

**Exam Bank No.:** 2999

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 1

A Reactor Trip occurs from 100% power.

When completing OPOP05-EO-EO00, Reactor Trip or Safety Injection, Immediate Action Step 1, Verify Reactor Trip, the crew would observe NIS \_\_\_\_\_(1)\_\_\_\_\_ and NIS \_\_\_\_\_(2)\_\_\_\_\_.

- A. 1) Source Range deenergized  
2) Intermediate Range lowering with negative SUR
- B. 1) Source Range deenergized  
2) Intermediate Range at a lower steady state value
- C. 1) Source Range energized  
2) Intermediate Range lowering with negative SUR
- D. 1) Source Range energized  
2) Intermediate Range at a lower steady state value

**Answer:** A 1) Source Range deenergized  
2) Intermediate Range lowering with negative SUR

**Exam Bank No.:** 2999**Source:** New**Modified from****K/A Catalog Number:** EPE007 EA2.01

Ability to determine or interpret the following as they apply to a reactor trip: Decreasing power level from available indications.

**RO Importance:** 4.1**Tier:** 1**Group/Category:** 1**10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 504.05**Objective Number:** 7

From memory, state/identify how a Reactor Trip and Safety Injection is verified per OPOP05-EO-EO00.

**Reference:** OPOP05-EO-EO00, LPBG-E-0, WOG ERG Reactor Trip or Safety Injection.**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: Following a reactor trip, the crew will check that IR amps are lower with a negative SUR. Also, during the immediate actions from memory, SR instruments will not yet be energized.
- B: INCORRECT: Plausible as the SR instruments are deenergized and if the operator believes the IR instrument are steady state at this point.
- C: INCORRECT: Plausible if the operator confuses the time required for SR instruments to be energized. IR amps are lowering with a negative SUR.
- D: INCORRECT: Plausible if the operator confuses the time required for SR instruments to be energized and if the operator believes the IR instrument are steady state at this point.

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

The student must assess the given condition and determine the operational state of plant equipment.

**Exam Bank No.:** 3000

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 2

Which of the following indications are available to positively identify a stuck open or leaking Pressurizer Safety Valve in the Control Room?

- 1) Individual discharge line acoustic monitors
- 2) Individual discharge line RTDs
- 3) Individual control board alarm
- 4) Individual control board position indicators

A. 1, 2 ONLY

B. 1, 2, 4 ONLY

C. 1, 3 ONLY

D. 3, 4 ONLY

**Answer:** A 1,2 ONLY

**Exam Bank No.:** 3000**Source:** New**Modified from****K/A Catalog Number:** EPE008 G2.1.28 Knowledge of the purpose and function of major system components and controls.**RO Importance:** 4.1 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 201.04 **Objective Number:** 19

Describe the indications available to determine that a Pressurizer PORV is leaking

**Reference:** LOT 201.04 Lesson Plan, Handout 1**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: Safeties have acoustic monitors and individual line RTDs only.
- B: INCORRECT: Plausible as the correct choices are included and the spray valves and PORVs on the pressurizer do have valve position indicators.
- C: INCORRECT: Plausible as the valves do have individual discharge line acoustic monitors and the spray valves and PORVs on the pressurizer do have valve position indicators.
- D: CORRECT: Plausible as the PORVs do have an alarm and the PORVs and spray valves have valve position indication.

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

The student must recall the valve position indication for the pressurizer safety valves.

**Exam Bank No.:** 3001

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 3

A Small Break LOCA has occurred on the unit.

- The crew has just entered 0POP05-EO-ES12, Post LOCA Cooldown and Depressurization, with the following conditions:
  - Hot leg temperatures:
    - Loop A: 470°F
    - Loop B: 320°F
    - Loop C: 480°F
    - Loop D: 440°F
  - Reactor head temperature: 564°F
  - Highest core exit thermocouple (CET): 512°F
  - RCS Pressure: 1385 psig
  - HHSI pumps: All running

The RO places auxiliary spray in service to lower RCS Pressure.

Based on these plant conditions which of the following is true concerning indication of voiding in the Reactor Coolant System?

Indications of voiding...

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

**Answer:** B will first be seen at approximately 1155 psig

**Exam Bank No.:** 3001**Source:** Bank**Modified from** 1381**K/A Catalog Number:** EPE009 EK1.02

Knowledge of the operational implications of the following concepts as they apply to the Small Break LOCA: Use of steam tables.

**RO Importance:** 3.5**Tier:** 1**Group/Category:** 1**10CFR Reference:** 55.41(b)(14)**STP Lesson:** LOT 102.54**Objective Number:** 10

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

**Reference:** 0POP05-EO-ES12, 0POP05-EO-EO10**Attached Reference**  **Attachment:** Steam Tables**NRC Reference Req'd**  **Attachment:****Distractor Justification**

A: INCORRECT: Plausible is RCPs were running.

B: CORRECT: With the conditions given, all RCPs would be tripped. With this, the student must use the highest temperature (564F at the head) and determine saturation pressure.

C: INCORRECT: Plausible if CET temperatures are used.

D: INCORRECT: Plausible if Loop C temperature is used.

