K/A Catalog Number:** G2.2.6

Knowledge of the process for making changes to procedures.

RO Importance: 3.0**Tier:** 3**Group/Category:** 2**10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 507.01**Objective Number:** 92183

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

Reference: 0PAP01-ZA-0102 Rev 16 Section 20.3**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: The SRO approves the field change and this is when it is effective.
- B: INCORRECT: This distractor is credible because the Technical Reviewer is require to sign the FC but the FC is not effective until signed by the SRO.
- C: INCORRECT: This distractor is credible because the cognizant manager must give concurrence to the FC preparer and sign Form 7. This is done before it is sent for approval.
- D: INCORRECT: This distractor is credible because if the procedure was required to be reviewed by PORC then the final signature would come from the Plant Manager.

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

Student must have fundamental knowledge of the plant procedure for field changes.

Exam Bank No.: 2685**Last used on an NRC exam:** Never**RO Sequence Number:** 42

The Unit is in Mode 6 with Core Alterations in progress.

The Equipment Hatch must be closed with a MINIMUM of (1) bolts.

If the Equipment Hatch can NOT be closed or is NOT capable of being closed with the MINIMUM amount of bolts then Core Alterations must be suspended (2).

- A. (1) 4
(2) immediately
- B. (1) 14
(2) immediately
- C. (1) 4
(2) within 2 hours
- D. (1) 14
(2) within 2 hours

Answer: A (1) 4
(2) immediately

Exam Bank No.: 2685**Source:** New**Modified from****K/A Catalog Number:** 103 K3.03

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.

RO Importance: 3.7 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(9)**STP Lesson:** LOT 503.01**Objective Number:** 92102

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

Reference: LOT 503.01 PPT LOT50301 3_4.9-11 5.0&6.0 Rev 14 Slide 19 - Also see CR 16-12260 for recent OE.

Attached Reference ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: The TRM states that a minimum of 4 bolts must be in place to secure the equipment hatch during refueling. If it is NOT closed with 4 bolts or capable of being closed with 4 bolts then suspend movement of fuel in containment immediately.
- B: INCORRECT: Plausible because 14 bolts would be 50% of the total equipment hatch bolts (28).
- C: INCORRECT: Plausible because the equipment hatch has to have the manpower and equipment staged to be able to close and bolt the equipment hatch within 2 hours. Incorrect because if at anytime it is determined that this capability does not exist then the action is to suspend core alterations immediately.
- D: INCORRECT: Plausible because 14 bolts would be 50% of the total equipment hatch bolts (28). Plausible because the equipment hatch has to have the manpower and equipment staged to be able to close and bolt the equipment hatch within 2 hours. Incorrect because if at anytime it is determined that this capability does not exist then the action is to suspend core alterations immediately.

Question Level: F**Question Difficulty** 2**Justification:**

The student must have knowledge of what constitutes a loss of containment integrity during refueling operations. Knowing the number of bolts required for the equipment hatch during refueling would determine if the containment system had a loss or malfunction. The effect of the loss would be to immediately suspend core Alterations which would be a requirement of less than 1 hour and thereby RO knowledge.

Exam Bank No.: 2653

Last used on an NRC exam: Never

RO Sequence Number: 43

The Unit is in Mode 1 with the following Pressurizer conditions:

- Backup Heater Group A capacity is 185 kW
- Backup Heater Group B capacity is 195 kW
- Pressure is 2090 psig
- Volume is 1260 cu ft

Which Pressurizer condition requires an entry into Technical Specifications?

- A. Backup Heater Group A ONLY
- B. Backup Heater Group A AND B
- C. Pressure
- D. Volume

Answer: C Pressure

Exam Bank No.: 2653**Source:** New**Modified from****K/A Catalog Number:** 010 G2.2.42

Pressurizer pressure Control:
Ability to recognize system parameters that are entry-level conditions for Technical Specifications.

RO Importance: 3.9**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(5)**STP Lesson:** LOT 201.04**Objective Number:** 92102

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

Reference: TS 3.2.5 Amend 188 and TS 3.4.3 Amend 188**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: T.S. 3.4.3 requires A and B backup heater groups to have a capacity of at least 175 kW. All distractors are plausible since they are T.S. requirements for the pressurizer.
- B: INCORRECT: T.S. 3.4.3 requires A and B backup heater groups to have a capacity of at least 175 kW. All distractors are plausible since they are T.S. requirements for the pressurizer.
- C: CORRECT: T.S. 3.2.5 - In Mode 1 the pressurizer pressure must be greater than that specified in the COLR. The COLR section 2.9 states pressurizer pressure > 2200 psig to maintain DNB parameters within limits
- D: INCORRECT: T.S. 3.4.3 requires the water volume to be less than or equal to 1816 cubic feet. Plausible since pressurizer volume is measured in % and not in cubic feet. The lesson plan states 1260 cubic feet to be the normal operating volume. All distractors are plausible since they are T.S. requirements for the pressurizer.

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

Student must recall Tech Spec entry criteria for the pressurizer parameters.

Exam Bank No.: 2659**Last used on an NRC exam:** Never**RO Sequence Number:** 44

Power limits are given for recovery of misaligned rods in order to prevent ____ (1) _____. When the Unit is at 100% power, ____ (2) _____ is the maximum amount of time a rod can be misaligned greater than 12 steps without a power reduction being required per OPOP04-RS-0001, Control Rod Malfunction.

- A. (1) lower DNB ratios
(2) one hour
- B. (1) lower DNB ratios
(2) four hours
- C. (1) higher linear heat rates
(2) one hour
- D. (1) higher linear heat rates
(2) four hours

Answer: C (1) higher linear heat rates
(2) one hour

Exam Bank No.: 2659**Source:** New**Modified from**

K/A Catalog Number: APE 005 AK3.05 Knowledge of the reasons for the following responses as they apply to the Inoperable/ Stuck control rod: Power limits on rod misalignment

RO Importance: 3.4 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(5)

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-RS-0001 Rev 37 Addendum 2

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: The basis explains the reasoning is to prevent the core design criteria to be exceeded by high local linear heat rates. Plausible because DNB ratio is also a core design criteria that is of concern but not for a misaligned rod.
- B: INCORRECT: The basis explains the reasoning is to prevent the core design criteria to be exceeded by high local linear heat rates. Plausible because DNB ratio is also a core design criteria that is of concern but not for a misaligned rod. Also, plausible because 4 hours is the maximum amount of time a rod can be misaligned without reducing to 40% power. A reduction to 75% is required for a time frame of 1-4 hours.
- C: CORRECT: The note prior to step 8 of addendum 2 states that if a rod can be re-aligned within 1 hour then a power reduction is not required. The basis explains the reasoning is to prevent high local linear heat rates.
- D: INCORRECT: The note prior to step 8 of addendum 2 states that if a rod can be re-aligned within 1 hour then a power reduction is not required. Plausible because 4 hours is the maximum amount of time a rod can be misaligned without reducing to 40% power. A reduction to 75% is required for a time frame of 1-4 hours.

Question Level: F **Question Difficulty** 3

Justification:

Student must know power limits and the bases for them for a misaligned rod.

Exam Bank No.: 2714

Last used on an NRC exam: Never

RO Sequence Number: 45

Considering each one separately, which of the following would require the most limiting condition for operation per TS while operating in Mode 1?

- A. QPTR = 1.03
- B. RWST = 450,000 gal
- C. RCS Tave = 560 °F
- D. RCS unidentified leakrate = 2 gpm

Answer: C RCS Tave = 560 °F

Exam Bank No.: 2714**Source:** New**Modified from****K/A Catalog Number:** G2.2.39

Knowledge of less than or equal to one hour Technical Specification action statements for systems.

RO Importance: 3.9**Tier:** 3**Group/Category:** 2**10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 503.01**Objective Number:** 80056

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

Reference: TS 3.1.1.4 page 3/4 1-8 (no Amend), TS 3.2.4 page 3/4 2-10 Amend 188, TS 3.5.5 page 3/4 5-10 Amend 188, TS 3.4.6.2 page 3/4 4-20 Amend 164

Attached Reference ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: TS 3.2.4 - With QPTR > 1.02 while in Mode 1 and greater than 50% power then reduce power within 2 hours. All distractors are plausible because they require short action times.
- B: INCORRECT: TS 3.5.5 - With RWST level < 458,000 gal then restore level within 1 hour. All distractors are plausible because they require short action times.
- C: CORRECT: TS 3.1.1.4 - With RCS Tave < 561 degrees F then restore Tave within 15 minutes.
- D: INCORRECT: TS 3.4.6.2 - With RCS unidentified leakage > 1 gpm then reduce leakage within 4 hours. All distractors are plausible because they require short action times.

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

Student must have knowledge of TS action statements.

Exam Bank No.: 2667**Last used on an NRC exam:** Never**RO Sequence Number:** 46

The crew is responding to a Reactor Trip and Safety Injection and need to restore Instrument Air to Containment.

In accordance with OPOP01-ZA-0018A Addendum 4, Establishing IA to Containment, the operator will ensure ____ (1) ____ is reset prior to opening the IA OCIV.

If the IA OCIV cannot be opened from the control room, then an operator will locally establish IA to Containment at the ____ (2) ____ MAB penetration space.

- A. (1) Phase A
(2) 10 ft
- B. (1) Phase A
(2) 60 ft
- C. (1) Safety Injection
(2) 10 ft
- D. (1) Safety Injection
(2) 60 ft

Answer: A (1) Phase A
(2) 10 ft

Exam Bank No.: 2667**Source:** New**Modified from****K/A Catalog Number:** 078 G2.1.30

Instrument Air:
Ability to locate and operate components, including local controls.

RO Importance: 4.4**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 202.26**Objective Number:** 80556

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

Reference: OPOP01-ZA-0018A Rev 5 Addendum 4**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: Phase A must be reset in order to open the IA OCIV. And it is locally operated at the 10 ft MAB penetration space.
- B: INCORRECT: It is locally operated at the 10 ft MAB penetration space. Plausible, because there several other IA isolation valves at the 60 foot MAB penetration space.
- C: INCORRECT: Phase A must be reset in order to open the IA OCIV. Plausible, because SI has to be reset in order to operate several valves in the control room. It is also commonly confused as to which valves receive a Phase A and which receive the signal from SI.
- D: INCORRECT: Phase A must be reset in order to open the IA OCIV. Plausible, because SI has to be reset in order to operate several valves in the control room. It is also commonly confused as to which valves receive a Phase A and which receive the signal from SI. Also, it is locally operated at the 10 ft MAB penetration space. Plausible, because there several other IA isolation valves at the 60 foot MAB penetration space.

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

Student must know the Phase A signal is an input to the IA OCIV and the local location to operate the valve manually.

Exam Bank No.: 2652**Last used on an NRC exam:** Never**RO Sequence Number:** 47

The Unit is at 100% power with the following conditions:

- “PRT LEVEL HI/LO” is in alarm.
- The PRT level indicator LI-0670 is reading 60%

The Reactor Operator should control PRT level by (1) per OPOP02-RC-0001, Pressurizer Relief Tank and Reactor Coolant Drain Tank System Operation, to within its normal operating band of (2).

- A. (1) pumping down the PRT to Recycle Holdup Tank
(2) 25% - 55%
- B. (1) pumping down the PRT to Liquid Waste Processing System
(2) 25% - 55%
- C. (1) filling the PRT from the Reactor Coolant Drain Tank
(2) 65% - 75%
- D. (1) filling the PRT from the Reactor Makeup Water System
(2) 65% - 75%

Answer: D (1) filling the PRT from Reactor Makeup Water System
(2) 65% - 75%

Exam Bank No.: 2652**Source:** New**Modified from****K/A Catalog Number:** 007 A1.01

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRTS controls including: Maintaining quench tank water level within limits

RO Importance: 2.9 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.04 **Objective Number:** 4555

STATE the normal pressures, temperatures, and level indication for the Pressurizer Relief Tank.

Reference: OPOP09-AN-04M7 F-1 Rev 30 and OPOP02- RC-0001 Rev 22**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: The PRT level is low. Plausible because there is 2 inputs into this alarm and one is high level in which case the OPOP09 directs the operator to pump down the PRT per OPOP02-RC-0001. The PRT would be pumped down to LWPS normally. However RHT is plausible because the PRT can be aligned to the RHT and is sometimes used during outages.
- B: INCORRECT: The PRT level is low. Plausible because there is 2 inputs into this alarm and one is high level in which case the OPOP09 directs the operator to pump down the PRT per OPOP02-RC-0001. The PRT would be pumped down to LWPS normally.
- C: INCORRECT: The PRT level alarm comes in at 64% for low level. If the PRT level is low then the annunciator response procedure directs the operator to fill the PRT per OPOP02-RC-0001. The normal operating band is 65-75%. However, RMW is the fill source. Plausible because the RCDT is filled by the PRT.
- D: CORRECT: The PRT level alarm comes in at 64% for low level. If the PRT level is low then the annunciator response procedure directs the operator to fill the PRT per OPOP02-RC-0001. The normal operating band is 65-75% and RMW is the fill source.

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

Student must analyze the given condition and know what the possible cause for the alarm is and the normal operating band of that system.

Exam Bank No.: 2642**Last used on an NRC exam:** Never**RO Sequence Number:** 48

When manually transferring 120 VAC DP-001 to the Voltage Regulated Transformer per OPOP02-AE-0004, 120 VAC ESF Vital Distribution Power Supplies, the operator first ensures the ____ (1) ____ lamp is illuminated and then ____ (2) ____ to complete the transfer.

- A. (1) "IN SYNC"
(2) toggles the Auto-Retransfer switch to "OFF"
- B. (1) "IN SYNC"
(2) depresses the "BYPASS SOURCE TO LOAD" pushbutton
- C. (1) "INVERTER SUPPLYING LOAD"
(2) toggles the Auto-Retransfer switch to "OFF"
- D. (1) "INVERTER SUPPLYING LOAD"
(2) depresses the "BYPASS SOURCE TO LOAD" pushbutton

Answer: B (1) "IN SYNC"
(2) depresses the "BYPASS SOURCE TO LOAD" pushbutton

Exam Bank No.: 2642**Source:** New**Modified from**

K/A Catalog Number: APE 057 AA1.01 Ability to operate and/or monitor the following as they apply to the Loss of Vital AC Instrument bus: Manual inverter swapping

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

STP Lesson: LOT 201.38 **Objective Number:** 91533

COMPARE and CONTRAST the normal and alternate/backup sources of power for the Class 1E Vital 120 VAC system to include method of switching power supplies.

Reference: OPOP02-AE-0004 Rev 64 page 40

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: Plausible because when manually swapping to the VRT you do not want the load to auto transfer. However, the auto transfer feature is disabled when the "BYPASS SOURCE TO LOAD" pushbutton is depressed.
- B: CORRECT: In order to manually transfer DP-001 to its VRT you first ensure the "IN SYNC" lamp is illuminated and then press the "BYPASS SOURCE TO LOAD" pushbutton.
- C: INCORRECT: Plausible because the "INVERTER SUPPLYING LOAD" light will be lit. However, this light is verified lit when placing the inverter in service. Procedurally the operator checks the "IN SYNC" light when manually swapping to the VRT. If the "IN SYNC" light is not lit then you SHALL NOT transfer to the VRT. Also plausible because when manually swapping to the VRT you do not want the load to auto transfer. However, the auto transfer feature is disabled when the "BYPASS SOURCE TO LOAD" pushbutton is depressed.
- D: INCORRECT: Plausible because the "INVERTER SUPPLYING LOAD" light will be lit. However, this light is verified lit when placing the inverter in service. Procedurally the operator checks the "IN SYNC" light when manually swapping to the VRT. If the "IN SYNC" light is not lit then you SHALL NOT transfer to the VRT.

Question Level: H **Question Difficulty** 3

Justification:

Student must understand the process and interpret the indications to manually swap the distribution panel to its backup source.

Exam Bank No.: 2708**Last used on an NRC exam:** Never**RO Sequence Number:** 49

Unit 1 is operating at 100% power when the following occurs:

- All 3 trains of ECW Pump Bay level low alarms come in.
- The crew is performing actions of 0POP09-AN-02M3 to address the alarms.
- The crew is at the step 6 to initiate ECW Pond fill per 0POP02-EW-0001, Essential Cooling Water Operations, IF the ECW Pond level is low.

The ECW pond level will be verified (1).

AND

Per 0POP02-EW-0001 Section 10, Control of the Essential Cooling Pond Level, the MINIMUM ECW Pond level shall be (2) feet.

- A. (1) locally
(2) 23.5
- B. (1) locally
(2) 25.5
- C. (1) on CP-009
(2) 23.5
- D. (1) on CP-009
(2) 25.5

Answer: B (1) locally
(2) 25.5

Exam Bank No.: 2708**Source:** New**Modified from**

K/A Catalog Number: APE 062 G2.2.44 Loss of Nuclear Service Water
Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.

RO Importance: 4.2 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 201.13 **Objective Number:** 91201

GIVEN a plant or system condition, PREDICT the operation of the Essential Cooling Water System.

Reference: OPOP09-AN-02M3 D-8 Rev 39, OPOP02-EW-0001 Rev 71 page 45

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: Per the OPOP02, the minimum ECP level is 25.5 feet. Plausible because at an individual bay level equivalent to 23.5 feet, the OPOP09 has the crew secure the associated ECW train.
- B: CORRECT: The pond level is read locally. OPOP02-EW-0001 states the MINIMUM ECW Pond level shall be 25.5 feet.
- C: INCORRECT: ECW Pond level is read locally. Plausible because the main reservoir level can be read on CP-009. Also, plausible because at an individual bay level equivalent to 23.5 feet, the OPOP09 has the crew secure the associated ECW train.
- D: INCORRECT: ECW Pond level is read locally. Plausible because the main reservoir level can be read on CP-009.

Question Level: H **Question Difficulty** 3

Justification:

Student must analyze the given conditions and decide what the correct actions are to take.

Exam Bank No.: 2200**Last used on an NRC exam:** 2013**RO Sequence Number:** 50

The Unit is performing a Plant Startup with the following conditions:

- Reactor Power is currently at 8%.
- Power Range Channel N41 INSTRUMENT and CONTROL power fuses are removed while maintenance is being performed on the detector.
- All protective bistables associated with N41 are in the TRIPPED condition.

Subsequently;

- The CONTROL power is lost to Power Range Channel N42.

The Control Board meter for N42 will (1).

AND

The Reactor Operator will next perform the immediate actions of (2).

- A. (1) indicate actual Reactor power
(2) 0POP04-NI-0001, Nuclear Instrument Malfunction
- B. (1) indicate actual Reactor power
(2) 0POP05-EO-EO00, Reactor Trip or Safety Injection
- C. (1) fail low
(2) 0POP04-NI-0001, Nuclear Instrument Malfunction
- D. (1) fail low
(2) 0POP05-EO-EO00, Reactor Trip or Safety Injection

Answer: B (1) indicate actual Reactor power
(2) 0POP05-EO-EO00, Reactor Trip or Safety Injection

Exam Bank No.: 2200**Source:** Bank**Modified from****K/A Catalog Number:** 012 A2.05

Ability to (a) predict the impacts of the following malfunctions or operations on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Faulty or erratic operation of detectors and function generators

RO Importance: 3.1 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.20 **Objective Number:** 507227

Given a description of plant conditions, ANALYZE the conditions and PREDICT how the Solid State Protection System will respond.