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

The student must determine the condition of the system by using Steam Tables.

**Exam Bank No.:** 3029**Last used on an NRC exam:** 2021**RO Sequence Number:** 4

Per OPOP05-EO-ES12, Post LOCA Cooldown and Depressurization, the crew will cool down the unit at \_\_\_\_\_(1)\_\_\_\_\_ in order to avoid the possibility of \_\_\_\_\_(2)\_\_\_\_\_.

- A. (1) 25°F/hour  
(2) Pressurized Thermal Shock
- B. (1) 25°F/hour  
(2) Recriticality
- C. (1) 100°F/hour  
(2) Pressurized Thermal Shock
- D. (1) 100°F/hour  
(2) Recriticality

**Answer:** C (1) 100F/hour (2) Pressurized Thermal Shock

**Exam Bank No.:** 3029**Source:** New**Modified from**

**K/A Catalog Number:** EPE011 EK3.10 Knowledge of the reasons for the following responses as they apply to the Large Break LOCA: PTS limits on RCS pressure and temperature.

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

**STP Lesson:** LOT 504.12 **Objective Number:** 92171

Given the conditions under which 1POP05-EO-ES12 is entered, STATE/IDENTIFY the basis for each.

**Reference:** 0POP05-EO-ES12, LOT 501.16 Student Handout

**Attached Reference**  **Attachment:**

**NRC Reference Req'd**  **Attachment:**

### **Distractor Justification**

- A: INCORRECT: Plausible as this is a cooldown rate used during a Natural Circulation cooldown. This is the correct reason.
- B: INCORRECT: Plausible as this is a cooldown rate used during a Natural Circulation cooldown and during a cooldown. Recriticality is not mentioned as a concern for the Small Break LOCA response but is mentioned as a potential concern for a Main Steam Line Break in LOT 501.16.
- C: CORRECT: 100F/hr is required during 0POP05-EO-ES12. The correct reason for limiting cooldown rate is to prevent Pressurized Thermal Shock.
- D: INCORRECT: Plausible as this is the correct cooldown rate. Recriticality is not mentioned as a concern for the Small Break LOCA response but is mentioned as a potential concern for a Main Steam Line Break in LOT 501.16.

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

### **Justification:**

The students must determine the proper cooldown rate to use during ES12.



**Exam Bank No.:** 3002

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 5

The unit is at 45%.

- RCP “B” seal leakoff flow indication pegs HIGH.
- Number One Seal DP drops to 200 psid.

The crew enters OPOP04-RC-0002, Reactor Coolant Pump Off Normal, which directs the following actions in the given sequence:

- Manually trip the Reactor
- Ensure Main Turbine tripped
- Stop the affected RCP
- Close the affected RCP’s Number One Seal leakoff valve between 3-5 min after stopping the RCP

The basis for manually tripping the Reactor BEFORE securing the RCP is to \_\_\_\_ (1) \_\_\_\_.

The basis for closing the Number One Seal Leakoff Valve between 3-5 minutes after securing the RCP ensures the RCP shaft \_\_\_\_ (2) \_\_\_\_.

- A. (1) remove the heat source from the RCS since power is < P-9 and an automatic trip will not occur following an RCP trip.  
(2) is still SLOWLY rotating to help the Number Two Seal become a film-riding seal.
- B. (1) remove the heat source from the RCS since power is < P-9 and an automatic trip will not occur following an RCP trip.  
(2) has STOPPED rotating to minimize the damage to the Number Two Seal
- C. (1) prevent an unnecessary challenge to the Reactor Protection System.  
(2) is still SLOWLY rotating to help the Number Two Seal become a film-riding seal.
- D. (1) prevent an unnecessary challenge to the Reactor Protection System.  
(2) has STOPPED rotating to minimize the damage to the Number Two Seal

**Answer:** D (1) prevent an unnecessary challenge to the Reactor Protection System.  
(2) has STOPPED rotating to minimize the damage to the Number Two Seal

**Exam Bank No.:** 3002**Source:** Bank**Modified from** 2280**K/A Catalog Number:** APE015 AK3.03

Knowledge of the reasons for the following responses as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow). Sequence of events for manually tripping reactor and RCP as a result of an RCP malfunction.

**RO Importance:** 3.7    **Tier:** 1    **Group/Category:** 1    **10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 505.01    **Objective Number:** 6

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:** OPOP04-RC-0002**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible since power is less than P-9 and a common error is to confuse P-8 and P-9. Also, closing the seal leakoff valve does transform the #2 seal to a film-riding seal. However, having the shaft rotating is not necessary or desired.
- B: INCORRECT: Plausible since power is less than P-9 and a common error is to confuse P-8 and P-9. The shaft has stopped rotating.
- C: INCORRECT: Plausible as tripping the reactor first does help prevent an unnecessary challenge to the Reactor Protection System and closing the seal leakoff valve does transform the #2 seal to a film-riding seal. However, having the shaft rotating is not necessary or desired.
- D: CORRECT: Tripping the reactor first does help prevent an unnecessary challenge to the Reactor Protection System and closing the seal leakoff valve does transform the #2 seal to a film-riding seal and is correctly done when the shaft is stopped.

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

Given conditions, the student must determine the correct course of action and the reason for the actions taken.

**Exam Bank No.:** 3030

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 6

Unit 1 is at 100% power.

- Volume Control Tank level is 20%.
- Equipment malfunction is preventing makeup to the VCT.

Approximately how long will it take for the VCT low level alarm at 15% to come in?

A. 56 hours

B. 28 hours

C. 14 hours

D. 3 hours

**Answer:** C 14 hours

**Exam Bank No.:** 3030      **Source:** Modified      **Modified from** 2808

**K/A Catalog Number:** APE022 AA1.08      Ability to operate and/or monitor the following as they apply to the Loss of Reactor Coolant Makeup: VCT level.

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

**STP Lesson:** LOT 201.07      **Objective Number:** 91057

Describe the operations, controls, indications, associated alarms, and flowpaths used (including valve positioning) for each of the following modes of operation of the Reactor Makeup System: VCT level

**Reference:** LOT 201.06

**Attached Reference**  **Attachment:**

**NRC Reference Req'd**  **Attachment:**

**Distractor Justification**

- A: INCORRECT: Plausible if the student uses 3 gph instead of 12 gph in the calculation.
- B: INCORRECT: Plausible if the student uses the pressurizer value of 68 gal/%.
- C: CORRECT: Without RMW going to the VCT, the only significant loss from the system would be through the RCP seals. Specifically, 3 gph to the RCDT from the #2 seal leakoff. With 4 RCPs, the total leak rate is 12 gph. The VCT low level alarm comes in at 15% and the VCT is 34 gal/%.  $(20\% - 15\%) * 34 * (1/12) = 14$  hours approximately.
- D: INCORRECT: Plausible if the candidate uses the RCDT value of 7 gal/%.

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

**Justification:**

The student must calculate the number of hours to reach a low level alarm.

**Exam Bank No.:** 3031

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 7

Unit 1 is in Mode 5, Mid-Loop operation

- RHR pumps 1A and 1B are inservice.
- The RCB Rover reports that RHR 1A pump is making excessively loud noises.
- Per OPOP04-RH-0001, Loss of Residual Heat Removal, step 4 RNO c., flow was lowered to between 1000-1500 gpm per train.

The RO then notes the following:

- CET temperatures are 190°F.
- RHR Pumps 1A and 1B amps are erratic.
- RCS NR hot leg level is at +5 inches and lowering.

The NEXT action operators will take in accordance with OPOP04-RH-0001 is to...

- A. lower RCS temperature via SI hot leg injection
- B. secure RHR pumps 1A and 1B.
- C. start containment closure and non-essential personnel evacuation per Addendum 3.
- D. restore NR hot leg level using gravity drain from RWST.

**Answer:** B secure RHR pumps 1A and 1B

**Exam Bank No.:** 3031**Source:** Modified**Modified from** 2395**K/A Catalog Number:** 025 AA2.07

Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System: Pump cavitation.

**RO Importance:** 3.4    **Tier:** 1    **Group/Category:** 1    **10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 505.01    **Objective Number:** 5

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

- A: INCORRECT: Plausible as reducing RCS temperature is an important action in Step 12 in the procedure but not the highest priority.
- B: CORRECT: The first procedural priority with these conditions is to protect the pumps, so they are secured.
- C: INCORRECT: Plausible as Step 10 does direct this action but not the highest priority here.
- D: INCORRECT: Plausible as Step 4 directs this action but this is only done if RHR has no indication of air entrainment.

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

The student must assess conditions and determine a proper course of action.

**Exam Bank No.:** 3082

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 8

Complete the following:

CCW Surge Tank level may be monitored on \_\_\_\_\_(1)\_\_\_\_\_.

If CCW Surge Tank level drops to 63%, then \_\_\_\_\_(2)\_\_\_\_\_.

- A. 1) the Control Board ONLY  
2) Charging pumps must be stopped
- B. 1) the Control Board ONLY  
2) Letdown must be isolated
- C. 1) the Control Board and QDPS  
2) Charging pumps must be stopped
- D. 1) the Control Board and QDPS  
2) Letdown must be isolated

**Answer:** D (1) the Control Board and QDPS (2) Letdown must be isolated

**Exam Bank No.:** 3082**Source:** New**Modified from****K/A Catalog Number:** APE026 2.1.19

Ability to use plant computers to evaluate system or component status.

**RO Importance:** 3.9**Tier:** 1**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.12**Objective Number:** 12

Given a plant or system condition, predict the operation of the Component Cooling Water System

**Reference:** OPOP04-CC-0001, LOT 201.12**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as not every control board indicator is repeated on QDPS and charging must be secured but there is no need to stop charging pumps.
- B: INCORRECT: Plausible as not every control board indicator is repeated on QDPS and this is the correct action.
- C: INCORRECT: Plausible as CCW level can be monitored from gauges on the CP-002 and also on a Detailed Data Menu Screen on QDPS and charging must be secured but there is no need to stop charging pumps.
- D: CORRECT: CCW level can be monitored from gauges on the CP-002 and also on a Detailed Data Menu Screen on QDPS. When CCW Surge Tank level drops below the 1st low level isolation, CCW will be isolated to the letdown heat exchanger, and a required operator action must be to secure letdown.