Reference: LOT 201.20 Solid State Protection System Rev 18 and LOT 201.16 Excore NIS Rev 13**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: A control power failure for a PR NI channel will cause the Control Board not effect indication. Therefore the meter will indicate actual Reactor power. Performing immediate actions for a PR channel failure is credible, however, due to continued misconceptions on how the instrument and control power circuits affect the operation of the PR NI channels. Also credible given the current Reactor power at 8% and a lot of the trips are not in effect until above 10% power.
- B: CORRECT: A control power failure for a PR NI channel will cause the Control Board not effect indication. Therefore the meter will indicate actual Reactor power. Also, the failure will cause N42 bistables to trip and with N41 bistables in the tripped condition the Reactor will trip.
- C: INCORRECT: Impact is credible because if the instrument power to a PR NI were to fail then the Control Board indication would fail low. Also, performing immediate actions for a PR channel failure is credible, however, due to continued misconceptions on how the instrument and control power circuits affect the operation of the PR NI channels. Also credible given the current Reactor power at 8% and a lot of the trips are not in effect until above 10% power.
- D: INCORRECT: Impact is credible because if the instrument power to a PR NI were to fail then the Control Board indication would fail low.

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

The Reactor Operator must have knowledge of how instrument power for the NIs can affect the SSPS and be able to evaluate the given condition to determine the correct action to implement.

Exam Bank No.: 1061**Last used on an NRC exam:** 2001**RO Sequence Number:** 51

The Unit was operating at 100% when the following occurred:

- The reactor tripped on high pressurizer pressure.
- Pressure in the PRT is at 35 PSIG and rising.

The approximate PORV tailpipe temperature would be (1) and indicated on the 'PORV DISCH TEMP' TI-0676 located on panel (2) in the Control Room.

- A. (1) 220°F
(2) CP-004
- B. (1) 220°F
(2) CP-005
- C. (1) 280°F
(2) CP-004
- D. (1) 280°F
(2) CP-005

Answer: C (1) 280°F
(2) CP-004

Exam Bank No.: 1061**Source:** Bank**Modified from****K/A Catalog Number:** 010 K5.02

Knowledge of the operational implications of the following concepts as they apply to the PZR PCS: Constant enthalpy expansion through a valve.

RO Importance: 2.6**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(5)**STP Lesson:** LOT 201.04**Objective Number:** 80883

DESCRIBE the indications available to determine that a Pressurizer power operated valve is leaking.

Reference: steam tables - mollier diagram**Attached Reference** ☒ **Attachment:** steam table with mollier diagram will be provided**NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible because a tailpipe temperature of 220 degrees would be the case if the Pressurizer (operating in a saturated condition) was discharging to the PRT at its normal operating pressure.
- B: INCORRECT: Plausible because a tailpipe temperature of 220 degrees would be the case if the Pressurizer (operating in a saturated condition) was discharging to the PRT at its normal operating pressure. Also plausible because the pressurizer level and pressure recorders are located on CP-005.
- C: CORRECT: The PORV is discharging to the PRT. You must know that the pressurizer is operating at a saturated condition and PORV discharging to a tank at 35 psig. 35 psig is equal to approximately 50 psia. 50 psia at saturation condition corresponds to a temperature of approximately 280 degrees. The TI-676 is located on panel CP-004.
- D: INCORRECT: Plausible because the pressurizer level and pressure recorders are located on CP-005.

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

Student must know the operating condition of the pressurizer and be able to use the mollier diagram to find the tailpipe temperature.

Exam Bank No.: 2091**Last used on an NRC exam:** 2011**RO Sequence Number:** 52

The Control Room has been evacuated with the following conditions:

- All plant systems have operated as designed.
- ALL steps of 0POP04-ZO-0001, Control Room Evacuation, required to be performed PRIOR to leaving the Control Room have been successfully completed.
- No equipment has yet been placed in service from outside the Control Room.

The Steam Generators (SG's)...

- A. ARE available as a heat sink because Main Feedwater is still in service and the Steam Dumps can be controlled from the Aux Shutdown Panel.
- B. ARE available as a heat sink because the AFW system has automatically started and the SG PORV's are capable of performing their design function.
- C. are NOT available as a heat sink because there is currently no feedwater source for the SG's AND there is no power available to the SG PORV's.
- D. are NOT available as a heat sink because all SG levels have shrunk below 14% NR level and the AFW pumps will not automatically start.

Answer: B ARE available as a heat sink because the AFW system has automatically started and the SG PORV's are capable of performing their design function.

Exam Bank No.: 2091**Source:** Bank**Modified from**

K/A Catalog Number: APE 068 AA2.05 Ability to determine and/or interpret the following as they apply to the Control Room Evacuation: Availability of heat sink.

RO Importance: 4.2 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(4)

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-ZO-0001, Rev. 42

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: MFW was isolated and the MSIV's were closed before evacuating the Control Room. Additionally, the Steam Dumps do not have controls on the Aux Shutdown Panel. Plausible the student may not remember MSIVs were closed per the procedure before exiting the control room since they are not normally closed for a normal reactor trip.
- B: CORRECT: Immediately after the Rx is tripped, AFW will start on LO-LO SG levels and begin feeding the SG's. Before leaving the Control Room, the MSIV's were closed so the SG's will steam thru the SG PORV's as SG pressure rises.
- C: INCORRECT: AFW will automatically start immediately after the Rx trip due to LO-LO SG levels. Additionally, the SG PORV's do have power available and can function to remove heat. Plausible because the procedure has the operator secure several components before exiting the control room
- D: INCORRECT: SG levels will shrink below 14% NR as stated, but the AFW system will automatically start and provide water to the SG's. The AFW pumps will automatically start immediately after the Rx trip due to LO-LO SG levels. If the controls for AFW have been transferred out of the Control Room there would be no automatic AFW starts, but this action is taken after the Control Room is evacuated therefore the AFW system will automatically start on SG LO-LO level.

Question Level: H **Question Difficulty** 3

Justification:

Student must use knowledge of actions taken before evacuating the control room and what controls are on the Aux Shutdown Panel to determine SG heat sink availability under the given plant conditions.

Exam Bank No.: 2663**Last used on an NRC exam:** Never**RO Sequence Number:** 53

The Unit is in Mode 6 with core off-load in progress.

The Equipment Hatch and Personnel Air Lock are open for equipment passage.

In accordance with OPOP04-FH-0001, Fuel Handling Accident, a high alarm on (1) would be indicative of a fuel handling accident inside Containment,

AND

Refueling personnel would be required to secure core off-load activities in the (2).

- A. (1) MAB Ventilation Monitors: RT-8014 through RT-8018
(2) RCB and FHB
- B. (1) MAB Ventilation Monitors: RT-8014 through RT-8018
(2) RCB ONLY
- C. (1) FHB Exhaust Monitors: RT-8035 and RT-8036
(2) RCB and FHB
- D. (1) FHB Exhaust Monitors: RT-8035 and RT-8036
(2) RCB ONLY

Answer: A (1) MAB Ventilation Monitors: RT-8014 through RT-8018
(2) RCB and FHB

Exam Bank No.: 2663**Source:** New**Modified from**

K/A Catalog Number: APE 036 AA2.02 Ability to determine and interpret the following as they apply to the Fuel Handling Incidents:
Occurrence of a fuel handling incident.

RO Importance: 3.4 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(11)

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

DESCRIBE the procedural requirements of the fuel handling equipment operating procedure(s) to include purpose, scope, precautions and limitations.

Reference: OPOP04-FH-0001, Fuel Handling Accident, Rev 19 Symptoms or Entry Conditions and Page 3 Step 1.0

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: CORRECT: With the PAL door open the MAB Ventilation system would pick up gases from Containment during a fuel handling accident and be detected by the MAB Ventilation Rad Monitors. Fuel Handling activities would be stopped in the RCB and FHB.
- B: INCORRECT: Plausible because the Fuel Handling accident is in containment. Incorrect because the procedure states that all fuel handling activities shall be suspended.
- C: INCORRECT: Plausible because the FHB HVAC could pick up gases from a fuel handling accident in the RCB if the PAL door was open but the door between the MAB and FHB would also have to be open. The PAL door is normally open with a team available to close the door within 2 hours. The door between the FHB and MAB is normally closed unless the Shift Manager has given specific permission to open the door and this is not stated in the stem of the question. Incorrect because it is assumed that the door between the FHB and the MAB is closed.
- D: INCORRECT: Plausible because the FHB HVAC could pick up gases from a fuel handling accident in the RCB if the PAL door was open but the door between the MAB and FHB would also have to be open. The PAL door is normally open with a team available to close the door within 2 hours. The door between the FHB and MAB is normally closed unless the Shift Manager has given specific permission to open the door and this is not stated in the stem of the question. Incorrect because it is assumed that the door between the FHB and the MAB is closed. Plausible because the Fuel Handling accident is in containment. Incorrect because the procedure states that all fuel handling activities shall be suspended.

Question Level: H **Question Difficulty** 3

Justification:

The student must analyze the condition given and have procedural knowledge of OPOP04-FH-0001, Fuel Handling Accident, to select the correct answer.

Exam Bank No.: 2561**Last used on an NRC exam:** Never**RO Sequence Number:** 54

The unit is in Mode 4 cooling down with the following conditions:

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

Subsequently;

- There is a loss of power to the Switchyard.
- No RHR pumps are available.

Per OPOP04-RH-0001, Loss of RHR Cooling, what is the PREFERRED method to maintain appropriate RCS cooldown rate?

- A. Adjust Steam Dumps
- B. Open SG PORVs
- C. Initiate RCS Feed and Bleed
- D. Align HHSI to RCS Cold Legs

Answer: B Open SG PORVs

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

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

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

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

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

Reference: OPOP04-RH-0001 Rev 34 step 28

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: Plausible because heat removal with the SGs is the preferred method. However due to the loss of the switchyard the condenser would not be available.
- B: CORRECT: Heat removal with the SGs preferred method. Because of the loss of the switchyard crew would have to dump steam to the atmosphere.
- C: INCORRECT: RCS feed and bleed is not the preferred method since the SGs are available. Plausible because it is a method used in this procedure.
- D: INCORRECT: Plausible because this would remove heat but is not described in this procedure.

Question Level: H **Question Difficulty** 3

Justification:

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

Exam Bank No.: 2548

Last used on an NRC exam: Never

RO Sequence Number: 55

Per OPOP04-ZO-0008, Fire/Explosion, which of the following non-safety related locations would the fire brigade be utilized to combat a fire at the discretion of the Shift Manager/Unit Supervisor?

- A. Warehouse
- B. Nuclear Support Center
- C. River Makeup Pumping Facility
- D. Circulating Water Intake Structure

Answer: D Circulating Water Intake Structure

Exam Bank No.: 2548**Source:** Bank**Modified from****K/A Catalog Number:** G2.4.27

Knowledge of "fire in the plant" procedures.

RO Importance: 3.4**Tier:** 3**Group/Category:** 4**10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 501.01**Objective Number:** 92111

Describe the general sequence of operation in the referenced procedure.

Reference: OPOP04-ZO-0008 Rev 25 step 1**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Switchyard and Circulating Water Intake Structure are the only 2 non-safety related areas that OPOP04-ZO-0008 allows fire brigade to respond to a fire. All distractors are plausible because they are inside the Owner Controlled Area and all are outside the Protected Area.
- B: INCORRECT: Switchyard and Circulating Water Intake Structure are the only 2 non-safety related areas that OPOP04-ZO-0008 allows fire brigade to respond to a fire. All distractors are plausible because they are inside the Owner Controlled Area and all are outside the Protected Area.
- C: INCORRECT: Switchyard and Circulating Water Intake Structure are the only 2 non-safety related areas that OPOP04-ZO-0008 allows fire brigade to respond to a fire. All distractors are plausible because they are inside the Owner Controlled Area and all are outside the Protected Area.
- D: CORRECT: Switchyard and Circulating Water Intake Structure are the only 2 non-safety related areas that OPOP04-ZO-0008 allows fire brigade to respond to a fire.

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

Student must have fundamental knowledge of fire brigade responsibilities.

Exam Bank No.: 2657**Last used on an NRC exam:** Never**RO Sequence Number:** 56

Per OPOP04-FW-0001, Loss of Steam Generator Level Control, the operation of a SGFP is allowed but restricted to 1 hour of operation when operating above ____ (1) ____ rpm in order to prevent an unacceptable differential pressure ____ (2) ____.

- A. (1) 5400
(2) across the pump impeller
- B. (1) 5400
(2) between the Feedwater and Steam headers
- C. (1) 5500
(2) across the pump impeller
- D. (1) 5500
(2) between the Feedwater and Steam headers

Answer: C (1) 5500
(2) across the pump impeller

Exam Bank No.: 2657**Source:** New**Modified from****K/A Catalog Number:** 059 G2.4.20

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

RO Importance: 3.8 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 505.01**Objective Number:** 92109

GIVEN a plant condition, DESCRIBE and/or INTERPRET the requirements and/or limits of a precaution or step of a referenced procedure.

Reference: OPOP04-FW-0001 Rev 28 note prior to step 3 and basis**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: The 1 hour restriction is at 5500 rpm. Plausible because there is operating restrictions at > 5400 rpm but they are associated with flow limits. Also plausible because originally there was a 1 hour time limit from 5400-5600rpm until an engineering review determined that we can change the 1 hour restriction to apply to 5500-5600 and the POP04-FW-0001 was revised accordingly.
- B: INCORRECT: The 1 hour restriction is at 5500 rpm. Plausible because there is operating restrictions at > 5400 rpm but they are associated with flow limits. Also plausible because originally there was a 1 hour time limit from 5400-5600rpm until an engineering review determined that we can change the 1 hour restriction to apply to 5500-5600 and the POP04-FW-0001 was revised accordingly. Also, the basis is to prevent an unacceptable DP across the pump impeller. Plausible because during this procedure there is a step to continuously monitor Feedwater/Steam Header DP and an associated addendum that the RO refers to for acceptable DPs but the basis for this is to have optimum MFRV position.
- C: CORRECT: The note prior to step 3 states the operation of a SGFP in the range of 5400-5600 rpm is acceptable but with some restrictions. 5400-5500 is acceptable indefinitely but with flow restrictions of > 8250 gpm. And 5500-5600 is acceptable but limited to 1 hour with flow > 11000 gpm. The basis states the restrictions are due to the DP created across the impeller
- D: INCORRECT: The basis is to prevent an unacceptable DP across the pump impeller. Plausible because during this procedure there is a step to continuously monitor Feedwater/Steam Header DP and an associated addendum that the RO refers to for acceptable DPs but the basis for this is to have optimum MFRV position.

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

Student must know the operational limits of the pump and the basis for them.

Exam Bank No.: 2641**Last used on an NRC exam:** Never**RO Sequence Number:** 57

The Unit is at 100% power when the controlling pressurizer level channel fails high. The crew is taking actions per OPOP04-RP-0002, Loss of Automatic Pressurizer Level Control, with the following conditions:

- Charging Flow Controller FK-0205 is operable and in manual.
- Normal letdown is in service.
- The failed channel has been deselected.
- Pressurizer Level Controller LK-0665 is in manual with its output matched to FK-0205 output.

Per OPOP04-RP-0002, Loss of Automatic Pressurizer Level Control, the crew will place 'CHG FLOW CONT' FK-0205 in AUTO (1) placing 'LEVEL CONT' LK-0665 in AUTO in order to (2).

- A. (1) before
(2) match charging flow with letdown flow
- B. (1) before
(2) maintain pressurizer level on program level
- C. (1) after
(2) match charging flow with letdown flow
- D. (1) after
(2) maintain pressurizer level on program level

Answer: D (1) after
(2) maintain pressurizer level on program level

Exam Bank No.: 2641**Source:** New**Modified from**

K/A Catalog Number: APE 022 AK1.04 Knowledge of the operational implications of the following concepts as they apply to Loss of Reactor Coolant
Makeup: Reason for changing from manual to automatic control of charging flow valve controller.

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

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

Given a description of plant conditions, analyze the conditions and predict how the chemical and volume control system will respond.

Reference: OPOP04-RP-0002 Rev 20 steps 10-12 and their basis.

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: LK-0665 is placed in Auto. Then once LK-0665 output is stable you place FK-0205 in auto per the procedure. Plausible because FK-0205 output follows the demand on LK-0665. However, offset can exist between the 2 outputs. Therefore LK-0665 should be placed in auto first and allowed to stabilize prior to placing FK-0205 in auto. Also plausible because FK-0205 output follows the demand on LK-0665. However, offset can exist between the 2 outputs. Therefore LK-0665 should be placed in auto first and allowed to stabilize prior to placing FK-0205 in auto.
- B: INCORRECT: LK-0665 is placed in Auto. Then once LK-0665 output is stable you place FK-0205 in auto per the procedure. Plausible because FK-0205 output follows the demand on LK-0665. However, offset can exist between the 2 outputs. Therefore LK-0665 should be placed in auto first and allowed to stabilize prior to placing FK-0205 in auto.
- C: INCORRECT: FK-0205 is placed in auto to ensure pressurizer level is maintained on program level. Plausible, because an operator would want to match charging flow with letdown flow to stabilize the pressurizer level. However, this would not guarantee that pressurizer level is at program level.
- D: CORRECT: LK-0665 is placed in Auto. Then once LK-0665 output is stable you place FK-0205 in auto per the procedure. FK-0205 is placed in auto to ensure pressurizer level is maintained on program level.

Question Level: H **Question Difficulty** 3

Justification:

Student must analyze the given conditions and determine the appropriate action to take and the basis for the action.

Exam Bank No.: 1867**Last used on an NRC exam:** 2009**RO Sequence Number:** 58

The Unit is operating at 100% power with the following conditions:

- The crew is responding to a tube leak per OPOP04-RC-0004, Steam Generator Tube Leakage.
- Pressurizer level is at 32%, trending down slowly.

In accordance with OPOP04-RC-0004, the crew should ____ (1) ____ letdown flow and raise charging flow to control Pressurizer level.

AND

If Pressurizer level cannot be maintained greater than ____ (2) ____, then the crew should trip the Reactor and initiate Safety Injection.

- A. (1) lower
(2) 15%
- B. (1) lower
(2) 17%
- C. (1) isolate
(2) 15%
- D. (1) isolate
(2) 17%

Answer: B (1) lower
(2) 17%

Exam Bank No.: 1867**Source:** Bank**Modified from**

K/A Catalog Number: APE 037 AA1.11 Ability to operate and/or monitor the following as they apply to the Steam Generator Tube Leak:
PZR level indicator

RO Importance: 3.4 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(7)

STP Lesson: LOT 505.01 **Objective Number:** 32636

Given a plant condition, STATE the actions required to be performed per the applicable Off-Normal procedure.

Reference: OPOP04-RC-0004, Steam Generator Tube Leakage, Step 5 Page 4 Rev 32

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: Plausible because in the same procedure CIP it is required to trip the reactor and initiate SI if VCT level can not be maintained greater than 15%.
- B: CORRECT: Per the procedure in early steps it has the operators control PZR level by lowering letdown flow. It is required to trip the Reactor and initiate an SI if PZR level can't be maintained above 17%.
- C: INCORRECT: Plausible because with an RCS leak letdown would be isolated if it were believed that the leak was in containment. Incorrect because isolating letdown flow is not a prescribed action as it would require isolation of charging or using charging and creating high thermal stress on the charging line connection. Plausible because in the same procedure CIP it is required to trip the reactor and initiate SI if VCT level can not be maintained greater than 15%.
- D: INCORRECT: Plausible because with an RCS leak letdown would be isolated if it were believed that the leak was in containment. Incorrect because isolating letdown flow is not a prescribed action as it would require isolation of charging or using charging and creating high thermal stress on the charging line connection.

Question Level: H **Question Difficulty** 3

Justification:

The student must be able to analyze the given condition and have fundamental knowledge of procedural requirements for a SG Tube leak.

Exam Bank No.: 2116

Last used on an NRC exam: 2016

RO Sequence Number: 59

In accordance with OPOP04-IA-0001, Loss of Instrument Air, which of the following is the FIRST Instrument Air pressure reached that would require a manual Reactor Trip?

- A. 90 psig
- B. 80 psig
- C. 70 psig
- D. 60 psig

Answer: D 60 psig

Exam Bank No.: 2116**Source:** Bank**Modified from**

K/A Catalog Number: APE 065 AA2.06 Ability to determine and interpret the following as they apply to the Loss of Instrument Air: When to trip reactor if instrument air pressure is decreasing.