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

The student must assess conditions and determine plant response.



**Exam Bank No.:** 3032

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 9

Unit 1 is at 100% power.

- The controlling Pressurizer Pressure channel PT-457 fails LOW.

With NO operator action, INITIALLY actual pressurizer pressure will \_\_(1)\_\_ and pressurizer liquid will experience an \_\_(2)\_\_.

- A. 1) rise  
2) outsurge
- B. 1) rise  
2) insurge
- C. 1) lower  
2) outsurge
- D. 1) lower  
2) insurge

**Answer:** A 1) rise 2) outsurge

**Exam Bank No.:** 3032**Source:** Bank**Modified from** CPSES 2016**K/A Catalog Number:** 027 AK1.02

Knowledge of the operational implications of the following concepts as they apply to Pressurizer Pressure Control Malfunctions: Expansion of liquids as temperature increases.

**RO Importance:** 2.8    **Tier:** 1    **Group/Category:** 1    **10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.14    **Objective Number:** 14

State the effect of a loss of pressurizer pressure control on ESFAS, RCS, and RPS.

**Reference:** LOT 201.14**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: With this failure, backup heaters will energize and remain energized since the pressure instrument has failed to 1700 psig. Pressurizer pressure will rise but spray valves will not actuate due to the failed instrument. As pressure rises, a slight outsurge will occur.
- B: INCORRECT: Plausible as pressure will rise and if the student is confused about the dynamics of flow in and out of the pressurizer.
- C: INCORRECT: Plausible if the student does not remember that pressurizer spray will not respond. An outsurge will occur.
- D: INCORRECT: Plausible if the student does not remember that pressurizer spray will not respond

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

The student must assess a failure and determine the effect on the plant and if the student is confused about the dynamics of flow in and out of the pressurizer.

**Exam Bank No.:** 3003

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 10

Unit 1 was operating at 100% power.

- A Loss of All AC Power occurs.
- SI is NOT actuated.

Which of the following parameters are procedurally required to be maintained in order to prevent potential loss of natural circulation in the Reactor Coolant System, per OPOP05-EO-EC00, Loss of All AC Power?

- A. SI Accumulator pressures greater than 616.3 psig, minimum.
- B. SI Accumulator pressures greater than 643.7 psig, minimum.
- C. Steam Generator pressure greater than 305 psig.
- D. Steam Generator PORVs opened greater than 50%.

**Answer:** C Steam Generator pressure greater than 305 psig.

**Exam Bank No.:** 3003**Source:** New**Modified from****K/A Catalog Number:** EPE055 EK1.02

Knowledge of the operational implications of the following concepts as they apply to the Station Blackout: Natural circulation cooling.

**RO Importance:** 4.1**Tier:** 1**Group/Category:** 1**10CFR Reference:** 55.41(b)(8)**STP Lesson:** LOT 504.22**Objective Number:** 99906

Describe how gas binding affects natural circulation

**Reference:** 0POP05-EO-EC00, Step 16 Caution.**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as this is the Unit 1 TS minimum value for the required band.
- B: INCORRECT: Plausible as this is the Unit 1 TS minimum mvalue for the required band.
- C: CORRECT: Correct per 0POP05-EO-EC00, Step 16 Caution.
- D: INCORRECT: Plausible as this is also a caution prior to Step 16, but in order to prevent loss of PORV hydraulic accumulator pressure.

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

The student must recall information from a procedure.

**Exam Bank No.:** 3033

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 11

Unit 2 is at 100% power.

- A simultaneous Loss of Offsite Power and Large Break LOCA occur at time  $t=0$ .
- ESF Load Sequencers started at time  $t=10$  seconds
- The Containment Pressure HI-3 setpoint was reached at time  $t=35$  seconds

Based on this information, Containment Spray Pumps will...

- A. automatically start immediately when HI-3 is reached.
- B. automatically start at time  $t=40$  seconds, LATEST.
- C. automatically start at time  $t=50$  seconds, LATEST.
- D. NOT automatically start.

**Answer:** C automatically start at  $t=50$  seconds, LATEST.

**Exam Bank No.:** 3033**Source:** New**Modified from****K/A Catalog Number:** APE056 AK3.01

Knowledge of the reasons for the following responses as they apply to the Loss of Offsite Power: Order and time to initiation of power for the load sequencer.

**RO Importance:** 3.5    **Tier:** 1    **Group/Category:** 1    **10CFR Reference:** 55.41(b)(5)**STP Lesson:** LOT 201.22    **Objective Number:** 98035

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

**Reference:** LOT201.22, LOT 201.11**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible if the student believes that only exceeding the setpoint is necessary for a start.
- B: INCORRECT: Plausible if the student believes that when the signal is received, the pumps will start (35 seconds + 10 seconds)
- C: CORRECT: With an SI and a LOOP, a MODE III actuation will occur. Containment Spray Pumps can be sequenced on beginning at 15 seconds after DG output breaker closure and ending at 17 seconds IF a HI-III signal is present. If not, the pumps can be sequenced on beginning at 40 seconds after DG output breaker closure and any time after that. With time  $t=0$  defined as the time of the accident, and HI-III occurring at 35 seconds, the pumps will start at 40 seconds + 10 seconds for DG output breaker closure, so at  $t=50$  seconds.
- D: INCORRECT: Plausible if the student only believes there is a 1 time shot from 15 to 17 seconds after DG output breaker closure.

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

The student must assess plant conditions and determine how equipment will respond.

**Exam Bank No.:** 3004

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 12

The unit is at 100% power with a normal control switch alignment.

- 3M02-A-5, 120V AC CH 1 DIST PNL 1201 TRBL, alarms.
- 3M01 BSMP light “AC BUS DP 1201 U/V” is LIT.

The crew enters 0POP04-VA-0001, Loss of 120 VAC Class Vital Distribution.

- Step 2.RNO.a directs the crew to “PLACE any SG feedwater regulating valve(s) or low power feedwater regulating valve(s) NOT properly responding in MANUAL to match feedwater flow to steam flow”.

Per this step, the feedwater regulating valves for SGs \_\_\_\_\_ will be placed in MANUAL.

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

**Answer: C** With all control channels aligned to their preferred sources, feed, flow, steam flow, and NR level inputs to SGWLC will only be lost to SGs A and B The loss of preferred source DP1201 requires going to manual control on A and B SG's.

**Exam Bank No.:** 3004**Source:** New**Modified from****K/A Catalog Number:** APE57 AA1.06

Ability to operate and / or monitor the following as they apply to the Loss of Vital AC Instrument Bus: Manual control of components for which automatic control is lost.

**RO Importance:** 3.5**Tier:** 1**Group/Category:** 1**10CFR Reference:** 55.41(b)(1)**STP Lesson:** LOT 201.38**Objective Number:** 97935

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

**Reference:** 0POP04-VA-0001, 1POP04-AN-03M2, 0POP04-FW-0001**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible because DP-1201 is an alternate source for SG C and D, but all switches are in their normal configuration.
- B: INCORRECT: Plausible because DP-1201 is an alternate source for SG C, but all switches are in their normal configuration.
- C: CORRECT: A loss of DP-1201 affect SG A and B level control due to failures of the associated level indicators.
- D: INCORRECT: Plausible because DP-1201 is an alternate source for SG C and D, but all switches are in their normal configuration.

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

Given a plant condition, the student must determine the effect on the plant.



**Exam Bank No.:** 3034

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 13

Unit 1 is at 100% power, normal electrical lineup.

- E1C11 Charger 2 is in service.
- 480V LC E1C2 feeder breaker trips.
- Battery breaker E1C11/1B, "125V BATT E1C11 TO 125V DC SWBD E1C11" is OPEN.

With NO operator action, which of the following 120VAC buses are expected to remain energized, if any?

- A. DP-1204 ONLY
- B. DP-002 ONLY
- C. Both DP-1204 and DP-002
- D. Neither DP-1204 or DP-002

**Answer:** A DP-1204 ONLY

**Exam Bank No.:** 3034**Source:** New**Modified from****K/A Catalog Number:** APE058 AA2.01

Ability to determine and interpret the following as they apply to the Loss of DC Power: That a loss of dc power has occurred; verification that substitute power sources have come online.

**RO Importance:** 3.3**Tier:** 1**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.37**Objective Number:** T20137

DEMONSTRATE an understanding of the theory and fundamental concepts of design, operation, monitoring, and evaluation of control room equipment, controls and instrumentation contained within the Class 1E 125 VDC System.

**Reference:** LOT 201.37, LOT 201.36, LOT 201.38, OPOP04-DJ-0001**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: With a loss of the inservice charger and the battery backup to the inverter, DP-1204 will automatically swap to its VRT. DP-002 does NOT automatically swap.
- B: INCORRECT: Plausible with a misunderstanding of the features of the 120V Vital AC System.
- C: INCORRECT: Plausible with a misunderstanding of the features of the 120V Vital AC System.
- D: INCORRECT: Plausible with a misunderstanding of the features of the 120V Vital AC System.

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

The student must assess the failure and determine the effect on the electrical system.

**Exam Bank No.:** 3035

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 14

With ECW pond level lowering, Technical Specification LCO 3.7.5, Ultimate Heat Sink, would FIRST fail to be satisfied when the Ultimate Heat Sink drops below \_\_\_\_\_ feet?

- A. 29.0
- B. 26.0
- C. 25.5
- D. 23.0

**Answer: C 25.5**

**Exam Bank No.:** 3035**Source:** New**Modified from****K/A Catalog Number:** 062 G2.2.42

Ability to recognize system parameters that are entry-level conditions for Technical Specifications.

**RO Importance:** 3.9**Tier:** 1**Group/Category:** 1**10CFR Reference:** 55.41(b)(5)**STP Lesson:** LOT 503.01**Objective Number:** T50301

Apply the Technical Specifications and the Technical Requirements Manual (TRM) to recognize non-compliance and the actions needed to restore compliance.

**Reference:** TS 3.7.5**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

A: INCORRECT: Plausible as this is ground elevation at the ECW Pond.