RO Importance: 3.6 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(7)

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-IA-0001, Rev.17 CIP

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: Plausible because 90 psig is a setpoint but its when the yard isolation valve closes.
- B: INCORRECT: Plausible because 80 psig is a setpoint but its when the dryer bypass valve opens.
- C: INCORRECT: Plausible because 70 psig is the approximate setpoint when the main feed reg valves begin to close.
- D: CORRECT: If air pressure goes below 60 psig, a manual Reactor trip is required by OPOP04-IA-0001.

Question Level: F **Question Difficulty** 3

Justification:

Student must have fundamental knowledge of the procedural requirement to perform a manual Reactor Trip on lowering Inst. Air pressure.

Exam Bank No.: 2696**Last used on an NRC exam:** Never**RO Sequence Number:** 60

The Unit is at 45% power with the following conditions:

- CW Pump #14 is OOS for maintenance.
- CW Pump #12 was tripped 5 hours ago due to a sheared shaft.

Subsequently;

- CW Pump #13 trips on overcurrent.
- Crew enters 0POP04-CW-0001, Loss of Circulating Water Flow.

The Steam Dumps will (1) available.

AND

Per 0POP04-CW-0001, the Crew will next perform actions of (2) .

- A. (1) be
 (2) 0POP04-TM-0003, Turbine Trip Below P-9
- B. (1) be
 (2) 0POP05-EO-EO00, Reactor Trip or Safety Injection
- C. (1) NOT be
 (2) 0POP04-TM-0003, Turbine Trip Below P-9
- D. (1) NOT be
 (2) 0POP05-EO-EO00, Reactor Trip or Safety Injection

Answer: D (1) NOT be
 (2) 0POP05-EO-EO00, Reactor Trip or Safety Injection

Exam Bank No.: 2696**Source:** New**Modified from****K/A Catalog Number:** 075 A2.03

Ability to (a) predict the impacts of the following malfunctions or operations on the circulating water system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:
Safety features and relationship between condenser vacuum, turbine trip, and steam dumps.

RO Importance: 2.5 **Tier:** 2 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 202.22 **Objective Number:** 97856

Given a plant or system condition, PREDICT the operation of the Circulating Water System.

Reference: LOT 202.22 Rev 11 PPT Slide 42 and 0POP04-CW-0001, Loss of Circulating Water Flow Rev 17

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: Plausible because the logic for the Steam Dump coincidence for C-9 is 1 of 4 CW Pump breakers closed. Incorrect because in this case no CW Pump breakers would be closed. (With 2 pumps running, both pumps will trip on the trip of one or the other.) Plausible because the conditions have the Unit below the P-9 set point of 50% power which would allow the main turbine to trip without tripping the reactor. Incorrect because under this condition 0POP04-CW-0001, Loss of Circulating Water Flow, the procedure requires a Reactor Trip when all Circ Water Pumps have tripped regardless of power level. CIP action.
- B: INCORRECT: Plausible because the logic for the Steam Dump coincidence for C-9 is 1 of 4 CW Pump breakers closed. Incorrect because in this case no CW Pump breakers would be closed. (With 2 pumps running, both pumps will trip on the trip of one or the other.)
- C: INCORRECT: Plausible because the conditions have the Unit below the P-9 set point of 50% power which would allow the main turbine to trip without tripping the reactor. Incorrect because under this condition 0POP04-CW-0001, Loss of Circulating Water Flow, the procedure requires a Reactor Trip when all Circ Water Pumps have tripped regardless of power level. CIP action.
- D: CORRECT: When 2 CW Pumps are running, both pumps will trip if either or the other pump is tripped with the discharge valves greater than 40% open. With no Circ Water pumps running it is required by 0POP04-CW-0001, Loss of Circulating Water Flow, to trip the Reactor.

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

The student must analyze the given condition and have knowledge of the relationship between Circ Water Pumps and Steam Dump logic to determine the correct answer.

Exam Bank No.: 2672**Last used on an NRC exam:** Never**RO Sequence Number:** 61

An 'Adverse Containment' condition in Emergency Operating Procedures is when Containment radiation levels on (1) are greater than or equal to (2).

- A. (1) RT-8011, RCB Atmosphere Monitor
(2) 10^4 R/HR
- B. (1) RT-8011, RCB Atmosphere Monitor
(2) 10^5 R/HR
- C. (1) RT-8050/8051, RCB High Range Area Monitors
(2) 10^4 R/HR
- D. (1) RT-8050/8051, RCB High Range Area Monitors
(2) 10^5 R/HR

Answer: D (1) RT-8050/8051, RCB High Range Area Monitors
(2) 10^5 R/HR

Exam Bank No.: 2672**Source:** New**Modified from****K/A Catalog Number:** WE16 EK2.1

Knowledge of the interrelations between the (High Containment Radiation) and the following: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

RO Importance: 3.0 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 202.41 **Objective Number:** 11504

LIST the interfaces between the Radiation Monitoring System and other systems.

Reference: LOT 202.41 Radiation Monitors Rev 12 PPT Slide #127 and TS 3.3.3.6 Accident Monitoring Amend 188

Attached Reference ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible because RT-8011 monitors RCB atmosphere conditions. Incorrect because it is not used for accident monitoring. Also, plausible because at a value of 10^4 R/HR would be approaching the Eplan limits for potential loss of containment barrier.
- B: INCORRECT: Plausible because RT-8011 monitors RCB atmosphere conditions. Incorrect because it is not used for accident monitoring
- C: INCORRECT: Plausible because at a value of 10^4 R/HR would be approaching the Eplan limits for potential loss of containment barrier.
- D: CORRECT: RT-8050/8051 RCB High Range Monitors are the accident radiation monitors for containment and are used to determine high radiation conditions in containment that will require use of adverse containment values at a value of 10^5 R/HR.

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

The student must have knowledge interrelations between Containment High Radiation and the components (Radiation Detectors) used to monitor the radiation levels.

Exam Bank No.: 2644**Last used on an NRC exam:** Never**RO Sequence Number:** 62

Per the CIP of 0POP05-E0-EC11, Loss of Emergency Coolant Recirculation, ALL pumps taking a suction from the RWST SHALL be secured when the RWST reaches ____ (1) ____ gallons in order to ____ (2) ____.

- A. (1) 32,500
(2) prevent pump damage
- B. (1) 32,500
(2) conserve RWST inventory
- C. (1) 75,000
(2) prevent pump damage
- D. (1) 75,000
(2) conserve RWST inventory

Answer: A (1) 32,500
(2) prevent pump damage

Exam Bank No.: 2644**Source:** New**Modified from****K/A Catalog Number:** EPE 011 EK3.3

Knowledge of the reasons for the following responses as they apply to the (Loss of Emergency Coolant Recirculation): Manipulation of controls required to obtain desired operating results during abnormal, and emergency situations

RO Importance: 3.8 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 504.27 **Objective Number:** 82524

DESCRIBE the readings which confirm that a Safety Injection or Containment Spray pump should be stopped.

Reference: 0POP05-E0-EC11 Rev 20 CIP**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: The RWST EMPTY alarms at 32,500 and the CIP states to secure any pumps taking a suction from the RWST to prevent damage due to loss of suction.
- B: INCORRECT: Plausible because throughout this procedure you secure a certain number of pumps taking a suction from the RWST in order to conserve RWST inventory. However, at 32,500 gallons you secure all of them to prevent pump damage.
- C: INCORRECT: 32,500 gallons is the RWST EMPTY alarm. Plausible because several procedures such as 0POP05-E0-EO10, Loss of Reactor or Secondary Coolant, have CIP actions that reference an RWST level of 75,000 gallons since this is when cold leg recirc switchover takes place.
- D: INCORRECT: Plausible because several procedures such as 0POP05-E0-EO10, Loss of Reactor or Secondary Coolant, have CIP actions that reference an RWST level of 75,000 gallons since this is when cold leg recirc switchover takes place. Also Plausible because throughout this procedure you secure a certain number of pumps taking a suction from the RWST in order to conserve RWST inventory.

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

Student must know system setpoints and the basis for CIP actions.

Exam Bank No.: 2648**Last used on an NRC exam:** Never**RO Sequence Number:** 63

After a manual Reactor trip was initiated from the Control Room, the following was observed:

- The Reactor Trip Breakers indicate closed.
- 480 Volt LC feeder breakers to LCs 1K1 and 1L1 indicate open.

With these conditions ___(1)___ will indicate zero steps out on the control rods and the Crew will use ___(2)___ to mitigate the condition.

- A. (1) Digital Rod Position Indication (DRPI)
(2) 0POP05-EO-FRS1, Response to Nuclear Power Generation - ATWS
- B. (1) Digital Rod Position Indication (DRPI)
(2) 0POP05-EO-EO00, Reactor Trip or Safety Injection
- C. (1) Control Rod Step Counters
(2) 0POP05-EO-FRS1, Response to Nuclear Power Generation - ATWS
- D. (1) Control Rod Step Counters
(2) 0POP05-EO-EO00, Reactor Trip or Safety Injection

Answer: B (1) Digital Rod Position Indication (DRPI)
(2) 0POP05-EO-EO00, Reactor Trip or Safety Injection

Exam Bank No.: 2648**Source:** New**Modified from****K/A Catalog Number:** EPE 029 EA2.08

ATWS:

Ability to determine and interpret the following as they apply to a ATWS:

Rod bank step counters and RPI.

RO Importance: 3.4**Tier:** 1**Group/Category:** 1**10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 504.28**Objective Number:** 92156

STATE the conditions under which 0POP05-EO-FRS1 is entered.

Reference: Entry conditions for 0POP05-EO-EO00 Rev 24 and 0POP05-EO-FRS1 Rev 19**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Because the Reactor was tripped from the control room. Plausible for the student to chose 0POP05-EO-FRS1 because the Reactor Trip Breakers are still closed.
- B: CORRECT: DRPI gives control rod position through digital means under all conditions. Control rod step counters give control rod position direct from the step counters but will not change on a Reactor trip where the control rods are released from the CRDMs. With the given condition the crew will remain in 0POP05-EO-EO00, Reactor Trip or Safety Injection, even though the Reactor Trip Breakers are closed, because the Reactor was able to be tripped from the control room.
- C: INCORRECT: But plausible because the control rod step counters are an indication of rod position but not after a reactor trip when the control rods are released from the CRDMs. The second part is incorrect because the Reactor was tripped from the control room. Plausible for the student to chose 0POP05-EO-FRS1 because the Reactor Trip Breakers are still closed.
- D: INCORRECT: But plausible because the control rod step counters are an indication of rod position but not after a reactor trip when the control rods are released from the CRDMs.

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

The student has to analyze the given conditions to determine the correct procedure and knowledge of indications for control rod position.

Exam Bank No.: 2715**Last used on an NRC exam:** Never**RO Sequence Number:** 64

The Unit has experienced a Small Break LOCA with the following conditions:

- Various malfunctions led to a Loss of All AC Power.
- RCS subcooling is 10°F and lowering.

What are the expected consequences if the crew is unable to depressurize the RCS to less than 700 psig?

- A. Reactor Coolant System inventory loss will result in inadequate core cooling and fuel damage is expected.
- B. As long as two Safety Injection Accumulators inject, then adequate core cooling will be maintained.
- C. Natural Circulation will provide long term core cooling as long as a secondary heat sink is maintained.
- D. As long as all SGs safeties remain operable, then total heat removal capacity will be great enough to prevent fuel damage.

Answer: A Reactor Coolant System inventory loss will result in inadequate core cooling and fuel damage is expected.

Exam Bank No.: 2715**Source:** New**Modified from****K/A Catalog Number:** 013 K3.01Knowledge of the effect that a loss or malfunction of the ESFAS will have on the following:
Fuel**RO Importance:** 4.4**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.10**Objective Number:** 32698

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

Reference: LOT 201.10 Student HO Rev 19 page 3, 24, 26**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: With the given plant conditions there will be no ECCS flow and inventory loss will continue through the SBLOCA resulting in inadequate core cooling and fuel damage.
- B: INCORRECT: If RCS pressure maintains 700 psig then the accumulators will not inject. Plausible because in the design basis LOCA analysis 2 accumulators is sufficient along with one train of SI.
- C: INCORRECT: Plausible because natural circulation will provide core cooling on a Loss of All AC Power. Incorrect though because with the given condition of a SBLOCA, a secondary heat sink will not be maintained, therefore natural circ will not maintain core cooling.
- D: INCORRECT: Plausible because SG safeties are still operable in the given situation. Incorrect though because with a SBLOCA there will not be natural circ to provide core cooling. And fuel damage would be expected.

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

Student must analyze the given conditions and predict the impact to core cooling.

Exam Bank No.: 2649**Last used on an NRC exam:** Never**RO Sequence Number:** 65

The crew is verifying an adequate RCS Bleed path per 0POP05-EO-FRH1, Response to Loss of Secondary Heat Sink, with the following conditions:

- Pressurizer PORV PCV-0655A is open.
- Pressurizer PORV PCV-0656A is closed and will not open.

What is the appropriate action the crew should perform?

- A. Open ONE reactor head vent valve.
- B. Open BOTH reactor head vent valves.
- C. Close the open PORV and Open ONE reactor head vent valve.
- D. Close the open PORV and Open BOTH reactor head vent valves.

Answer: B Open BOTH reactor head vent valves.

Exam Bank No.: 2649**Source:** Modified**Modified from** 1864**K/A Catalog Number:** EPE E05 EK2.2

Knowledge of the interrelations between the Loss of Secondary Heat Sink and the following: Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility

RO Importance: 3.9 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 504.33 **Objective Number:** 83085

DESCRIBE the indications and anticipated readings used to determine that the Reactor Coolant System bleed path is adequate

Reference: OPOP05-EO-FRH1 Rev 25 Step 14**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: The procedure requires both head vent valves to be open. Plausible, the student would think only one head vent valve would be needed and provide proper capacity to substitute for one pressurizer PORV.
- B: CORRECT: Step 13 has the operator open both reactor head vent valves in the RNO if both PORVs are not open.
- C: INCORRECT: The procedure does NOT close the PORV prior to opening the head vent valves. Plausible the student would think that they should close the PORV because they know one PORV does not provide and adequate bleed path and would enter the RNO section of the procedure. Plausible, the student would think only one head vent valve would be needed to provide proper capacity for an adequate bleed path.
- D: INCORRECT: The procedure does NOT close the PORV prior to opening the head vent valves. Plausible the student would think that they should close the PORV because they know one PORV does not provide and adequate bleed path and would enter the RNO section of the procedure.

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

Student must analyze given conditions and know the correct actions to take in response to the conditions.

Exam Bank No.: 2646**Last used on an NRC exam:** Never**RO Sequence Number:** 66

The crew is responding to a SGTR and is preparing to depressurize the RCS per step 18 of OPOP05-EO-EO30, Steam Generator Tube Rupture, with the following conditions:

- Normal Spray is available
- Containment is NOT in an adverse condition.

The primary operator should open both normal spray valves (1) and should close them when pressurizer level reaches (2) if RCS pressure is above ruptured SG pressure but within 300 psi.

- A. (1) 50%
(2) 8%
- B. (1) 50%
(2) 38%
- C. (1) 100%
(2) 8%
- D. (1) 100%
(2) 38%

Answer: D (1) 100%
(2) 38%

Exam Bank No.: 2646**Source:** New**Modified from**

K/A Catalog Number: EPE 038 EA1.05 Ability to operate and monitor the following as they apply to a SGTR: Maximum controlled depressurization rate for the affected S/G

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

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

Given a copy of a step from OPOP05-EO-EO30 state/identify how the action is performed and the basis for the action to include the action itself, its purpose and the result.

Reference: OPOP05-EO-EO30 Rev 27 step 18e

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: The depress termination criteria when not in adverse conditions is when the pressurizer level is 38% if RCS pressure is within 300 psi of the ruptured SG pressure. Plausible, because the depress criteria is at 8% pressurizer level if RCS pressure is less than the ruptured SG pressure. Step 18 has the operator initiate maximum pressurizer spray which requires both spray valves to be opened to 100%. Although the step does not say 100% open, the WOG refers max spray. Plausible, because in the previous steps to initiate the cooldown at max rate if the operator was using steam dumps they would have reached max rate if only opened to 50%.
- B: INCORRECT: Step 18 has the operator initiate maximum pressurizer spray which requires both spray valves to be opened to 100%. Although the step does not say 100% open, the WOG refers max spray. Plausible, because in the previous steps to initiate the cooldown at max rate if the operator was using steam dumps they would have reached max rate if only opened to 50%.
- C: INCORRECT: The depress termination criteria when not in adverse conditions is when the pressurizer level is 38% if RCS pressure is within 300 psi of the ruptured SG pressure. Plausible, because the depress criteria is at 8% pressurizer level if RCS pressure is less than the ruptured SG pressure.
- D: CORRECT: Step 18 has the operator initiate maximum pressurizer spray which requires both spray valves to be opened to 100%. The depress termination criteria when not in adverse conditions is when the pressurizer level is 38% if RCS pressure is within 300 psi of the ruptured SG pressure. This is a new termination criteria per the WOG background documents Rev 3.

Question Level: H **Question Difficulty** 3

Justification:

Student must analyze given conditions and know the appropriate actions to take to mitigate the SGTR.

Exam Bank No.: 1226**Last used on an NRC exam:** Never**RO Sequence Number:** 67

The crew performed a manual Reactor trip and Safety Injection with the following indications:

- RCS pressure is lowering.
- RCS inventory is lowering.
- MAB floor drain sump levels are rising.
- MAB area radiation monitors are in alarm.
- The crew has transitioned to 0POP05-EO-EC12, LOCA Outside Containment.

In accordance with 0POP05-EO-EC12, the crew will attempt to isolate the leak by closing the containment isolation valves for all of the following systems listed below **EXCEPT** _____.

- A. Charging
- B. Normal Letdown
- C. Seal Water Return
- D. Component Cooling Water

Answer: D Component Cooling Water

Exam Bank No.: 1226**Source:** New**Modified from**

K/A Catalog Number: EPE E04 EA1.2 Ability to operate and/or monitor the following as they apply to the LOCA Outside Containment: Operating behavior characteristics of the facility

RO Importance: 3.6 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(5)

STP Lesson: LOT 504.46 **Objective Number:** 82647

Given a copy of a step from POP05-EO-EC12, 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-EC12 Rev 10 and LOT 201.12 Rev 14 slide 44

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: Charging is isolated during steps of this procedure.
- B: INCORRECT: Normal Letdown is isolated during steps of this procedure.
- C: INCORRECT: Seal Water Return is isolated during steps of this procedure.
- D: CORRECT: CCW is NOT addressed in this procedure. However it is plausible to think CCW would be isolated when identifying a leak inside containment because CCW provides cooling to several components inside containment that operate at a higher pressure than CCW such as the RHR HX, RCP thermal barrier HX, and RCDT HX. Since they operate at a higher pressure they would leak into the CCW system if experiencing a leak. Also 0POP04-RC-0003, Excessive RCS Leakage, DOES isolate CCW when identifying and isolating an RCS leak. This question was discussed with the chief examiner and agreed on leaving as a negatively focused stem. Several options were explored writing this question without a negative stem. However, for this question the negative stem was unavoidable. So per NUREG 1021 Rev 11 appendix B (page B-10) we agreed the stem was unavoidable and highlighted the negative part of the stem.

Question Level: H **Question Difficulty** 3

Justification:

Student must know what systems are operated to isolate a leak during an event with a LOCA outside containment.

Exam Bank No.: 2675

Last used on an NRC exam: Never

RO Sequence Number: 68

What is the maximum allowable RCS cooldown rate allowed in accordance with OPOP05-EO-ES03, Natural Circulation Cooldown with Steam Voids in the Vessel?