B: INCORRECT: Plausible as this is the upper level of the TS band.

C: CORRECT: The TS lower limit is 25.5 feet. Below this value the LCO would not be met.

D: INCORRECT: Plausible as this is mentioned in TS as the amount of feet of water over the fuel assemblies in the spent fuel pool.

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

The student must recall TS information about the Ultimate Heat Sink.

**Exam Bank No.:** 3036

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 15

The unit was at 100% when a Loss of Instrument Air occurred.

- The crew tripped the reactor.
- The air leak was isolated and IA pressure is slowly rising.
- Pressurizer level is 67% and slowly rising.

Per OPOP04-IA-0001, Loss of Instrument Air, Addendum 1, Loss of IA in MODE 3, the crew should...

- A. ensure Excess Letdown in service.
- B. establish local control of Low Pressure Letdown.
- C. ensure MOV-0023, Letdown Containment Isolation Valve, is OPEN.
- D. establish local Charging flow control.

**Answer:** A Ensure Excess Letdown in service.

**Exam Bank No.:** 3036**Source:** New**Modified from****K/A Catalog Number:** APE065 AA1.03

Ability to operate and/or monitor the following as they apply to the Loss of Instrument Air: Restoration of systems served any instrument air when pressure is regained.

**RO Importance:** 2.9**Tier:** 1**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 202.26**Objective Number:** 25609

GIVEN a plant or system condition, PREDICT the operation of the Instrument and Service Air system.

**Reference:** 0POP04-IA-0001, LOT 202.26**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: With a loss of IA at 100%, the crew will trip the reactor and perform 0POP04-IA-0001 as time permits. With PZR level at 67% and rising, letdown has been isolated due to a loss of IA to FV-0011. Per Addendum 1, the crew will place Excess Letdown inservice.
- B: INCORRECT: Plausible as LP Letdown is placed in service during shutdown, but not in MODE 3.
- C: INCORRECT: Plausible as this is a Letdown CIV, and other Letdown Valves are interlocked to the operation of FV-0011.
- D: INCORRECT: Plausible as charging flow control has been lost, but not required here with this set of conditions as MOV-0025 has already been closed.

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

The student must assess the failure and apply the procedure properly.

**Exam Bank No.:** 3005**Last used on an NRC exam:** 2021**RO Sequence Number:** 16

Unit 1 is in MODE 1 with the Main Generator synched to the grid.

- All Auxiliary and Standby Buses are aligned to the Unit Auxiliary Transformer.
- A system disturbance occurs to the 345KV transmission system which results in degraded grid voltage.
- The crew enters procedure 0POP04-AE-0005, Offsite Power System Degraded Voltage, due to North and South Bus voltage <339KV.
- Standby Buses 1F and 1H voltages are in the required band.

Which of the following describes the condition of the Unit 1 Load Tap Changers (LTC) upon completion of 0POP04-AE-0005 actions, prior to the time Technical Specifications require the unit to be placed in Hot Standby?

UAT LTC is in \_\_\_\_ (1) \_\_\_\_ and ESF E1B LTC is in \_\_\_\_ (2) \_\_\_\_.

- A. (1) AUTO  
(2) AUTO
- B. (1) MAN  
(2) AUTO
- C. (1) AUTO  
(2) MAN
- D. (1) MAN  
(2) MAN

**Answer:** C (1) AUTO (2) MAN

**Exam Bank No.:** 3005**Source:** New**Modified from****K/A Catalog Number:** APE077 AK2.04 Knowledge of the interrelations between Generator Voltage and Electric Grid disturbances and the following: Controllers, positioners**RO Importance:** 3.0 **Tier:** 1 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(4)**STP Lesson:** LOT 201.36 **Objective Number:** 92399

State what operator action must be taken to supply power to ESF 4.16KV buses from the emergency transformer.

**Reference:** OPOP04-AE-0005**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible with misconceptions about normal lineups and the normal position of the ESF E1B LTC.
- B: INCORRECT: Plausible with misconceptions about normal lineups and the required LTC positions.
- C: CORRECT: Step 9 directs the crew to check that the UAT is maintaining secondary voltage between 12.8 and 14.5 KV in AUTO. Since, Standby Buses 1F and 1H are in the normal band, the step is completed, with the UAT LTC in AUTO, and in Step 10 the ESF E1B LTC is placed in MAN.
- D: INCORRECT: Plausible with misconceptions about normal lineups and the required LTC positions.

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

The student must assess plant conditions and determine the appropriate course of action.



**Exam Bank No.:** 3037

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 17

The unit was at 100% power when a LOCA Outside Containment occurred.

- The crew is performing 0POP05-EO-EC12, LOCA Outside Containment.
- FHB Area Rad Monitors are alarming.
- FHB ECCS Sump Levels: ONE train is in HI-HI alarm.

While performing 0POP05-EO-EC12, the \_\_\_\_\_ is OPEN and will have to be energized LOCALLY prior to being closed from the Control Room.

- A. HHSI Pump Discharge Valve
- B. RHR Pump Suction Isolation Valve
- C. LHSI Pump Hot Leg Injection Valve
- D. LHSI Cold Leg Injection Valve

**Answer:** D LHSI Cold Leg Injection Valve

**Exam Bank No.:** 3037**Source:** New**Modified from****K/A Catalog Number:** W/E04 EK2.2

Knowledge of the interrelations between the (LOCA Outside Containment) 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:** 3.8    **Tier:** 1    **Group/Category:** 1    **10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 504.27    **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, LOT 504.27**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as similar to the LHSI Cold Leg Injection Valve, but this valve normally has power on.
- B: INCORRECT: Plausible as similar to the LHSI Cold Leg Injection Valve, but this valve normally has power on.
- C: INCORRECT: Plausible as similar to the LHSI Cold Leg Injection Valve, but this valve has a power switch in the Control Room.
- D: CORRECT: In EC12, the crew sequentially isolates systems that could cause leakage outside containment. The LHSI Cold Leg Injection Valve is deenergized and does NOT have a power switch in the Control Room, and it must be energized locally.

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

The student must assess the conditions and determine the proper plant configuration.

**Exam Bank No.:** 3099

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 18

A Large Break LOCA occurred.

- The crew could NOT establish Cold Leg Recirculation and has entered 0POP05-EO-EC11, Loss of Emergency Coolant Recirculation.

Using the provided QDPS QUAL PAMS screen and 0POP05-EO-EC11, Step 5, MONITOR Containment Spray Requirements (Suction From RWST), the crew needs to ensure that \_\_\_\_\_ Containment Spray Pumps are in service?

- A. three
- B. two
- C. one
- D. zero

**Answer:** B two

**Exam Bank No.:** 3099**Source:** Modified**Modified from** 2746**K/A Catalog Number:** W/E11 EK2.1

Knowledge of the interrelations between the (Loss of Emergency Coolant Recirculation) and the following: Components and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features

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

Describe the readings and indications which confirm that a Safety Injection or Containment Spray pump should be stopped

**Reference:** LOT504.27,**Attached Reference**  **Attachment:** 0POP05-EO-EC11, Step 5, QDPS QUAL PAMS screen.**NRC Reference Req'd**  **Attachment:** 0POP05-EO-EC11, 0POP05-EO-EO10, 0POP05-EO-EO00**Distractor Justification**

- A: INCORRECT: Plausible since 3 CS pumps are available for service, but 1 CS pump has already been stopped per the CIP of EO00. Also 3 RCFCs in service would not align with 3 CS pumps running.
- B: CORRECT: With 3 RCFCs running, the RWST at 34,500 gallons, and 13.8 psig containment pressure, 2 CS pumps are required.
- C: INCORRECT: Plausible because this would be correct under these conditions if RWST level were greater than 75,000 gallons.
- D: INCORRECT: Plausible if more than 3 RCFCs were running.

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

The student must assess the given conditions and determine a procedural course of action.

**Exam Bank No.:** 3038

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 19

Unit 1 is at 100% power.

- Pressurizer level is 56%.
- The Pressurizer Level Control Selector switch is in the “465/466” position.

The process (variable) leg for the LT-466, Pressurizer Level Transmitter, line fails to atmospheric pressure.

With NO operator action, the INDICATED level will cause \_\_\_\_\_.

- A. FCV-205 (Charging Flow Control Valve) to open
- B. FCV-205 (Charging Flow Control Valve) to close
- C. Pressurizer Heaters to turn off
- D. actuation of Pressurizer High Level Alarm

**Answer:** C Pressurizer Heaters to turn off.

**Exam Bank No.:** 3038**Source:** New**Modified from****K/A Catalog Number:** APE028 AK2.02

Knowledge of the interrelations between the Pressurizer Level Control Malfunctions and the following: Sensors and detectors.

**RO Importance:** 2.6**Tier:** 1**Group/Category:** 2**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.14**Objective Number:** 15

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

**Reference:** LOT 201.14**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible if the student confuses the operation of the two level controllers listed on the switch position and believes that the one listed last automatically controls level.
- B: INCORRECT: Plausible if the student confuses the operation of the two level controllers listed on the switch position and believes that the one listed last automatically controls level.
- C: CORRECT: With a failure of the variable leg of the instrument, indicated level will fail low. This failure of LT-466 does not cause any changes to the position of FCV-205 which is controlled from the instrument that is listed first (LT-465). However, it does cause all heaters to be cutout.
- D: INCORRECT: Plausible if the student misunderstands the variable leg failure and believes that indicated level fails high.

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

The student must assess the conditions given, and determine the effect on the plant.

**Exam Bank No.:** 3039

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 20

The unit is in MODE 3.

- Tave = 560°F
- 3 Circulating Water Pumps are running
- Condenser pressure is 23" Hg Vacuum
- Steam Dumps are in Steam Pressure Mode
- The UI-0555 Demand Indicator is at 25%
- All Steam Dumps indicate CLOSED

Based on this information, Steam Dumps are NOT opening because \_\_\_\_\_(1)\_\_\_\_\_. The basis for this signal preventing Steam Dumps from opening is \_\_\_\_\_(2)\_\_\_\_\_.