- A. 200°F/HR
- B. 160°F/HR
- C. 100°F/HR
- D. 80°F/HR

Answer: C 100°F/HR

Exam Bank No.: 2675**Source:** New**Modified from****K/A Catalog Number:** W/E10 EK1.2

Knowledge of the operational implications of the following concepts as they apply to the (Natural Circulation with Steam Void in Vessel with/without RVLS):
Normal, abnormal and emergency operating procedures associated with (Natural Circulation with Steam Void in Vessel with/without RVLS).

RO Importance: 3.4 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 504.26 **Objective Number:** 30367

STATE the maximum cooldown rate with steam voids in the vessel.

Reference: OPOP05-EO-ES03 Rev 11 Step 3**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible because 200 degrees F per hour represents the maximum cooldown rate of the pressurizer allowed by Tech Specs.
- B: INCORRECT: Plausible because 160 degrees F per hour represents the maximum administrative cooldown rate of the pressurizer allowed at STP.
- C: CORRECT: 100 degrees F per hour is the maximum cooldown rate allowed in OPOP05-EO-ES03, Natural Circulation Cooldown with Steam Voids in the Vessel.
- D: INCORRECT: Plausible because 80 degrees F per hour represents the maximum administrative cooldown rate of the RCS allowed at STP.

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

The Student must have knowledge of the actions and limits associated with OPOP05-EO-ES03, Natural Circulation Cooldown with Steam Voids in the Vessel.

Exam Bank No.: 1858**Last used on an NRC exam:** 2009**RO Sequence Number:** 69

The Unit is at 100% power when the following occurs:

- A Feedwater Line Break on SG 1C occurs inside the RCB.

If no operator actions are taken, then RCS Tavg will (1) prior to the Reactor trip.

AND

The post-trip RCS cooldown will be (2) when compared to an equivalent sized Steam Line Break.

- A. (1) rise
(2) the same
- B. (1) rise
(2) less
- C. (1) lower
(2) the same
- D. (1) lower
(2) less

Answer: B (1) rise
(2) less

Exam Bank No.: 1858**Source:** Bank**Modified from**

K/A Catalog Number: APE 054 AK1.01 Knowledge of the operational implications of the following concepts as they apply to Loss of Main Feedwater (MFW): MFW line break depressurizes the S/G (similar to a steam line break)

RO Importance: 4.1 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(5)

STP Lesson: LOT 501.17 **Objective Number:** 501175

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

Reference: LOT501.17, Decrease in Heat Removal by the Secondary System (Rev 3)

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: A FW line break creates less cooling on the RCS because the loss of FW from the SG and out the break does not involve the removal of latent heat as occurs in a steam break. Plausible the student would think the amount of cooldown would be the same since it is comparing the same size break. Also plausible the student may think Tavg would lower since the water would turn into steam when entering containment and possibly act like a steam leak.
- B: CORRECT: RCS Tavg will rise due to lowering feed flow to the affected SG causing a decrease in heat transfer in that SG. A FW line break creates less cooling on the RCS because the loss of FW from the SG and out the break does not involve the removal of latent heat as occurs in a steam break.
- C: INCORRECT: RCS Tavg will rise due to lowering feed flow to the affected SG causing a decrease in heat transfer in that SG. Also, a FW line break creates less cooling on the RCS because the loss of FW from the SG and out the break does not involve the removal of latent heat as occurs in a steam break. Plausible the student would think the amount of cooldown would be the same since it is comparing the same size break.
- D: INCORRECT: RCS Tavg will rise due to lowering feed flow to the affected SG causing a decrease in heat transfer in that SG. Plausible the student may think Tavg would lower since the water would turn into steam when entering containment and possibly act like a steam leak.

Question Level: H **Question Difficulty** 3

Justification:

Must be able to determine plant response on a FW line break at the specified location.

Exam Bank No.: 2536**Last used on an NRC exam:** Never**RO Sequence Number:** 70

The Unit is at 100% when a small RCS leak in containment is detected. A team is preparing to enter containment to locate the leak.

When the team enters the RCB, containment pressure will (1).

AND

The team (2) be required to perform 0PSP03-XC-0002A Form 2, Partial Containment Inspection for Loose Debris, for this entry.

- A. (1) equalize to MAB pressure
(2) will NOT
- B. (1) equalize to MAB pressure
(2) will
- C. (1) continue to slowly rise
(2) will NOT
- D. (1) continue to slowly rise
(2) will

Answer: D (1) continue to slowly rise
(2) will

Exam Bank No.: 2536**Source:** Bank**Modified from****K/A Catalog Number:** 103 A2.05

Ability to (a) predict the impacts of the following malfunctions or operations on the containment system and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Emergency containment entry.

RO Importance: 2.9 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(9)**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: Lesson Plan 505.01 Rev 7, 0PSP03-XC-0002A Rev 56 Step 1 of Form 1**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible because both doors have to be opened to enter containment. Incorrect because entry and exit is made through one door at a time so containment integrity always exists. Containment pressure would continue to only be affected by the size of the RCS leak. Also plausible the student may think a loose debris inspection would not be required since this entry is for an emergent issue with RCS leakage.
- B: INCORRECT: Plausible because both doors have to be opened to enter containment. Incorrect because entry and exit is made through one door at a time so containment integrity always exists. Containment pressure would continue to only be affected by the size of the RCS leak.
- C: INCORRECT: Plausible the student may think a loose debris inspection would not be required since this entry is for an emergent issue with RCS leakage.
- D: CORRECT: Containment pressure will not change because entry and exit is made through one door at a time so containment integrity always exists. The procedural requirement is to perform Form 2 for EACH containment entry when containment integrity is established.

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

Student must analyze the condition and know the effect on containment integrity and also know the procedural requirements of 0PSP03-XC-0002A.

Exam Bank No.: 2664**Last used on an NRC exam:** Never**RO Sequence Number:** 71

The Unit has indications of failed fuel and an operator is needed to place a Cation Bed Demineralizer in service. Radiological readings in the area are 1100 mR/hr.

The valves used to place the Cation Bed in service are located on the (1) level of the MAB.

AND

0PGP03-ZR-0051, Radiological Access Requirements, will require (2) to access the area.

- A. (1) 10 ft
(2) continuous RP coverage
- B. (1) 10 ft
(2) RP manager approval
- C. (1) 41 ft
(2) continuous RP coverage
- D. (1) 41 ft
(2) RP manager approval

Answer: C (1) 41 ft
(2) continuous RP coverage

Exam Bank No.: 2664**Source:** New**Modified from****K/A Catalog Number:** G2.3.12

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

RO Importance: 3.2 **Tier:** 3 **Group/Category:** 3 **10CFR Reference:** 55.41(b)(12)**STP Lesson:** LOT 507.01 **Objective Number:** 92186

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

Reference: OPGP03-ZR-0051 Rev 37 step 6.3.1 and 6.7.1 and OPOP02-CV-0004 Rev 86 section 37**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: All valves for this activity are located on the 41 ft of the MAB. Plausible because 10 ft MAB contains several CVCS valves.
- B: INCORRECT: All valves for this activity are located on the 41 ft of the MAB. Plausible because 10 ft MAB contains several CVCS valves. RP Manager approval is not required. Plausible, because the RP Manager approval per this procedure for entry into a Very High Rad Area.
- C: CORRECT: The described area is a locked high rad area which requires continuous RP coverage to access and all valves required for the given activity are located on the 41 ft of the MAB.
- D: INCORRECT: RP Manager approval is not required. Plausible, because the RP Manager approval per this procedure for entry into a Very High Rad Area.

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

The student must have knowledge of what radiation level constitutes LHRA and the requirements to enter the area and the location of the given area.

Exam Bank No.: 1101**Last used on an NRC exam:** 2016**RO Sequence Number:** 72

In accordance with OPOP08-FH-0009, Core Refueling, which of the following is a task for a Licensed Control Room Operator during refueling operations?

- A. Inform the Core Load Supervisor of the next core location to have a fuel assembly loaded.
- B. Operate the remote television monitoring equipment used to observe refueling activities.
- C. Monitor the Core Monitoring NI channels during and following insertion of each fuel assembly.
- D. Evaluate Inverse Count Rate Ratio (ICRR) data on loaded fuel assemblies.

Answer: C Monitor the Core Monitoring NI channels during and following insertion of each fuel assembly.

Exam Bank No.: 1101**Source:** Bank**Modified from****K/A Catalog Number:** G2.1.40

Knowledge of refueling administrative requirements.

RO Importance: 2.8**Tier:** 3**Group/Category:** 1**10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 201.43**Objective Number:** 66407

DESCRIBE the procedural requirements of the fuel handling equipment operating procedure(s) to include purpose, scope, precautions and limitations

Reference: OPOP08-FH-0009, Rev 46, Core Refueling, Page 14**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Credible because move sheets are available to and monitored by the RO during fuel movement, but not an assigned responsibility.
- B: INCORRECT: Credible because the equipment is available to the operator, but not an assigned responsibility
- C: CORRECT: per OPOP08-FH-0009, Core Refueling
- D: INCORRECT: Credible because ICRR data is collected. Incorrect because per OPOP08-FH-0009, step 6.2.10.4, it is collected by Reactor Engineering. NOTE: Reactor Operator is required to evaluate/perform an ICRR per the Task Analysis of LOT Training during their reactor startup certification..

Question Level: F**Question Difficulty** 2**Justification:**

The student must have knowledge of the administrative responsibilities for Licensed Operators during refueling.

Exam Bank No.: 2665

Last used on an NRC exam: Never

RO Sequence Number: 73

Containment Spray Pump 1A is powered by ____ (1) ____ and Containment Spray Pump 1B is powered by ____ (2) ____.

- A. (1) E1C
(2) E1A
- B. (1) E1A
(2) E1C
- C. (1) E1C
(2) E1B
- D. (1) E1A
(2) E1B

Answer: D (1) E1A
(2) E1B

Exam Bank No.: 2665**Source:** New**Modified from****K/A Catalog Number:** 026.K2.01Knowledge of bus power supplies to the following:
Containment spray pumps**RO Importance:** 3.4**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(8)**STP Lesson:** LOT 201.11**Objective Number:** 30896

STATE the power supply for the Containment Spray Pumps.

Reference: LOT201.11 Rev 15 page 10 or slide 31**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: All distractors are plausible because they are all various Class 1E 4.16 KV buses. Also, there other pumps are cross train powered such as Charging Pumps and BA Transfer Pumps (i.e. Train A pumps are powered by C Train and the Train B pumps are powered by A Train.)
- B: INCORRECT: All distractors are plausible because they are all various Class 1E 4.16 KV buses. Also, there other pumps are cross train powered such as Charging Pumps and BA Transfer Pumps (i.e. Train A pumps are powered by C Train and the Train B pumps are powered by A Train.)
- C: INCORRECT: All distractors are plausible because they are all various Class 1E 4.16 KV buses. Also, there other pumps are cross train powered such as Charging Pumps and BA Transfer Pumps (i.e. Train A pumps are powered by C Train and the Train B pumps are powered by A Train.)
- D: CORRECT: Train A CS pump is powered from E1A and B CS pump is powered from E1B.

Question Level: F**Question Difficulty** 2**Justification:**

Student must recall the power supply for Containment Spray Pumps.

Exam Bank No.: 1346

Last used on an NRC exam: Never

RO Sequence Number: 74

The Class 1E 125 VDC battery is **DESIGNED** to supply Class 1E DC control power to associated ESF loads following a loss of all AC power for a MINIMUM of _____.

- A. 1 hour
- B. 2 hours
- C. 5 hours
- D. 8 hours

Answer: B 2 hours

Exam Bank No.: 1346**Source:** Bank**Modified from****K/A Catalog Number:** 063 K1.03

Knowledge of the physical connections and/or cause-effect relationships between the DC electrical system and the following systems: Battery charger and battery

RO Importance: 2.9**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.37**Objective Number:** 92986

DESCRIBE the local and MCR instrumentation available to monitor the Class 1E 125 VDC System.

Reference: LOT 201.37 HO Rev 10 page 3**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Class 1E 125 VDC battery is designed to supply ESF loads for 2 hours following a loss of charging capability. Plausible because there are a couple 1 hour TS actions associated with this system and the associated battery chargers in TS.
- B: CORRECT: Class 1E 125 VDC battery is designed to supply ESF loads for 2 hours following a loss of charging capability. The loss of charging capability is implied in this question stem with the loss of all AC power.
- C: INCORRECT: Class 1E 125 VDC battery is designed to supply ESF loads for 2 hours following a loss of charging capability. Plausible because if power was lost for 5 hours (ELAP condition) OPOP05-EO-EC00, Loss of All AC Power, has the operator perform additional load shedding to lengthen the battery life.
- D: INCORRECT: Class 1E 125 VDC battery is designed to supply ESF loads for 2 hours following a loss of charging capability. Plausible because the 125 V battery charger is demonstrated OPERABLE during its surveillance by supplying at least 300 amps at the minimum float voltage for at least 8 hours.

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

Student must have fundamental knowledge of the Class 1E 125VDC battery capabilities.

Exam Bank No.: 2655**Last used on an NRC exam:** Never**RO Sequence Number:** 75

To maintain an active license for the next calendar quarter per OPOP01-ZA-0014, Licensed Operator License Maintenance:

A Reactor Operator must complete a minimum of (1) 12-hour shifts within the same calendar quarter.

AND

The (2) is the official record for active license maintenance watches stood.

- A. (1) four
 (2) Emp Center
- B. (1) four
 (2) Control Room Logbook
- C. (1) five
 (2) Emp Center
- D. (1) five
 (2) Control Room Logbook

Answer: D (1) five
 (2) Control Room Logbook

Exam Bank No.: 2655**Source:** New**Modified from****K/A Catalog Number:** G2.1.4

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

RO Importance: 3.3 **Tier:** 3 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 507.01 **Objective Number:** 92186

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

Reference: OPOP01-ZA-0014 Rev 27 section 4.3**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: An individual must complete at least 5 12-hour shifts within the same calendar. Plausible, because an individual would stand 4 watches under instruction along with other requirements to reactivate a license. Also the procedure states the control room log is the official record for license maintenance watches stood. Plausible because the Emp Center is the STP official time keeping computer program including logging hours for covered workers and the program calculates the work hour rule and any potential violations.
- B: INCORRECT: An individual must complete at least 5 12-hour shifts within the same calendar. Plausible, because an individual would stand 4 watches under instruction along with other requirements to reactivate a license.
- C: INCORRECT: The procedure states the control room log is the official record for license maintenance watches stood. Plausible because the Emp Center is the STP official time keeping computer program including logging hours for covered workers and the program calculates the work hour rule and any potential violations.
- D: CORRECT: An individual must complete at least 5 12-hour shifts within the same calendar. And the procedure states the control room log is the official record for license maintenance watches stood.

Question Level: F **Question Difficulty** 2**Justification:**

Student must recall the requirements to maintain an active license.

Exam Bank No.: 2668

Last used on an NRC exam: Never

SRO Sequence Number: 76

In accordance with 0ERP01-ZV-SH01, Shift Manager, the Emergency Director is allowed to delegate approving...

- A. press releases prior to issuance.
- B. notifications to State and County.
- C. departures from license conditions.
- D. Protective Action Recommendations.

Answer: A press releases prior to issuance.

Exam Bank No.: 2668**Source:** Modified**Modified From** 2541**K/A Catalog Number:** G2.4.29

Knowledge of the emergency plan.

SRO Importance: 4.4 **Tier:** 3 **Group/Category:** 4**10CFR Reference or SRO Objective:** 55.43(b)(3)**SRO Justification:**

SRO only objective associated with the responsibilities of the Shift Manager/Emergency Director.

STP Lesson: LOT 803.14**Objective Number:** SRO-47030

DISCUSS the duties and responsibilities of the Shift Manager as delineated in 0ERP01-ZV-SH01, Shift Manager.

Reference: 0ERP01-ZV-SH01, Shift Manager Rev 31 steps 4.4.1 and 4.4.2**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: Approving press releases prior to issuance is a Emergency Director responsibility that may be delegated.
- B: INCORRECT: Plausible because all distractors are responsibilities of the Emergency Director listed in 0ERP01-ZV-SH01.
- C: INCORRECT: Plausible because all distractors are responsibilities of the Emergency Director listed in 0ERP01-ZV-SH01.
- D: INCORRECT: Plausible because all distractors are responsibilities of the Emergency Director listed in 0ERP01-ZV-SH01.

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

Student must know the responsibilities of the Emergency Director.

Exam Bank No.: 2291**Last used on an NRC exam:** 2014**SRO Sequence Number:** 77

In accordance with 0POP08-FH-0009, Core Refueling, which TWO of the following are specific responsibilities of the Core Load Supervisor?

1. Agree to changes made to an Approved Fuel Transfer Form.
 2. Implementation of 0POP08-FH-0009, Core Refueling, procedure.
 3. Review Fuel Assembly visual checks performed during fuel movement.
 4. Provide Independent Verification of Fuel Assembly location.
-
- A. 1 and 2
 - B. 2 and 3
 - C. 3 and 4
 - D. 1 and 4

Answer: A 1 and 2

Exam Bank No.: 2291**Source:** Bank**Modified From****K/A Catalog Number:** G2.1.41

Knowledge of the refueling process.

SRO Importance: 3.7 **Tier:** 3 **Group/Category:** 2**10CFR Reference or SRO Objective:** 55.43(b)(7)**SRO Justification:**

refuel floor SRO responsibilities

STP Lesson: LOT 201.43**Objective Number:** 66407

DESCRIBE the procedural requirements of the fuel handling equipment operating procedure(s) to include purpose, scope, precautions and limitations.

Reference: OPOP08-FH-0009 Rev 46 Section 3**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: The Core Load Supervisor is required to agree with any changes made to an approved Fuel Transfer Form and implements the Core Refueling procedure.
- B: INCORRECT: This distractor is credible because the CLS oversees all fuel movement but the Reactor Engineers are responsible for reviewing the visual checks performed during fuel movement.
- C: INCORRECT: This distractor is credible because the CLS oversees all fuel movement but the Reactor Engineers are responsible for reviewing the visual checks performed during fuel movement. Also, up until 2RE16 the CLS did perform independent verification of fuel assembly location in the Reactor Core but a lesson learned on Supervisory oversight and industry practice has led to STP having another individual on the refuel team perform the IV's on fuel movement.
- D: INCORRECT: This distractor is credible because up until 2RE16 the CLS did perform independent verification of fuel assembly location in the Reactor Core but a lesson learned on Supervisory oversight and industry practice has led to STP having another individual on the refuel team perform the IV's on fuel movement.

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

The student must have knowledge of the responsibilities of SROs including those of the CLS.

Exam Bank No.: 2673**Last used on an NRC exam:** Never**SRO Sequence Number:** 78

The Unit is in Mode 1 when a plant computer point is required to be taken off-scan due to a material deficiency.

Per 0PGP03-ZO-0039, Operations Configuration Management, permission from the (1) is required prior to taking the point off-scan.

AND

Once the point is taken off-scan, it shall be reviewed by (2) within 36 hours.

- A. (1) Operations Manager
(2) Maintenance
- B. (1) Operations Manager
(2) Engineering
- C. (1) Shift Manager
(2) Maintenance
- D. (1) Shift Manager
(2) Engineering

Answer: D (1) Shift Manager
(2) Engineering

Exam Bank No.: 2673**Source:** New**Modified From****K/A Catalog Number:** G2.2.43

Knowledge of the process used to track inoperable alarms.

SRO Importance: 3.3 **Tier:** 3 **Group/Category:** 2**10CFR Reference or SRO Objective:** 55.43(b)(3)**SRO Justification:**

administrative processes for disabling annunciators

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

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

Reference: 0PGP03-ZO-0039 Rev 29 section 4.5**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: The Shift Manager must approve the point being placed in off-scan. Plausible because it is the Ops Manager responsibility to ensure the plant is operated in accordance with plant procedures and operating license requirements. Also, Engineering must due the review. Plausible because this review is due to a material deficiency which maintenance normally responds to material deficient conditions.
- B: INCORRECT: The Shift Manager must approve the point being placed in off-scan. Plausible because it is the Ops Manager responsibility to ensure the plant is operated in accordance with plant procedures and operating license requirements.
- C: INCORRECT: Engineering must due the review. Plausible because this review is due to a material deficiency which maintenance normally responds to material deficient conditions.
- D: CORRECT: Step 4.5.1 states the Shift Manager must approve taking the point off scan. And step 4.5.5 states that if it is off-scan due to a material deficiency then it must be reviewed within 36 hours by engineering.

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

The student must have fundamental knowledge of the process for tracking inoperable alarms per 0PGP03-ZO-0039, Configuration Mangement.

Exam Bank No.: 2697**Last used on an NRC exam:** Never**SRO Sequence Number:** 79

The crew is responding to a LOCA per 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant, with the following conditions:

- Containment Pressure is 17 psig.
- CETs are 900°F.
- RVWL is indicating 0% Plenum Level.
- Addendum 5 of 0POP05-EO-EO00, Reactor Trip or Safety Injection, is complete.

The Unit Supervisor should ____ (1) ____ the step in progress and enter ____ (2) ____.

- A. (1) immediately stop
(2) 0POP05-EO-FRC2, Response to Degraded Core Cooling
- B. (1) immediately stop
(2) 0POP05-EO-FRZ1, Response to High Containment Pressure
- C. (1) complete
(2) 0POP05-EO-FRC2, Response to Degraded Core Cooling
- D. (1) complete
(2) 0POP05-EO-FRZ1, Response to High Containment Pressure

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

Exam Bank No.: 2697**Source:** New**Modified From****K/A Catalog Number:** 017 G2.4.21

In-Core Temperature Monitoring:
Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc

SRO Importance: 4.6 **Tier:** 2 **Group/Category:** 2**10CFR Reference or SRO Objective:** 55.43(b)(5)**SRO Justification:**

knowledge of administrative procedures that specify hierarchy, implementation, and/or coordination of plant normal, abnormal, and emergency procedures

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

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

Reference: 0POP05-EO-FO02 Rev 3, 0POP05-EO-FO05 Rev 4, 0POP01-ZA-0018 Rev 21 step 6.8**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: FRC2 is the correct procedure transition. However, the step should be completed prior to the transition. Plausible because the EOP users guide does describe situations when it is appropriate to immediately stop any action in progress and transition to FRPs, i.e. a re path condition.
- B: INCORRECT: The step should be completed prior to the transition. Plausible because the EOP users guide does describe situations when it is appropriate to immediately stop any action in progress and transition to FRPs, i.e. a re path condition. Also if the conditions of the plenum were > than 20% level then only a yellow path would be observed on core cooling and then FRZ1 would be correct the choice. In addition, the stem gives conditions for 2 orange paths and the student must know the hierarchy of FRPs to implement.
- C: CORRECT: The conditions given indicate both an orange path on Containment and Core Cooling. The student must recognize these conditions and also know the order of hierarchy is to implement actions of FRC2 first. Also, the student must know that the EOP user's guide states that when in an EOP and an orange condition arises then they should complete the step in progress before transitioning to the FRP.
- D: INCORRECT: It is correct to complete the step in progress before the transition due to an orange path. However it is incorrect to implement FRZ1. Plausible because if the conditions of the plenum were > than 20% level then only a yellow path would be observed on core cooling and then FRZ1 would be correct the choice. In addition, the stem gives conditions for 2 orange paths and the student must know the hierarchy of FRPs to implement.

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

Student must analyze the given conditions and choose the correct FRP to enter and also understand the EOP User's Guide implementation criteria.

Exam Bank No.: 2686

Last used on an NRC exam: Never

SRO Sequence Number: 80

The crew is performing actions of 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant, with the following conditions:

- Containment Pressure is 12 psig and slowly lowering
- SG levels are all 50% and stable (Narrow Range)
- Pressurizer level is 48% and slowly rising
- RCS pressure is 1800 psig and stable
- Subcooling is 50° and stable
- RWST level is 125,000 gal and lowering
- 'CNTMT SUMP TO SI SUCT HDR ISOL' MOV-0016B has lost power.
- 'CNTMT SUMP TO SI SUCT HDR ISOL' MOV-0016C is danger tagged closed.

The Unit Supervisor will NEXT perform steps in...

- A. 0POP05-EO-EC11, Loss of Emergency Coolant Recirculation.
- B. 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.
- C. 0POP05-EO-ES13, Transfer to Cold Leg Recirculation.
- D. 0POP05-EO-ES11, SI termination.

Answer: D 0POP05-EO-ES11, SI termination.

Exam Bank No.: 2686**Last used on an NRC exam:** Never**SRO Sequence Number:** 80

The crew is performing actions of 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant, with the following conditions:

- Containment Pressure is 12 psig and slowly lowering
- SG levels are all 50% and stable
- Pressurizer level is 48% and slowly rising
- RCS pressure is 1800 psig and stable
- Subcooling is 50° and stable
- RWST level is 125,000 gal and lowering
- 'CNTMT SUMP TO SI SUCT HDR ISOL' MOV-0016B has lost power.
- 'CNTMT SUMP TO SI SUCT HDR ISOL' MOV-0016C is danger tagged closed.

The Unit Supervisor will NEXT perform steps in...

- A. 0POP05-EO-EC11, Loss of Emergency Coolant Recirculation.
- B. 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.
- C. 0POP05-EO-ES13, Transfer to Cold Leg Recirculation.
- D. 0POP05-EO-ES11, SI termination.

Answer: D 0POP05-EO-ES11, SI termination.

Exam Bank No.: 2686**Source:** New**Modified From**

K/A Catalog Number: EPE 011 EA2.11 Ability to determine or interpret the following as they apply to a Large Break LOCA: Conditions for throttling or stopping HPI.

SRO Importance: 4.3 **Tier:** 1 **Group/Category:** 1

10CFR Reference or SRO Objective: 55.43(b)(5)

SRO Justification:

assessment of plant conditions (normal, abnormal, or emergency) and then selection of a procedure or section of a procedure to mitigate or recover, or with which to proceed

STP Lesson: LOT 504.09 **Objective Number:** 81187

DISCUSS the indications available to determine plant status during a loss of primary or secondary coolant accident.

Reference: 0POP05-EO-EO10 Rev 23 CIP

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: 0POP05-EO-EC11 is plausible because the given conditions indicate a loss of emergency coolant recirc capability on 2 trains of ECCS. However, all 3 trains must be lost for this transition to be correct. Transition to 0POP05-EO-EC11 is one of the transitions listed on the CIP of 0POP05-EO-EO10.
- B: INCORRECT: It is plausible the student may not think SI termination criteria is met and that they should proceed with actions in 0POP05-EO-EO10. However, subcooling, SG levels, RCS pressure, and Pressurizer level all indicate that SI termination criteria are met.
- C: INCORRECT: 0POP05-EO-ES13 is plausible if the student thought RWST level was low enough to transition. However, RWST level is above the required level for cold leg recirc switchover. Transition to 0POP05-EO-ES13 is one of the transitions listed on the CIP of 0POP05-EO-EO10.
- D: CORRECT: SI termination criteria is met and per the CIP the US should transition to 0POP05-EO-ES11 step 1.

Question Level: H **Question Difficulty** 3

Justification:

Student must analyze the plant conditions and select the appropriate procedure to mitigate the event.

Exam Bank No.: 2706**Last used on an NRC exam:** Never**SRO Sequence Number:** 81

The crew is responding to a Loss of All AC Power per 0POP05-EO-EC00 with the following conditions:

- Steps 1-7 were completed and the crew was on step 8 when power was restored to Train 'A' AC ESF Bus.

Subsequently;

- The crew goes to step 26 to start recovery actions.
- SG pressures are being stabilized using SG PORVs.
- While re-energizing the Train 'A' Sequencer a SG PORV sticks open and cannot be closed locally.

If SG pressure lowers to the SI setpoint, the SI equipment (1) .

AND

The Unit Supervisor would transition to (2) .

- A. (1) will automatically start
(2) 0POP05-EO-EO00, Reactor Trip or Safety Injection
- B. (1) will automatically start
(2) 0POP05-EO-EC02, Loss of All AC Power Recovery with SI Required
- C. (1) must be manually started
(2) 0POP05-EO-EO00, Reactor Trip or Safety Injection
- D. (1) must be manually started
(2) 0POP05-EO-EC02, Loss of All AC Power Recovery with SI Required

Answer: D (1) must be manually started
(2) 0POP05-EO-EC02, Loss of All AC Power Recovery with SI Required

Exam Bank No.: 2706**Source:** New**Modified From****K/A Catalog Number:** 013 A2.02

Ability to a) predict the impacts fo the following malfunctions or operations on the ESFAS; and b) based on those predictions, use procedures to correct, control, mitigate the consequences of those malfunctions or operations: Excess steam demand

SRO Importance: 4.5 **Tier:** 2 **Group/Category:** 1**10CFR Reference or SRO Objective:** 55.43(b)(5)**SRO Justification:**

assessment of plant conditions (normal, abnormal, or emergency) and then selection of a procedure or section of a procedure to mitigate or recover, or with which to proceed

STP Lesson: LOT 504.22 **Objective Number:** 82283

Given current plant conditions, determine the recovery procedure to be used.

Reference: 0POP05-EO-EC00 Rev 29 steps 30 and 31**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible since the stem states the sequencer has been re-energized. The student must know that the SI signal has to be reset first and that the equipment will have to be manually started. Also plausible because in other EOPs when an SI actuates you would transition to 0POP05-EO-EO00 to address the SI status. Also plausible a student may think that since a bus has been re-energized then 0POP05-EO-EC02 is not required and that responding to the SI per EO00 would be more important.
- B: INCORRECT: This is the correct procedure transition. However the SI equipment will not auto start since SI has not been reset. Plausible since the stem states the sequencer has been re-energized. The student must know that the SI signal has to be reset first and that the equipment will have to be manually started.
- C: INCORRECT: This is the correct operation of the SI equipment. However it is not the correct recovery procedure. Plausible because in other EOPs when an SI actuates you would transition to 0POP05-EO-EO00 to address the SI status. Also plausible a student may think that since a bus has been re-energized then 0POP05-EO-EC02 is not required and that responding to the SI per EO00 would be more important.
- D: CORRECT: At this point the SI Sequencers would be energized but not reset. Therefore, the equipment would have to be manually started. Step 31 would have the US transition to 0POP05-EO-EC02.

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

Student must analyze the given conditions and predict the operation of SI equipment and choose the correct recovery procedure.

Exam Bank No.: 2688**Last used on an NRC exam:** Never**SRO Sequence Number:** 82

The Unit has experienced a LOCA outside containment with the following conditions:

- RCS temperature is rising.
- RCS pressure is lowering.
- Train 'A' FHB SI/CS pump sump level is in alarm.

Subsequently;

- The crew is performing actions of 0POP05-EO-EC12, LOCA Outside Containment.
- The crew isolated Train 'A' ECCS and Containment Spray per step 4.
- RCS pressure continues to lower.
- The crew restores Train 'A' ECCS and Containment Spray.

In accordance with 0POP05-EO-EC12, the Unit Supervisor should...

- A. remain in 0POP05-EO-EC12 and continue with step 5 to check for a LOCA inside the MAB.
- B. remain in 0POP05-EO-EC12 and repeat step 4 to isolate 'B' or 'C' ECCS and Containment Spray.
- C. transition to 0POP05-EO-EC11, Loss of Emergency Coolant Recirculation, to cool down and depressurize to Cold Shutdown conditions.
- D. transition to 0POP05-EO-ES12, Post LOCA Cooldown and Depressurization, to cool down and depressurize to Cold Shutdown conditions.

Answer: B remain in 0POP05-EO-EC12 and repeat step 4 to isolate 'B' or 'C' ECCS and Containment Spray.

Exam Bank No.: 2688**Source:** Modified**Modified From** 1398

K/A Catalog Number: EPE E04 EA2.1 Ability to determine and interpret the following as they apply to LOCA Outside Containment: Facility conditions and selection of appropriate procedures during abnormal and emergency conditions.

SRO Importance: 4.3 **Tier:** 1 **Group/Category:** 1

10CFR Reference or SRO Objective: 55.43(b)(5)

SRO Justification:

assessment of plant conditions (normal, abnormal, or emergency) and then selection of a procedure or section of a procedure to mitigate or recover, or with which to proceed

STP Lesson: LOT 504.46 **Objective Number:** 82657

From Memory STATE/IDENTIFY indications and trends used to determine that the break is isolated in accordance with POP05-EO-EC12.

Reference: OPOP05-EO-EC12 Rev 10 step 4j RNO

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: RCS pressure is still lowering so the procedure will have the crew repeat step 4 for the other trains before moving on to step 5 to check for a LOCA in the MAB. Plausible, because the crew isolated the train with the sump level alarm in. Therefore the student may think it is appropriate to move on to the next step of the procedure.
- B: CORRECT: Since the crew has only isolated one train of ECCS and RCS pressure is still lowering the procedure will have the crew repeat step 4 for the other trains before moving on to step 5 to check for a LOCA in the MAB.
- C: INCORRECT: The crew should remain in EC12. Plausible because at step 6 of EC12 the crew would transition to EC11 to cool down if RCS pressure is still lowering. Also plausible to think that step 5 would not be performed (check for LOCA in MAB) since the indications are only for a LOCA in the FHB.
- D: INCORRECT: The crew should remain in EC12. Plausible because at step 6 of EC12 the crew would transition to cool down if RCS pressure is still lowering. However they would transition to EC11 and not ES12 to perform the cooldown.

Question Level: H **Question Difficulty** 3

Justification:

Student must analyze the plant conditions and determine the appropriate actions to take to mitigate the event.

Exam Bank No.: 2681

Last used on an NRC exam: Never

SRO Sequence Number: 83

The crew was performing actions of 0POP04-RC-0004, Steam Generator Tube Leakage, in response to a tube leak on SG 'A'.

Subsequently;

- The leak became larger and was approximately 250 gpm.
- The crew performed a Reactor Trip and Safety Injection.

*Note to students on board:
"Assume same amount of AFW flow to SG's A, B, C, and D."*

The crew is currently performing steps of 0POP05-EO-EO30, Steam Generator Tube Rupture. SG 'A' has been isolated and the RCS cooldown is in progress when the following parameters are observed:

	Pressure	Level	Main Steamline Radiation
SG A	1190 psig and lowering	44% NR and stable	1.8 E-1 and rising
SG B	910 psig and lowering	22% NR and stable	9.2 E-2 and rising
SG C	910 psig and lowering	17% NR and lowering	2.0 E-2 and stable
SG D	910 psig and lowering	23% NR and lowering	2.0 E-2 and stable

Based on these indications, the Unit Supervisor should...

- A. stop the cooldown when the required CET temperature is reached and continue in 0POP05-EO-EO30.
- B. stop the cooldown immediately and return to step 1 of 0POP05-EO-EO30.
- C. transition to 0POP05-EO-EO20, Faulted Steam Generator Isolation.
- D. transition to 0POP05-EO-EC31, SGTR with Loss of Reactor Coolant – Subcooled Recovery Desired.

Answer: B stop the cooldown immediately and return to step 1 of 0POP05-EO-EO30.

Exam Bank No.: 2681**Last used on an NRC exam:** Never**SRO Sequence Number:** 83

The crew was performing actions of 0POP04-RC-0004, Steam Generator Tube Leakage, in response to a tube leak on SG 'A'.

Subsequently;

- The leak became larger and was approximately 250 gpm.
- The crew performed a Reactor Trip and Safety Injection.

The crew is currently performing steps of 0POP05-EO-EO30, Steam Generator Tube Rupture. SG 'A' has been isolated and the RCS cooldown is in progress when the following parameters are observed:

	Pressure	Level	Main Steamline Radiation
SG A	1190 psig and lowering	44% NR and stable	1.8 E-1 and rising
SG B	910 psig and lowering	22% NR and stable	9.2 E-2 and rising
SG C	910 psig and lowering	17% NR and lowering	2.0 E-2 and stable
SG D	910 psig and lowering	23% NR and lowering	2.0 E-2 and stable

Based on these indications, the Unit Supervisor should...

- A. stop the cooldown when the required CET temperature is reached and continue in 0POP05-EO-EO30.
- B. stop the cooldown immediately and return to step 1 of 0POP05-EO-EO30.
- C. transition to 0POP05-EO-EO20, Faulted Steam Generator Isolation.
- D. transition to 0POP05-EO-EC31, SGTR with Loss of Reactor Coolant – Subcooled Recovery Desired.

Answer: B stop the cooldown immediately and return to step 1 of 0POP05-EO-EO30.

Exam Bank No.: 2681**Source:** New**Modified From**

K/A Catalog Number: APE 037 A2.11 Ability to determine and interpret the following as they apply to a Steam Generator Tube Leak: When to isolate one or more SGs

SRO Importance: 3.8 **Tier:** 1 **Group/Category:** 2

10CFR Reference or SRO Objective: 55.43(b)(5)

SRO Justification:

assessment of plant conditions (normal, abnormal, or emergency) and then selection of a procedure or section of a procedure to mitigate or recover, or with which to proceed

STP Lesson: LOT 504.15 **Objective Number:** 38635

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

Reference: 0POP05-EO-EO30 Rev 26 and its WOG background document Rev 2 page 77

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: The cooldown should be stopped and the SRO should return to the beginning of EO30 so that the 'B' SG is isolated properly. Plausible, because the cooldown is a time critical operator action for response to a SGTR. It is plausible to think that the cooldown must be completed prior to addressing any new issues.
- B: CORRECT: The given indications show that 'B' SG is indicating a SGTR as well as 'A' SG. It is implied in this question that the student identifies this since it is considered RO knowledge. If a second SG is identified as ruptured once a cooldown has been started, then the correct action to take is to stop the cooldown in progress and return to the beginning of EO30. The WOG explains the cooldown should be stopped until the subsequent SG is isolated so there is no unnecessary releases.
- C: INCORRECT: Plausible because the CIP of EO30 states that if any SG pressure is lowering in an uncontrolled manner then transition to EO20. Plausible with the given SG pressure indications that the student may think that the SGs are depressing uncontrollably and would need to transition to EO20.
- D: INCORRECT: Plausible because there are 10 different ways to transition out of EO30 to EC31. (i.e. if a student believed there is no intact SG available for the cooldown)

Question Level: H **Question Difficulty** 3

Justification:

Student must be able to analyze given conditions and determine how to correctly apply the EOPs to mitigate the event.

Exam Bank No.: 2711**Last used on an NRC exam:** Never**SRO Sequence Number:** 84

Before performing a liquid waste release, the ____ (1) ____ authorizes the discharge by signing 0PSP07-WL-LDP1, Liquid Effluent Permit.

AND

If a Circulating Water Pump trips during the discharge, then the liquid waste release ____ (2) ____.

- A. (1) Shift Manager
(2) shall be secured immediately
- B. (1) Shift Manager
(2) may continue if at least 2 independent samples are analyzed
- C. (1) Chemistry Manager
(2) shall be secured immediately
- D. (1) Chemistry Manager
(2) may continue if at least 2 independent samples are analyzed

Answer: A (1) Shift Manager
(2) shall be secured immediately

Exam Bank No.: 2711**Source:** New**Modified From****K/A Catalog Number:** APE 059 G2.3.6 Accidental Liquid Radwaste Release:
Ability to approve release permits.**SRO Importance:** 3.8 **Tier:** 1 **Group/Category:** 2**10CFR Reference or SRO Objective:** 55.43(b)(4)**SRO Justification:**

process for gaseous/liquid release approvals (i.e., release permits)

STP Lesson: LOT 202.22 **Objective Number:** 23901

DISCUSS the proper use of the circulating water system operating procedure for normal and abnormal operating conditions. Include the system operating parameters to be observed at different power levels.

Reference: 0PSP07-WL-LDP1 Rev 18 Step 5.1.26 and 0POP02-WL-0100 Rev 21 step 4.8**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: The final step of the pre-release instructions of 0PSP07-WL-LDP1 is to obtain the shift manager's signature for approval of a discharge. Also in order to prevent an unanalyzed release step 4.8 of 0POP02-WL-0100, Liquid Waste Release, states that if the number of running CW pumps decreases then the release shall be terminated immediately.
- B: INCORRECT: If a CW pump trips then the discharge shall be secured immediately. This prevents an unanalyzed release from occurring. Plausible, because this is the correct action per the ODCM if the LWPS rad monitor were to become inoperable.
- C: INCORRECT: 0PSP07-WL-LDP1, Liquid Effluent Permit, is signed by the SM to authorize a discharge. Plausible, because Chemistry is the organization who owns the procedure and is responsible for performing it including all sampling, analysis, opening a Liquid Effluent Permit, and closing the permit. The Chemistry Department reviews the completed package and signs as the designated reviewer.
- D: INCORRECT: Plausible, because Chemistry is the organization who owns the procedure and is responsible for performing it including all sampling, analysis, opening a Liquid Effluent Permit, and closing the permit. The Chemistry Department reviews the completed package and signs as the designated reviewer. Also, plausible because this is the correct action per the ODCM if the LWPS rad monitor were to become inoperable.

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

Student must know the requirements for a liquid radwaste release.

Exam Bank No.: 2710

Last used on an NRC exam: Never

SRO Sequence Number: 85

Unit 1 is operating at 100% with the following conditions:

- A fire breaks out in the control room.
- A spurious reactor trip occurs due to the fire.

The Unit Supervisor should FIRST enter (1) .

- A. 0POP05-EO-EO00, Reactor Trip or Safety Injection
- B. 0POP04-ZO-0001, Control Room Evacuation
- C. 0POP04-ZO-0008, Fire / Explosion
- D. 0POP04-ZO-0009, Safe Shutdown Fire Response

Answer: B 0POP04-ZO-0001, Control Room Evacuation

Exam Bank No.: 2710**Source:** New**Modified From****K/A Catalog Number:** G2.4.27 Knowledge of "fire in the plant" procedures.**SRO Importance:** 3.9 **Tier:** 3 **Group/Category:** 4**10CFR Reference or SRO Objective:** 55.43(b)(5)**SRO Justification:**

knowledge of administrative procedures that specify hierarchy, implementation, and/or coordination of plant normal, abnormal, and emergency 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: 0POP01-ZA-0018 Rev 21 section 7.1 and 0POP04-ZO-0008 Rev 25 steps 4 and 5**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible since a fire in this area will require the control room to trip the reactor. However, this fire requires a control room evacuation, therefore 0POP04-ZO-0001 will take precedence
- B: CORRECT: The fire is in the control room and caused a reactor trip. Therefore a Control Room evacuation is needed. Per 0POP01-ZA-0018, EOP Users Guide, 0POP04-ZO-0001 shall take precedence over all EOPs.
- C: INCORRECT: Plausible because 0POP04-ZO-0008 is the first procedure entered when addressing a fire. However, since this fire required a control room evacuation, 0POP04-ZO-0001 will take precedence.
- D: INCORRECT: Plausible because 0POP04-ZO-0009 addresses fires that are in this fire area. However, this fire requires a control room evacuation, therefore 0POP04-ZO-0001 will take precedence.

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

Student must know the EOP user's guide order of hierarchy for procedures and also know the requirements of the fire response procedure.

Exam Bank No.: 416**Last used on an NRC exam:** 2014**SRO Sequence Number:** 86

Given the following:

- A Small Break LOCA has occurred.
- Safety Injection has been terminated in accordance with 0POP05-EO-ES11, SI Termination.
- Operators have just established charging and restored MINIMUM charging flow.
- The crew is continuing in ES11 when the following conditions are identified:
 - RCS subcooling is 45°F and stable
 - Pressurizer level is 7% and stable
 - Adverse Containment Conditions do NOT exist

The Unit Supervisor should direct the crew to (1) and (2) .

- A. (1) manually operate SI pumps
(2) continue with 0POP05-EO-ES11, SI Termination
- B. (1) manually operate SI pumps
(2) transition to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant
- C. (1) adjust charging flow to restore pressurizer level
(2) continue with 0POP05-EO-ES11, SI Termination
- D. (1) adjust charging flow to restore pressurizer level
(2) transition to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant

Answer: C (1) adjust charging flow to restore pressurizer level
(2) continue with 0POP05-EO-ES11, SI Termination

Exam Bank No.: 416**Source:** Bank**Modified From**

K/A Catalog Number: EPE E02 EA2.1 Ability to determine and interpret the following as they apply to the SI Termination : Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

SRO Importance: 4.2 **Tier:** 1 **Group/Category:** 2

10CFR Reference or SRO Objective: 55.43(b)(5)

SRO Justification:

assessment of plant conditions (normal, abnormal, or emergency) and then selection of a procedure or section of a procedure to mitigate or recover, or with which to proceed (ES11 is not a major EOP listed in NUREG 1021 therefore SRO knowledge)

STP Lesson: LOT 504.07 **Objective Number:** 92226

LIST the conditions in 0POP05-EO-ES11 which would require manually restarting the SI pumps.

Reference: 0POP05-EO-ES11 Rev 16 Step 9

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: Incorrect because you would not start the SI pumps. Plausible because you would start the SI pumps if pressurizer level can not be restored. However the procedure first has the crew manually control charging flow to restore the pressurizer level. Also plausible because the other EOPs with SI reinitiation criteria (i.e. E10) does not specify that you first attempt to manually control charging flow to restore pressurizer level.
- B: INCORRECT: Plausible because this is the correct actions to take if subcooling is not met or pressurizer level can not be restored. However the procedure first has the crew attempt to restore pressurizer level by controlling pressurizer level. Also plausible because the other EOPs with SI reinitiation criteria (i.e. E10) does not specify that you first attempt to manually control charging flow to restore pressurizer level.
- C: CORRECT: The RNO of step 9 states that the crew should control charging flow to restore pressurizer level and only if pressurizer level can not be restored then start the SI pumps and transition to EO10.
- D: INCORRECT: Incorrect because you would stay in ES11. Plausible because you would transition to EO10 if subcooling was not met or if pressurizer level could not be restored to greater than 8%.

Question Level: H **Question Difficulty** 3

Justification:

Student must assess the given plant conditions and determine the correct mitigative strategy and select the appropriate procedure to recover with.

Exam Bank No.: 2577**Last used on an NRC exam:** 2016**SRO Sequence Number:** 87

The crew is performing the steps of 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant, due to a Small Break LOCA.

- A depressurization of all SGs to 1000 psig has just been performed.

Subsequently;

- All SG pressures are 950 psig and lowering rapidly.
- All SG flows are 0.3×10^6 lbm/hr and rising.
- Containment Pressure is 3.5 psig and rising.
- RWST level is 125,000 gallons and lowering.
- All MSIVs are open and will not close from the Control Room.

The Unit Supervisor will...

- A. remain in 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant, and reset SI.
- B. transition to 0POP05-EO-ES13, Transfer to Cold Leg Recirculation, and reset SI.
- C. transition to 0POP05-EO-EO20, Faulted Steam Generator Isolation, and perform Addendum 1, to locally close MSIVs.
- D. transition to 0POP05-EO-EC21, Uncontrolled Depressurization of all Steam Generators, and perform Addendum 1, to locally close MSIVs.

Answer: C transition to 0POP05-EO-EO20, Faulted Steam Generator Isolation, and perform Addendum 1, to locally close MSIVs.

Exam Bank No.: 2577**Source:** Bank**Modified From**

K/A Catalog Number: APE 040 G2.4.47 Steam Line Rupture-Excessive Heat Transfer:
Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference.

SRO Importance: 4.2 **Tier:** 1 **Group/Category:** 1

10CFR Reference or SRO Objective: 55.43(b)(5)

SRO Justification:

knowledge of when to implement attachments and appendices, including how to coordinate these items with procedure steps

STP Lesson: LOT 504.13 **Objective Number:** 81261

STATE/IDENTIFY the indications and anticipated readings used to determine that a faulted Steam Generator exists and which Steam Generator(s) is/are faulted.

Reference: 0POP05-EO-EO10, Rev 23, Step 3, Page 8 and 0POP05-EO-EO20, Rev 12, Step 1 RNO, Page 3

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: Plausible because if the US thought that this subsequent condition was from a larger RCS break then staying in 0POP05-EO-EO10 would be justified. Incorrect because with the presence of SG flow going up then this indicates that the issue is a faulted SG
- B: INCORRECT: Plausible because with the original SBLOCA RWST level would be lowering and if this procedure were entered it would take priority. Incorrect because RWST level is still not low enough to transition to 0POP05-EO-ES13.
- C: CORRECT: With the given conditions it would be determined that a faulted SG has occurred in containment. This knowledge is assumed to be known by the SRO. The US will transition to 0POP05-EO-EO20 and with the MSIVs open will use Addendum 1 to close them locally.
- D: INCORRECT: Plausible because all SG pressures are lowering rapidly. Incorrect because a transition to 0POP05-EO-EC21 is not made directly from any procedure except 0POP05-EO-EO20.

Question Level: H **Question Difficulty** 3

Justification:

The student must analyze the given conditions to determine the correct procedure transition.

Exam Bank No.: 2684**Last used on an NRC exam:** Never**SRO Sequence Number:** 88

The Unit is responding to a Loss of All AC Power per 0POP05-EO-EC00, Loss of All AC Power, with the following conditions:

- The dispatcher reports the Emergency Transformer will be restored within 3 hours.
- Train 'A' bus voltage is 109 VDC.
- Train 'B' and 'C' bus voltages are below 105.5 VDC.

The Unit Supervisor should next direct actions of ____ (1) ____ and open 'B' and 'C' battery output breakers to ensure ____ (2) ____.

- A. (1) 0POP12-ZO-FSG07, Loss of Vital Instruments or Control Power
(2) the batteries are capable of flashing if a Standby DG becomes available
- B. (1) 0POP12-ZO-FSG07, Loss of Vital Instruments or Control Power
(2) the battery currents do not exceed rated values resulting in battery damage
- C. (1) 0POP05-EO-EC00 Addendum 4, Vital DC Monitoring
(2) the batteries are capable of flashing if a Standby DG becomes available
- D. (1) 0POP05-EO-EC00 Addendum 4, Vital DC Monitoring
(2) the battery currents do not exceed rated values resulting in battery damage

Answer: C (1) opening 'B' and 'C' battery output breakers per 0POP05-EO-EC00 Addendum 4, Vital DC Monitoring
(2) the battery is capable of flashing if a Standby DG becomes available

Exam Bank No.: 2684**Source:** New**Modified From****K/A Catalog Number:** EPE 055 G2.4.18 Station Blackout:
Knowledge of the specific bases for EOPs.**SRO Importance:** 4.0 **Tier:** 1 **Group/Category:** 1**10CFR Reference or SRO Objective:** 55.43(b)(5)**SRO Justification:**

assessment of plant conditions (normal, abnormal, or emergency) and then selection of a procedure or section of a procedure to mitigate or recover, or with which to proceed

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: 0POP05-EO-EC00 Rev 29 Addendum 4**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: This is the correct basis but the actions should be done in Addendum 4 of EC00. Plausible because EC00 will direct you to perform 0POP12-ZO-FSG07 for any bus with low voltage but an ELAP (extended loss of all AC power) must be in progress for this transition. The student must know the definition of an ELAP is if a bus cannot be restored within 4 hours. The stem of the question states the emergency transformer would be available in 3 hours. Therefore, an ELAP would not be in progress.
- B: INCORRECT: Plausible because EC00 will direct you to perform 0POP12-ZO-FSG07 for any bus with low voltage but an ELAP (extended loss of all AC power) must be in progress for this transition. The student must know the definition of an ELAP is if a bus cannot be restored within 4 hours. The stem of the question states the emergency transformer would be available in 3 hours. Therefore, an ELAP would not be in progress. Also plausible because when the battery voltage goes down the current rises. So a student may think that the basis of this action is to protect the battery from higher currents.
- C: CORRECT: Addendum 4 directs opening the battery output breakers for and Train with a bus voltage below 105.5 VDC. The basis for this is to conserve the battery should a DG become available.
- D: INCORRECT: This is the correct actions to take but the wrong basis. Plausible because when the battery voltage goes down the current rises. So a student may think that the basis of this action is to protect the battery from higher currents.

Question Level: H **Question Difficulty** 4**Justification:**

Student must analyze the given conditions and select the appropriate path of EC00 to take to recover from the event and the bases for the actions.

Exam Bank No.: 2683**Last used on an NRC exam:** Never**SRO Sequence Number:** 89

The Unit is at 100% power when the following occurs:

- 'ECW PUMP 1A DISCH PRESS LO' alarms.
- 'ECW PUMP 1B DISCH PRESS LO' alarms.
- ECW Pump 1C is in standby and auto starts.
- The crew enters 0POP04-EW-0001, Loss of Essential Cooling Water.
- A plant operator is dispatched to the intake structure to check for blockage.
- While waiting to hear from the plant operator 'CCW HX 1C OUTL TEMP HI' alarms.
- The crew is monitoring and trending Train 'C' CCW Outlet temperature at step 6 of 0POP04-EW-0001, and secures letdown and all Non-essential CCW loads per the RNO column.

Subsequently;

- Train 'C' ECW to CCW Outlet temperature is 115°F and continues to rise.

Which of the following would be the NEXT correct action for the Unit Supervisor to perform?

- A. Remain in 0POP04-EW-0001 and use 0POP02-EW-0001, ECW Operations, to secure other CCW loads to prevent damage to plant equipment.
- B. Remain in 0POP04-EW-0001 and continue actions to secure other CCW loads to prevent damage to plant equipment.
- C. Trip the reactor, trip the RCPs, and enter 0POP05-EO-EO00, Reactor Trip or Safety Injection, and use 0POP02-EW-0001, ECW Operations, to combat further challenges to plant equipment.
- D. Trip the reactor, trip the RCPs, and enter 0POP05-EO-EO00, Reactor Trip or Safety Injection, and continue use of 0POP04-EW-0001 to combat further challenges to plant equipment.

Answer: D Trip the reactor, trip the RCPs, and enter 0POP05-EO-EO00, Reactor Trip or Safety Injection, and continue use of 0POP04-EW-0001, to combat further challenges to plant equipment.

Exam Bank No.: 2683**Source:** New**Modified From****K/A Catalog Number:** 076 G2.4.8

Service Water:
Knowledge of how abnormal operating procedures are
used in conjunction with EOPs.

SRO Importance: 4.5 **Tier:** 2 **Group/Category:** 1**10CFR Reference or SRO Objective:** 55.43(b)(5)**SRO Justification:**

knowledge of administrative procedures that specify hierarchy, implementation, and/or coordination of plant normal, abnormal, and emergency 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: 0POP01-ZA-0018 Rev 21 step 4.26.4 and 0POP04-EW-0001 Rev 5 step 6 RNO**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: The procedure has the crew trip the reactor if the outlet temperatures are greater than 110 degrees and continue to rise after securing the non-essential loads. Plausible, because the procedure does secure more CCW loads but only after the reactor is tripped.
- B: INCORRECT: The procedure has the crew trip the reactor if the outlet temperatures are greater than 110 degrees and continue to rise after securing the non-essential loads. Plausible, because the procedure does secure more CCW loads but only after the reactor is tripped. Also incorrect because they should use the 0POP04 and not the 0POP02.
- C: INCORRECT: Plausible because the crew should trip the reactor. However, they should use the 0POP04 when resources permit and not the 0POP02.
- D: CORRECT: 0POP04-EW-0001 step 6 RNO requires the Reactor to be tripped if CCW outlet temperatures continue to rise after securing the non-essential loads. The crew should continue actions in the 0POP04 as resources permit.

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

The student must be able to analyze the given conditions and have knowledge of the rules of usage for off-normal and emergency procedures to determine the correct answer.

Exam Bank No.: 2679

Last used on an NRC exam: Never

SRO Sequence Number: 90

Maintaining the minimum AFW storage tank volume required by Technical Specifications ensures that following a design basis accident there is sufficient water to maintain the RCS at Hot Standby for _____ followed by a cooldown.

- A. 2 hours
- B. 4 hours
- C. 8 hours
- D. 12 hours

Answer: B 4 hours

Exam Bank No.: 2679**Source:** New**Modified From****K/A Catalog Number:** 061 G2.2.25

Auxiliary Feedwater:
Knowledge of the bases in Technical Specifications for
limiting conditions for operations and safety limits.

SRO Importance: 4.2 **Tier:** 2 **Group/Category:** 1**10CFR Reference or SRO Objective:** 55.43(b)(2)**SRO Justification:**

knowledge of TS bases that are required to analyze TS-required actions and terminology

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

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

Reference: TS 3.7.1.3 basis page B3/4 7-2a Amend 06-9821-1**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: All distractors are plausible because they are times used through Tech Specs.
- B: CORRECT: The TS ensures enough water to maintain hot standby for 4 hours followed by a cooldown to 350 degrees.
- C: INCORRECT: All distractors are plausible because they are times used through Tech Specs.
- D: INCORRECT: All distractors are plausible because they are times used through Tech Specs.

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

Student must know the basis for the TS requirement of the AFWST.

Exam Bank No.: 2690**Last used on an NRC exam:** Never**SRO Sequence Number:** 91

The Unit is at 100% when the following occurs:

- Loss of Class 1E 125 VDC power to E1D11

In addition to the Electrical System Technical Specifications, the Unit Supervisor should also declare __ (1) __ inoperable and enter a __ (2) __ Limiting Condition for Operation action.

- A. (1) SG 'D' PORV
(2) 72 hour
- B. (1) SG 'D' PORV
(2) 7 day
- C. (1) AFW Pump 14
(2) 72 hour
- D. (1) AFW Pump 14
(2) 7 day

Answer: C (1) AFW Pump 14
(2) 72 hour

Exam Bank No.: 2690**Source:** New**Modified From**

K/A Catalog Number: APE 058 AA2.03 Ability to determine and interpret the following as they apply to the Loss of DC Power: DC loads lost; impact on ability to operate and monitor plant systems.

SRO Importance: 3.9 **Tier:** 1 **Group/Category:** 1

10CFR Reference or SRO Objective: 55.43(b)(2)

SRO Justification:

application of required actions (TS Section 3) and surveillance requirements (SR) (TS Section 4) in accordance with rules of application requirements (TS, Section 1)

STP Lesson: LOT 201.37 **Objective Number:** 63901

GIVEN a loss of power, PREDICT the operation of the class 1E DC Electrical Distribution System to include automatic actions and interlocks.

Reference: OPOP04-DJ-0001 Addendum 4 Rev 30 and TS 3.7.1.2 Amend 181

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: SG D PORV is not inoperable with a loss of E1D11. It is affected with a loss of DP 1202 (120 VAC). Plausible because the loss of E1D11 does include a failure to SG 1D PORV nitrogen control valve which causes the hydraulic pump to run more frequently due to a loss of pressure of the accumulator.
- B: INCORRECT: SG D PORV is not inoperable with a loss of E1D11. It is affected with a loss of DP 1202 (120 VAC). Plausible because the loss of E1D11 does include a failure to SG 1D PORV nitrogen control valve which causes the hydraulic pump to run more frequently due to a loss of pressure of the accumulator. Also plausible because there are several 7 day LCO actions in TS.
- C: CORRECT: When E1D11 has no power then AFW pump 14 shall be declared inoperable. The trip and throttle valve and the main steam inlet valve both fail as is when power is lost. The AFW pump 14 has a 72 hour action to return to operable when in Mode 1
- D: INCORRECT: AFW pump 14 is declared inoperable. However, it is a 72 hour LCO action. Plausible, because there are several 7 day LCO actions in TS for loss of one pump i.e. ECW and CCW pumps.

Question Level: H **Question Difficulty** 3

Justification:

The student must analyze the given condition and predict the equipment lost and their associated TS requirements.

Exam Bank No.: 2703**Last used on an NRC exam:** Never**SRO Sequence Number:** 92

The Unit is at 100% power when the following occurs:

- ‘SFP WATER LVL HI/LO’ alarms.
- SFP level is 62 feet and lowering.
- The crew is performing actions of 0POP04-FC-0001, Loss of Spent Fuel Pool Level or Cooling.

In accordance with Addendum 1, Spent Fuel Pool Level Low, the Unit Supervisor will ensure that (1) is/are secured.

AND

In accordance with TS 3.9.11.1, the SFP level shall be restored within (2) to within its limit.

- A. (1) fuel movement ONLY
(2) 4 hours
- B. (1) fuel movement AND the SFP pumps
(2) 4 hours
- C. (1) fuel movement ONLY
(2) 8 hours
- D. (1) fuel movement AND the SFP pumps
(2) 8 hours

Answer: B (1) fuel movement AND the SFP pumps
(2) 4 hours

Exam Bank No.: 2703**Source:** New**Modified From****K/A Catalog Number:** 033 A2.03

Ability to (a) predict the impacts of the following malfunctions on the Spent Fuel Pool Cooling System; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations: Abnormal spent fuel pool water level or loss of water level

SRO Importance: 3.5 **Tier:** 2 **Group/Category:** 2**10CFR Reference or SRO Objective:** 55.43(b)(2)**SRO Justification:**

application of required actions (TS Section 3) and SRs (TS Section 4) in accordance with rules of application requirements (TS Section 1)

STP Lesson: LOT 201.42**Objective Number:** 92051

GIVEN a plant or system condition, PREDICT the operation of the Spent Fuel Pool Cooling and Cleanup System.

Reference: OPOP04-FC-0001 Rev 36 Addendum 1 and TS 3.9.11.1 Amend 188**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: This is the correct TS LCO action time. Also securing fuel movement is the correct TS action. However the POP04 also requires the SFP pumps to be secured. Plausible because the student must know that in addition to the TS requirements the POP04 requires the SFP pumps to be secured. Also plausible the student may think that due to the low level, higher temperatures will be observed so the SFP pumps would need to remain operating.
- B: CORRECT: TS requires that fuel movement be secured. The POP04 also requires the SFP pumps to be secured. The TS LCO action is 4 hours for SFP level below 62 feet.
- C: INCORRECT: Plausible because the student must know that in addition to the TS requirements the POP04 requires the SFP pumps to be secured. Also plausible the student may think that due to the low level, higher temperatures will be observed so the SFP pumps would need to remain operating. Also plausible because there is 8 hour LCO action times in TS.
- D: INCORRECT: This is the correct actions to take. However it is the wrong TS LCO time. Plausible because there is 8 hour LCO action times in TS.

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

Student must analyze the given conditions and know the appropriate actions to take over the off-normal procedure and TS.

Exam Bank No.: 2447**Last used on an NRC exam:** 2016**SRO Sequence Number:** 93

Unit 1 is at 100% power with a normal electrical lineup.

Subsequently;

- A lock-out occurs on the switch yard NORTH Bus.

The Unit 1 Unit Supervisor will enter Technical Specification _____(1)_____ and direct the actions of _____(2)_____ to restore lost electrical power once the switchyard NORTH Bus is restored.

- A. (1) 3.8.1.1.a due to loss of ONE required offsite circuit
(2) 0POP04-AE-0002, Loss of One or More 13.8 KV Auxiliary or Non-Class 4.16 KV Bus D
- B. (1) 3.8.1.1.a due to loss of ONE required offsite circuit
(2) 0POP04-AE-0003, Loss of Power to One or More 13.8 KV Standby Bus
- C. (1) 3.8.1.1.e due to loss of TWO required offsite circuits
(2) 0POP04-AE-0002, Loss of One or More 13.8 KV Auxiliary or Non-Class 4.16 KV Bus D
- D. (1) 3.8.1.1.e due to loss of TWO required offsite circuits
(2) 0POP04-AE-0003, Loss of Power to One or More 13.8 KV Standby Bus

Answer: D (1) 3.8.1.1.e due to loss of TWO required offsite circuits
(2) 0POP04-AE-0003, Loss of Power to One or More 13.8 KV Standby Bus

Exam Bank No.: 2447**Source:** Bank**Modified From****K/A Catalog Number:** 062 A2.04

Ability to predict the impacts of the following malfunctions or operations on the ac distribution system; and based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations: Effect on plant of de-energizing a bus.

SRO Importance: 3.4 **Tier:** 2 **Group/Category:** 1**10CFR Reference or SRO Objective:** 55.43(b)(2)**SRO Justification:**

application of required actions (TS Section 3) and SRs (TS Section 4) in accordance with rules of application requirements (TS Section 1)

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

GIVEN a plant or system condition, PREDICT the operation of the Non-Class 1E 13.8 to 4.16 volt AC distribution system.

Reference: LOT 201.31, Rev 15, Lesson Plan on Non-Class 13.8 and 4.16 KV power and TS 3.8.1.1 Amend 179

Attached Reference ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible because losing one swityard bus constitutes losing one offsite circuit. It is reasonable for a student to forget that the Standby Bus G would also be effected. Also plausible because for this condition the Unit Supervisor would start directing actions per OPOP04-AE-0001 and then have to make a determination of which procedure to use next based on the extent of the loss of power.
- B: INCORRECT: Plausible because losing one swityard bus constitutes losing one offsite circuit. It is reasonable for a student to forget that the Standby Bus G would also be effected.
- C: INCORRECT: Plausible because for this condition the Unit Supervisor would start directing actions per OPOP04-AE-0001 and then have to make a determination of which procedure to use next based on the extent of the loss of power.
- D: CORRECT: Under a normal electrical lineup, if the North Bus was lost, it would constitute losing TWO required offsite sources because 13.8 KV Standby Bus 1G would also be effected. OPOP04-AE-0001 would first be entered and then OPOP04-AE-0003 would be used to restore power to Unit 1 13.8 KV Standby Bus 1G once the North switch yard Bus was restored.

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

The student must be able to analyze the condition to determine the extent of the loss of power and have knowledge of normal electrical lineups and of off-normal electrical procedures.

Exam Bank No.: 2717**Last used on an NRC exam:** Never**SRO Sequence Number:** 94

The radiation monitor which monitors radioactive materials released in effluents to the atmosphere to ensure site compliance with the Offsite Dose Calculation Manual is (1).

AND

If this radiation monitor is declared inoperable, then its effluent releases (2).

- A. (1) RT-8010 (Unit Vent Monitor)
(2) may continue provided grab samples are taken
- B. (1) RT-8010 (Unit Vent Monitor)
(2) must be suspended immediately
- C. (1) RT-8032 (GWPS Outlet Monitor)
(2) may continue provided grab samples are taken
- D. (1) RT-8032 (GWPS Outlet Monitor)
(2) must be suspended immediately

Answer: A (1) RT-8010 (Unit Vent Monitor)
(2) may continue provided grab samples are taken

Exam Bank No.: 2717**Source:** New**Modified From****K/A Catalog Number:** G2.3.11

Ability to control radiation releases.

SRO Importance: 4.3 **Tier:** 3 **Group/Category:** 3**10CFR Reference or SRO Objective:** 55.43(b)(2)**SRO Justification:**

same items listed above for the Technical Requirements Manual (TRM) and Offsite Dose Calculation Manual (ODCM): application of required actions (TS Section 3) and surveillance requirements (SR) (TS Section 4) in accordance with rules of application requirements (TS, Section 1)

STP Lesson: LOT 503.03**Objective Number:** 92103

Given the topic or title of a requirement in the ODCM, describe the general requirements to include components or administrative requirements affected, limitations, and major time frames and bases for requirements.

Reference: ODCM Rev 19 Section 3.3.3.11 and UFSAR section 11**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: The Unit Vent (RT-8010) is the radiation monitor that is described in the ODCM and the UFSAR. ODCM 3.3.3.11 action b (action 49) states that if the unit vent stack is inoperable then effluent releases may continue provided grab samples are taken once every 12 hours for up to 30 days.
- B: INCORRECT: Plausible because ODCM 3.3.3.11 Action a states to immediately suspend the release of effluents or declare the channel inoperable if the applicable channels alarm setpoint is less conservative than required.
- C: INCORRECT: This is the correct action to be taken. However, RT-8032 is the outlet monitor for the gaseous waste process system and is not listed in the ODCM. Plausible because it is described in the UFSAR and monitors gaseous effluents.
- D: INCORRECT: RT-8032 is the outlet monitor for the gaseous waste process system and is not listed in the ODCM. Plausible because it is described in the UFSAR and monitors gaseous effluents. Also, plausible because ODCM 3.3.3.11 Action a states to immediately suspend the release of effluents or declare the channel inoperable if the applicable channels alarm setpoint is less conservative than required.

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

Student must know which radiation monitors are described in the ODCM and the applicable actions to be taken if declared inoperable.

Exam Bank No.: 2695**Last used on an NRC exam:** Never**SRO Sequence Number:** 95

A Pressurizer Level channel check shall be performed (1) while in Modes 1 – 3 to satisfy the Technical Specification Surveillance Requirements of 4.3.1.1 and documented on Logsheet 1 of 0PSP03-ZQ-0028, Operator Logs.

AND

If one Pressurizer Level channel is inoperable and it is determined that a second channel is outside the required limits for channel check while performing 0PSP03-ZQ-0028, then the Unit Supervisor shall (2).

- A. (1) daily
(2) within 1 hour take action to shutdown the Unit and be in HOT STANDBY within the next 6 hours
- B. (1) daily
(2) within 24 hours restore at least one channel to operable or be in HOT STANDBY within the next 6 hours
- C. (1) shiftly
(2) within 1 hour take action to shutdown the Unit and be in HOT STANDBY within the next 6 hours
- D. (1) shiftly
(2) within 24 hours restore at least one channel to operable or be in HOT STANDBY within the next 6 hours

Answer: C (1) shiftly
(2) within 1 hour take action to shutdown the Unit and be in HOT STANDBY within the next 6 hours

Exam Bank No.: 2695**Source:** New**Modified From****K/A Catalog Number:** 011 G2.2.12Pressurizer Level Control:
Knowledge of surveillance procedures**SRO Importance:** 4.1 **Tier:** 2 **Group/Category:** 2**10CFR Reference or SRO Objective:** 55.43(b)(2)**SRO Justification:**

application of required actions (TS Section 3) and SRs (TS Section 4) in accordance with rules of application requirements (TS Section 1)

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

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

Reference: TS 4.3.1.1 Amend 188, 0PSP03-ZQ-0028 Rev 142 Logsheet 1 page 20, TS 3.3.1. Item 12 Action 6 Amend 205

Attached Reference ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: This is the correct TS action. However the channel check is required to be performed shiftly. Plausible because there are several TS logs on Logsheet 1 of 0PSP03-ZQ-0028 that are only required to be taken daily such as SFP level, RCS WR cold leg and hot leg temperatures, etc.
- B: INCORRECT: The channel check is required to be performed shiftly. Plausible because there are several TS logs on Logsheet 1 of 0PSP03-ZQ-0028 that are only required to be taken daily such as SFP level, RCS WR cold leg and hot leg temperatures, etc. Also the correct TS action would be to enter TS 3.0.3. Plausible because the TS described in this distractor is an action taken in the same table of TS - Action 9 - however it is applied to a different reactor trip system instrumentation.
- C: CORRECT: This channel check is required to be performed shiftly in order to satisfy the surveillance requirements of TS 3.3.1. And if one channel is inoperable and a second becomes inoperable, then the correct action would be to enter TS 3.0.3 and within 1 one take action to shutdown the unit and be in HOT STANDBY in the next 6 hours.
- D: INCORRECT: This is the required periodicity. However the correct TS action would be to enter TS 3.0.3. Plausible because the TS described in this distractor is an action taken in the same table of TS - Action 9 - however it is applied to a different reactor trip system instrumentation.

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

Student must know the TS surveillance requirements and LCO actions for pressurizer level.

STP LOT-21 NRC SRO EXAM

Print Date 9/5/2017

Exam Bank No.: 2691

Last used on an NRC exam: Never

SRO Sequence Number: 96

The crew is performing a plant startup with the following conditions:

- Source Range NIs are reading 9.0×10^4 counts per second.
- Intermediate Range NIs are reading 5.0×10^{-10} amps.

Subsequently,

- DP 1201 loses power.

Only considering the Technical Specifications required for NIs, what is the appropriate LCO statement the Unit Supervisor would enter?

- A. Restore the inoperable channel to operable status prior to raising power above 10%.
- B. Restore the inoperable channel to operable status prior to raising power above P-6.
- C. Startup may proceed up to 75% if the inoperable channel is tripped within 72 hours.
- D. Suspend all operations involving positive reactivity changes immediately.

Note on board
to students:
"prior to any
reactor trip
occurring...."

Answer: A Restore the inoperable channel to operable status prior to raising power above 10%.

Exam Bank No.: 2691**Last used on an NRC exam:** Never**SRO Sequence Number:** 96

The crew is performing a plant startup with the following conditions:

- Source Range NIs are reading 9.0×10^4 counts per second.
- Intermediate Range NIs are reading 5.0×10^{-10} amps.

Subsequently,

- DP 1201 loses power.

Only considering the Technical Specifications required for NIs, what is the appropriate LCO statement the Unit Supervisor would enter?

- A. Restore the inoperable channel to operable status prior to raising power above 10%.
- B. Restore the inoperable channel to operable status prior to raising power above P-6.
- C. Startup may proceed up to 75% if the inoperable channel is tripped within 72 hours.
- D. Suspend all operations involving positive reactivity changes immediately.

Answer: A Restore the inoperable channel to operable status prior to raising power above 10%.

Exam Bank No.: 2691**Source:** New**Modified From**

K/A Catalog Number: APE 057 G2.2.37 Loss of Vital AC Instrument Bus:
Ability to determine operability and/or availability of safety related equipment.

SRO Importance: 4.6 **Tier:** 1 **Group/Category:** 1

10CFR Reference or SRO Objective: 55.43(b)(2)

SRO Justification:

application of required actions (TS Section 3) and surveillance requirements (SR) (TS Section 4) in accordance with rules of application requirements (TS, Section 1)

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

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

Reference: TS 3.3.1 action 3a Amend 189, 3b Amend 189, 2a Amend 136, 4 Amend 189

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: CORRECT: A loss of DP 1201 results in a loss of a SR, IR, and PR NI. The given power level is slightly above the P-6 setpoint. Therefore the Mode applicability would only have TS actions for the IR and PR NIs. The IR TS would be the most limiting. TS 3.3.1 Action 3b states when above the P-6 setpoint but below 10%, restore the inoperable channel to operable status prior to increasing thermal power above 10%.
- B: INCORRECT: Plausible because the IR NI is the most limiting TS for the given situation and this would be the correct TS for an inoperable IR NI below the P-6 setpoint (10~10 amps or approx 5x10⁵ cps).
- C: INCORRECT: Plausible because a PR NI is inoperable with the given situation. With the PR inop then TS 3.3.1 action 2 would be entered which states to place the inop channel in tripped position within 72 hours. This would be the correct answer if DP 1203 or 1204 lost power. However, the stem states DP 1201 lost power. Also incorrect because power may not go above 10% power because TS 3.3.1 action 3b would also be entered for the inop IR NI and that will not allow power to go above 10%.
- D: INCORRECT: Plausible because a SR NI is inop with the given situation. This is the correct TS action for an inop SR NI. However, the mode of applicability for the inop SR NI TS is for only below the P-6 setpoint.

Question Level: H **Question Difficulty** 3

Justification:

Student must analyze the given conditions and determine what NI are affected and inoperable and know their respective TS LCO statements.

Exam Bank No.: 2676

Last used on an NRC exam: Never

SRO Sequence Number: 97

The Unit is at 100% power when the following occurs:

- 10:00 – one control rod drops
- 11:00 – a Shutdown Margin verification is complete

What is the LATEST time the next Shutdown Margin verification must be completed per Technical Specifications?

- A. 16:00
- B. 17:00
- C. 22:00
- D. 23:00

Answer: D 23:00

Exam Bank No.: 2676**Source:** New**Modified From****K/A Catalog Number:** APE 003 G2.2.40 Dropped Control Rod:
Ability to apply Technical Specifications for a system.**SRO Importance:** 4.7 **Tier:** 1 **Group/Category:** 2**10CFR Reference or SRO Objective:** 55.43(b)(2)**SRO Justification:**

application of required actions (TS Section 3) and surveillance requirements (SR) (TS Section 4) in accordance with rules of application requirements (TS, Section 1)

STP Lesson: LOT 505.01 **Objective Number:** 92102

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

Reference: TS 3.1.3.1.b.3 Amend 27**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible if the student thought a shutdown margin was required every 6 hours and it was due from the time the rod actually dropped.
- B: INCORRECT: Plausible if the student thought a shutdown margin was required every 6 hours. There are other actions within the same TS that are 6 hour action statements.
- C: INCORRECT: Plausible because this would be the time if it was due 12 hours from the time the rod dropped.
- D: CORRECT: A shutdown margin is required once per 12 hours. So the latest the next shutdown margin must be completed by is 23:00.

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

Student must know TS action associated with a dropped rod.

Exam Bank No.: 2701**Last used on an NRC exam:** Never**SRO Sequence Number:** 98

The Unit is at 100% power with the following conditions:

- ‘ACC TK 1A PRESS HI/LO’ alarms.
- Accumulator 1A pressure is 580 psig.

(1) What is the maximum amount of time to restore the accumulator pressure per Technical Specifications?

AND

(2) What is the effect on plant safety during a LOCA per the Technical Specification bases?

- A. (1) 24 hours
(2) A sufficient volume of water cannot be assumed to reach the core.
- B. (1) 24 hours
(2) The accumulator injection rate cannot be assumed to provide adequate core cooling.
- C. (1) 7 days
(2) A sufficient volume of water cannot be assumed to reach the core.
- D. (1) 7 days
(2) The accumulator injection rate cannot be assumed to provide adequate core cooling.

Answer: A (1) 24 hours
(2) A sufficient volume of water cannot be assumed to reach the core.

Exam Bank No.: 2701**Source:** New**Modified From****K/A Catalog Number:** 006 A2.04

Ability to (a) predict the impacts of the following malfunctions or operations on the ECCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Improper discharge pressure

SRO Importance: 3.8 **Tier:** 2 **Group/Category:** 1**10CFR Reference or SRO Objective:** 55.43(b)(2)**SRO Justification:**

application of required actions (TS Section 3) and SRs (TS Section 4) in accordance with rules of application requirements (TS Section 1)

STP Lesson: LOT 201.10 **Objective Number:** 92102

Given the topic or title of a specification included in the TS, or TRM, describe the general requirements of the specification to include components or administrative requirements affected, limitations, major time frames involved, major surveillance in order to comply, and the basis for the specification.

Reference: TS 3.5.1 Amend 188 and its basis on page B 3/4 5-1 Amend 08-9098-11**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: The TS LCO action is 24 hours for one accumulator inoperable for any reason other than boron concentration. The accumulator pressure band is stated in the surveillance requirements of TS3.5.1. The basis states that the operability of the accumulator ensures that a sufficient volume of borated water will be immediately forced into the reactor core through 3 cold legs.
- B: INCORRECT: This is the correct LCO time. However it is not the correct basis. Plausible because the pressure does ensure the water volume is forced into the core immediately (injection rate). However, the accumulators provide the initial cooling mechanism but the ECCS subsystems (i.e. LHSI and HHSI) provide the adequate core cooling. This distractor would be applicable to a HHSI and/or LHSI pump.
- C: INCORRECT: This is the correct basis. However it is not the correct LCO time. Plausible because 7 dayss is the LCO action time if one train of ECCS is inoperable per TS 3.5.2.
- D: INCORRECT: Plausible because 7 dayss is the LCO action time if one train of ECCS is inoperable per TS 3.5.2. Also plausible because the pressure does ensure the water volume is forced into the core immediately (injection rate). However, the accumulators provide the initial cooling mechanism but the ECCS subsystems (i.e. LHSI and HHSI) provide the adequate core cooling. This distractor would be applicable to a HHSI and/or LHSI pump.

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

The student must analyze the given plant condition and know the requirements and bases for the associated TS.

Exam Bank No.: 2670**Last used on an NRC exam:** Never**SRO Sequence Number:** 99

The Overpower ΔT (OP ΔT) trip provides protection from exceeding the ____ (1) ____.

AND

It provides a backup to the ____ (2) ____ trip.

- A. (1) allowable heat generation rate (kW/ft)
(2) high neutron flux
- B. (1) allowable heat generation rate (kW/ft)
(2) high neutron flux rate
- C. (1) departure from nucleate boiling ratio limit (DNBR)
(2) high neutron flux
- D. (1) departure from nucleate boiling ratio limit (DNBR)
(2) high neutron flux rate

Answer: A (1) allowable heat generation rate (kW/ft)
(2) high neutron flux

Exam Bank No.: 2670**Source:** New**Modified From****K/A Catalog Number:** G2.2.22

Knowledge of the limiting conditions for operations and safety limits.

SRO Importance: 4.7 **Tier:** 3 **Group/Category:** 2**10CFR Reference or SRO Objective:** 55.43(b)(2)**SRO Justification:**

knowledge of TS bases that are required to analyze TS-required actions and terminology

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

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

Reference: TS 2.2.1 bases page B2-5 Amend 115**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: CORRECT: OP delta T provides assurance of fuel integrity and ensures that the allowable heat generation rate (kW/ft) is not exceeded. It also provides a backup to the High Neutron Flux trip.
- B: INCORRECT: OP delta T provides a backup to the High Neutron Flux trip. Plausible because the High Neutron Flux Rate trip works in conjunction with the High Neutron Flux trip to ensure criteria are met for other events.
- C: INCORRECT: OP delta T provides assurance of fuel integrity. Plausible, because other TS safety limits and trip setpoints provide protections from DNB such as OT delta T and low reactor coolant flow.
- D: INCORRECT: Plausible, because other TS safety limits and trip setpoints provide protections from DNB such as OT delta T and low reactor coolant flow. Also, plausible because the High Neutron Flux Rate trip works in conjunction with the High Neutron Flux trip to ensure criteria are met for other events.

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

Student must know the bases for the TS safety limits.

Exam Bank No.: 2709**Last used on an NRC exam:** Never**SRO Sequence Number:** 100

Per Conduct of Operations Chapter 2, Shift Operating Practices, a site fire brigade will be maintained with at least (1) individuals at all times.

AND

The fire brigade personnel (2) stand a safe shutdown watch.

- A. (1) five
(2) can
- B. (1) five
(2) can not
- C. (1) three
(2) can
- D. (1) three
(2) can not

Answer: B (1) five
(2) can not

Exam Bank No.: 2709**Source:** New**Modified From****K/A Catalog Number:** G2.1.5

Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations etc.

SRO Importance: 3.9 **Tier:** 3 **Group/Category:** 1**10CFR Reference or SRO Objective:** 55.43(b)(1)**SRO Justification:**

required actions necessary when a facility does not meet the administrative controls listed in Technical Specifications (TS), Section 5 or 6, depending on the facility (e.g., shift staffing requirements)

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

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

Reference: COP Chapter 2 Rev 72 steps section 16 (16.1.5 and 16.1.7), TS 6.2.2 and 10CFR50 Appendix R**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: This is the correct number of members. However, the fire brigade members are not allowed to stand a safe shutdown watch. Plausible because the COP states that the fire brigade can consist of any qualified personnel including ones from departments other than operations.
- B: CORRECT: Per 10CFR50 App R and COP chapter 2 section 19.1 and 19.2 the fire brigade must have 5 members at all times. COP step 19.1.5 states that these members can not include personnel necessary for safe shutdown of the unit.
- C: INCORRECT: The fire brigade will be made up of 5 members at all times. Plausible because TS 6.2.2 for unit staffing describes that a total of 3 plant operators is required to be on site at all times. Also the fire brigade members are not allowed to stand a safe shutdown watch. Plausible because the COP states that the fire brigade can consist of any qualified personnel including ones from departments other than operations.
- D: INCORRECT: The fire brigade will be made up of 5 members at all times. Plausible because TS 6.2.2 for unit staffing describes that a total of 3 plant operators is required to be on site at all times.

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

Student must know the shift staffing requirements.

Kelly,

There are 4 questions in the written exam (2 RO and 2 SRO questions) that were modified. Attached are the 4 questions from our bank that they were modified from.

#82 (SRO) - modified from Exam Bank No: 1398

#76 (SRO) - modified from Exam Bank No: 2541

#6 (RO) - modified from Exam Bank No: 1010

#65 (RO) - modified from Exam Bank No: 1864

Exam Bank No.: 1398

Last used on an NRC exam: 2009

The Unit was at 100% power when a LOCA outside Containment occurred with the following conditions:

- 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 FHB SI/CS sump level.
- RCS temperature is slowly rising.
- RCS Pressure continues to lower.

The Unit Supervisor will NEXT...

- A. transition to 0POP05-EO-ES12, Post LOCA Cooldown and Depressurization, to cool down and depressurize the plant to Cold Shutdown conditions
- B. transition to 0POP05-EO-ES11, SI Termination, to terminate Safety Injection before initiating plant cooldown.
- C. continue with 0POP05-EO-EC12, LOCA Outside Containment, and sequentially isolate Train 'B' and 'C' ECCS and CS in an attempt to stop the leakage.
- D. transition with 0POP05-EO-EC11, Loss of Emergency Coolant Recirculation, and check if coolant recirculation equipment is available.

Answer: C continue with 0POP05-EO-EC12, LOCA Outside Containment, and sequentially isolate Train 'B' and 'C' ECCS and CS in an attempt to stop the leakage.

Exam Bank No.: 1398**Source:** Bank**Modified from:**

K/A Catalog Number: W/E04 EA2.1 Ability to determine and interpret the following as they apply to the LOCA Outside Containment: Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

RO/SRO Importance: 3.4 / 4.3**Tier:** 1**Group/Category:** 1**RO-10CFR55.41 #****SRO-10CFR55.43 # 5 or SRO Obj:****SRO Justification:****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, LOCA Outside Containment, Rev 8, Steps 3 and 4

Attached Reference ☐ **Attachment:**

NRC Reference Req'd ☐ **Attachment:**

Distractor Justification

- A: INCORRECT: It is plausible to consider that the leak is isolated due perform the isolation step of Train A ECCS but RCS pressure is lowering.
- B: INCORRECT: It is plausible to consider that the leak is isolated due perform the isolation step of Train A ECCS but RCS pressure is lowering.
- C: CORRECT: Based on RCS pressure continuing to lower the leak is not isolated and in accordance with Step 3, of 0POP05-EO-EC12, if RCS pressure continues to lower after the first SI Train is isolated, continue with step 4 to sequentially isolate other trains.
- D: INCORRECT: It is plausible because this is the action to take if all 3 trains of SI have been checked and the MAB has been checked for leaks.

Level H**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.

In accordance with 0ERP01-ZV-SH01, Shift Manager, which of the following responsibilities is the Emergency Director allowed to delegate?

- A. Declaring an emergency classification.
- B. Approving press releases prior to issuance.
- C. Approving all required notifications to State and County.
- D. Declaring entry into Severe Accident Management Guidelines.

Answer: B Approving press releases prior to issuance

Exam Bank No.: 2541**Source:** Bank**Modified from:****K/A Catalog Number:****RO/SRO Importance:** / **Tier:** **Group/Category:****RO-10CFR55.41 #** **SRO-10CFR55.43 #** or **SRO Obj:****SRO Justification:****STP Lesson:** LOT 803.14 **Objective Number:** SRO-470

DISCUSS the duties and responsibilities of the Shift Manager as delineated in 0ERP01-ZV-SH01, Shift Manager.

Reference: 0ERP01-ZV-SH01, Page 3 for 40**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: The Emergency Director can delegate approving press release prior to issuance. All other distractors are NOT allowed to be delegated in accordance with 0ERP-ZV-SH01.
- B: CORRECT: The Emergency Director can delegate approving press release prior to issuance.
- C: INCORRECT: The Emergency Director can delegate approving press release prior to issuance. All other distractors are NOT allowed to be delegated in accordance with 0ERP-ZV-SH01.
- D: INCORRECT: The Emergency Director can delegate approving press release prior to issuance. All other distractors are NOT allowed to be delegated in accordance with 0ERP-ZV-SH01.

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

Student must have fundamental knowledge of the responsibilities of the emergency director when implementing the emergency plan.

Given the following:

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

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

The RCFCs are

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

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

Exam Bank No.: 1010**Source:** Bank**Modified from:****K/A Catalog Number:** 022 K1.04

Knowledge of the physical connections and/or the cause-effect relationships between the CCS and the following systems: Chilled water

RO/SRO Importance: 2.9 /**Tier:** 2**Group/Category:** 1**RO-10CFR55.41 #** 7**SRO-10CFR55.43 #** or **SRO Obj:****SRO Justification:****STP Lesson:** LOT 202.33**Objective Number:** 4967

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

Reference: LOT 202.33, LOT 201.12**Attached Reference** ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

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

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

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

Exam Bank No.: 1864

Last used on an NRC exam: 2009

The Unit operators are establishing RCS bleed and feed in accordance with 0POP05-EO-FRH1, Loss of Secondary Heat Sink, when the following condition occurred:

- While verifying RCS bleed path per step 13, the Reactor Operator observes that ONE of the Pressurizer PORV's will not open.

Which of the following describes the appropriate response in accordance with 0POP05-EO-FRH1, Loss of Secondary Heat Sink, step 13, and the reason for this response?

- A. No further action is required because the RCS will still depressurize sufficiently with one PORV open to permit adequate SI flow to remove core decay heat.
- B. Close the open PORV and continue efforts to restore AFW flow because one PORV will not depressurize the RCS sufficiently to allow SI to maintain RCS inventory.
- C. Open the Reactor Vessel Head Vent valves because the RCS may not depressurize sufficiently to permit adequate SI flow to remove core decay heat.
- D. Close the open PORV, then open the Reactor Vessel Head Vent valves to restrict the mass loss sufficiently to ensure RCS inventory can be maintained with SI.

Answer: C Open the Reactor Vessel Head Vent valves because the RCS may not depressurize sufficiently to permit adequate SI flow to remove core decay heat.

Exam Bank No.: 1864**Source:** Bank**Modified from:**

K/A Catalog Number: W/E05 EK3.1 Knowledge of the reasons for the following responses as they apply to the (Loss of Secondary Heat Sink):
Facility operating characteristics during transient conditions, including coolant chemistry and the effects of temperature, pressure, and reactivity changes and operating limitations and reasons for these operating characteristics.

RO/SRO Importance: 3.4 / 3.8**Tier:** 1**Group/Category:** 1**RO-10CFR55.41 #** 5**SRO-10CFR55.43 #** or **SRO Obj:****SRO Justification:****STP Lesson:** LOT 504.33**Objective Number:** 83085

DESCRIBE the indications and anticipated readings used to determine that the Reactor Coolant System bleed path is adequate

Reference: OPOP05-EO-FRH1 step 13 Rev24
WOG ERG Background FRH.1 (Rev 2)

Attached Reference ☐ **Attachment:****NRC Reference Req'd** ☐ **Attachment:****Distractor Justification**

- A: INCORRECT: This distractor is credible because it identifies a lack of knowledge with the function of the PZR PORVs and their interrelation with the Loss of Secondary Heat Sink. One PORV will NOT depressurize the RCS sufficiently to allow enough SI flow to maintain inventory and remove decay heat.
- B: INCORRECT: This distractor is credible because continuing efforts to restore AFW flow and returning to the beginning of the procedure is an action if adequate RCS FEED path cannot be established.
- C: CORRECT: Reason and action IAW with the references cited.
- D: INCORRECT: This distractor is credible because it identifies a lack of knowledge with the function of the PZR PORVs and the Reactor Head Vent valves and their interrelation with the Loss of Secondary Heat Sink. Opening the Reactor Vessel Head Vent Valves provides additional depressurization of the RCS but is still not enough to equal 2 PZR PORVs being open even though this same action is performed if no PZR PORVs can be opened. If only one PZR PORV can be opened, then it needs to stay open.

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

The student must be able analyze the given conditions to determine appropriate procedure response and understand why those actions are necessary.

LOT 21 STP Written Exam Handouts

33866956
REV. 8

FIGURE 7.1

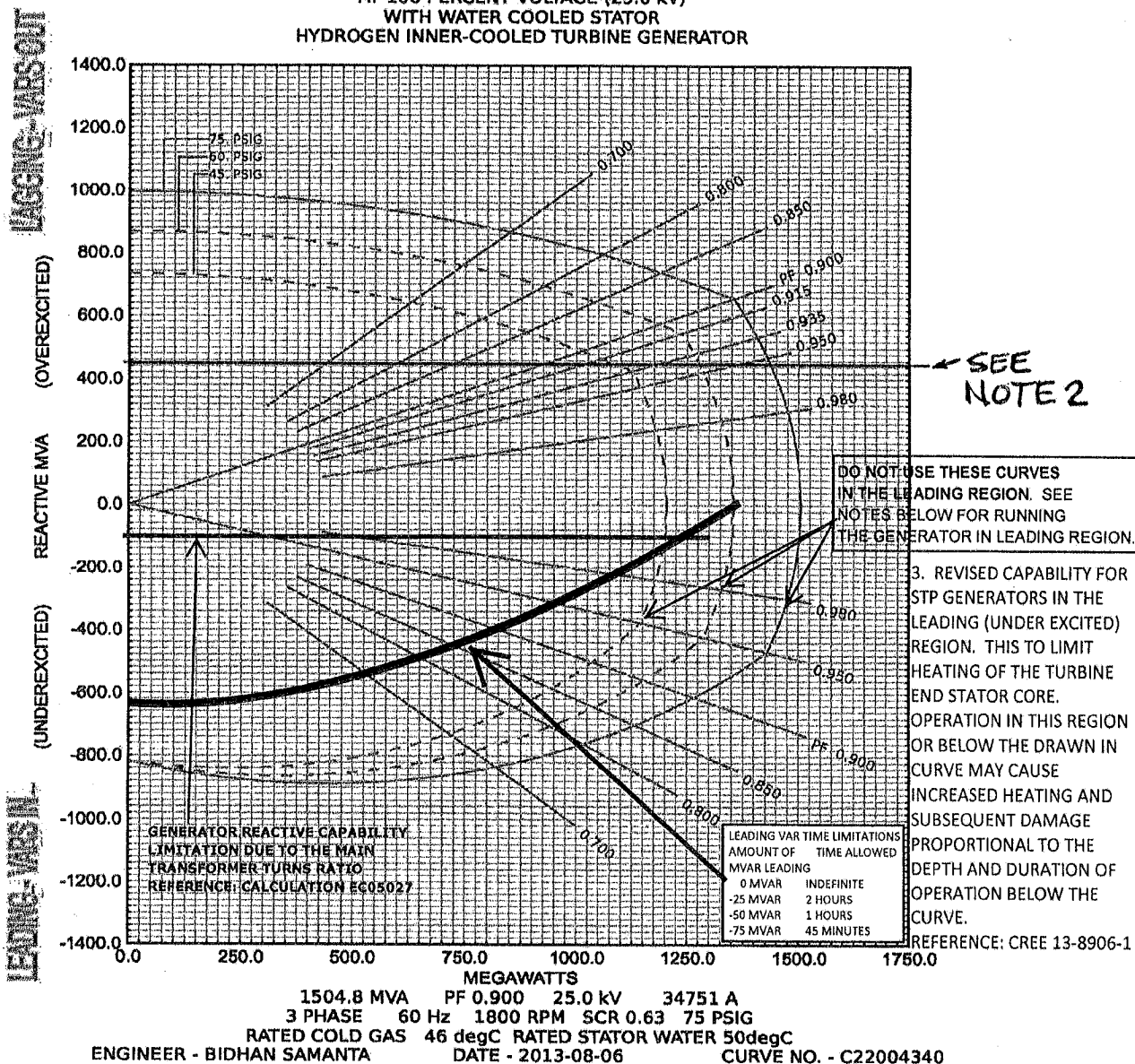
MAIN GENERATOR CAPABILITY CURVE (UNIT 1)

PCB107.01

Rev. 8

SIEMENS ENERGY, INC
CALCULATED CAPABILITY CURVES
AT 100 PERCENT VOLTAGE (25.0 kV)
WITH WATER COOLED STATOR
HYDROGEN INNER-COOLED TURBINE GENERATOR

CURVE NO. C22004340



NOTES

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- 1 OPERATE AS CLOSE TO UNITY POWER FACTOR (LOW MVAR) BUT SLIGHTLY LAGGING AS PRACTICAL WHILE OBSERVING PLANT AND GRID STABILITY FOR CONTRIBUTION TO LONG TERM HEALTH OF THE MAIN GENERATOR.
2. OBSERVE AN ADMINISTRATIVE LIMIT OF 450 MVAR REACTIVE LOADING. IF PLANT OR GRID CONDITIONS DICTATE OPERATION ABOVE THIS LIMIT FOR GREATER THAN SIX (6) HOURS, THEN AN ENGINEERING EVALUATION IS TO BE PERFORMED FOLLOWING THE PERIOD OF INCREASED LOADING.
REFERENCE: CREE 13-8906-1

Prepared by: S. S. S.
Reference VTD-S125-0020 Page 2

Date: 4/10/14

Reviewed by: J. S. S.
Approved by: C. H. Bergeron

Date: 4-17-14
Date: 4-21-14

Addendum 1**Percent Power vs Program Tavg**

Addendum 1 Page 1 of 1

Auctioneered High Tavg = 592°F

Percent Power	Program Tavg	Percent Power	Program Tavg	Percent Power	Program Tavg	Percent Power	Program Tavg
1	567.25	26	573.50	51	579.75	76	586.00
2	567.50	27	573.75	52	580.00	77	586.25
3	567.75	28	574.00	53	580.25	78	586.50
4	568.00	29	574.25	54	580.50	79	586.75
5	568.25	30	574.50	55	580.75	80	587.00
6	568.50	31	574.75	56	581.00	81	587.25
7	568.75	32	575.00	57	581.25	82	587.50
8	569.00	33	575.25	58	581.50	83	587.75
9	569.25	34	575.50	58	581.75	84	588.00
10	569.50	35	575.75	60	582.00	85	588.25
11	569.75	36	576.00	61	582.25	86	588.50
12	570.00	37	576.25	62	582.50	87	588.75
13	570.25	38	576.50	63	582.75	88	589.00
14	570.50	39	576.75	64	583.00	89	589.25
15	570.75	40	577.00	65	583.25	90	589.50
16	571.00	41	577.25	66	583.50	91	589.75
17	571.25	42	577.50	67	583.75	92	590.00
18	571.50	43	577.75	68	584.00	93	590.25
19	571.75	44	578.00	69	584.25	94	590.50
20	572.00	45	578.25	70	584.50	95	590.75
21	572.25	46	578.50	71	584.75	96	591.00
22	572.50	47	578.75	72	585.00	97	591.25
23	572.75	48	579.00	73	585.25	98	591.50
24	573.00	49	579.25	74	585.50	99	591.75
25	573.25	50	579.50	75	585.75	100	592.00

This Procedure is Applicable in Mode 1