- A. (1) P-12 is present  
(2) the condenser is NOT available to receive Steam Dump flow
- B. (1) P-12 is present  
(2) an overcooling event may be occurring
- C. (1) C-9 is NOT present  
(2) the condenser is NOT available to receive Steam Dump flow
- D. (1) C-9 is NOT present  
(2) an overcooling event may be occurring

**Answer:** B (1) P-12 is present (2) an overcooling event may be occurring.

**Exam Bank No.:** 3039**Source:** Modified**Modified from** 2278**K/A Catalog Number:** APE051 AK3.01

Knowledge of the reasons for the following responses as they apply to the Loss of Condenser Vacuum: Loss of steam dump capability upon loss of condenser vacuum.

**RO Importance:** 2.8**Tier:** 1**Group/Category:** 2**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 202.09**Objective Number:** 3

List the signals associated with the Steam Dumps including setpoints, coincidence, logic, and interlocks.

**Reference:** LOT202.09 Steam Dumps**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as P-12 is present, but the condenser is available to receive steam flow, and this is not the basis.
- B: CORRECT: For steam dumps to operate in MODE 3, P-12 must not be present, and C-9 must be present. P-12 is present when 2/4 Tave channels are below 563F and may be defeated on the main control board. C-9 is present when a CW pump breaker is closed and 2 of 3 vacuum instruments are >22" Hg. In this case, with Tave at 560F, P-12 is present and NOT reset so steam dumps would be closed. The basis for this interlock to stop an overcooling event, if occurring.
- C: INCORRECT: Plausible as there are several different Condenser Vacuum setpoints for different features and required manual operator actions that could be confused with the C-9 interlock setpoint of 22".
- D: INCORRECT: Plausible as there are several different Condenser Vacuum setpoints for different features and required manual operator actions that could be confused with the C-9 interlock setpoint of 22". This is the correct basis.

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

The student must assess the conditions given and determine the operation of the Steam Dump System.



**Exam Bank No.:** 3040

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 21

Which of the following events would cause Area Radiation Monitors to alarm?

1. Steam Generator Tube Rupture
2. RCS leak in Room 3 (Incore Instrumentation Room)
3. LOCA Inside Containment
4. Main Steam Line Break
5. Feedwater Line Break Inside Containment
6. GWPS Charcoal Bed Rupture

A. 1, 3, 4 ONLY

B. 2, 3, 6 ONLY

C. 1, 2, 5 ONLY

D. 4, 5, 6 ONLY

**Answer:** B 2, 3, ,6 ONLY

**Exam Bank No.:** 3040**Source:** Bank**Modified from** STP NRC 2001**K/A Catalog Number:** APE061 AA1.01

Ability to operate and/or monitor the following as they apply to the Area Radiation Monitoring (ARM) System Alarms: Automatic actuation.

**RO Importance:** 2.9**Tier:** 1**Group/Category:** 2**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 202.41**Objective Number:** 16

Predict the probable ARMS alarms that would be energized under the following conditions: A) LOCA, B) SGTR, C) MSLB, D) RCS to CCW leak, E) GST rupture of the charcoal beds, F) Fuel handling accident in the fuel building, G) High Radiation in the drumming station, H) RCS leakage at the incore instrumentation seal table, I) High radiation in the Primary Sample Room.

**Reference:** OPOP04-RA-0001, LOT 202.41**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as a Steam Generator Tube Rupture does release radiation, but would be seen on process monitors and Main Steam Line Break does change containment parameters but not radiation levels.
- B: CORRECT: An RCS Leak, LOCA, and GWPS Charcoal Bed Rupture would all cause area radiation monitors to have elevated levels.
- C: INCORRECT: Plausible as a Steam Generator Tube Rupture does release radiation, but would be seen on process monitors and a Feedwater Line Break does change containment parameters but not radiation levels.
- D: INCORRECT: Plausible as a GWPS Charcoal Bed Rupture does raise radiation levels, and Main Steam line or Feed line breaks inside containment will change containment parameters

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

The student must evaluate the accidents presented and determine the impact on the Area Radiation Monitoring System. (This was noted by the NRC as a bank question from the STP 2001 NRC Exam)

**Exam Bank No.:** 3041

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 22

Per OPGP03-ZF-0018, Fire Protection System Functionality Requirements, if a FIRE RATED DOOR in the MAB is impaired, then within 1 hour a(an) \_\_\_\_\_(1)\_\_\_\_\_ fire watch must be established. The individual filling this position \_\_\_\_\_(2)\_\_\_\_\_ have other duties.

- A. (1) hourly  
(2) can NOT
- B. (1) hourly  
(2) can
- C. (1) continuous  
(2) can NOT
- D. (1) continuous  
(2) can

**Answer:** B (1) hourly (2) can

**Exam Bank No.:** 3041**Source:** New**Modified from****K/A Catalog Number:** APE067 AA2.15

Ability to determine and interpret the following as they apply to the Plant Fire on Site: Requirements for establishing a fire watch.

**RO Importance:** 2.9**Tier:** 1**Group/Category:** 2**10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 507.01**Objective Number:** 5

Given the title of an administrative procedure, determine the requirements associated with the reference procedure.

**Reference:** OPGP03-ZF-0018**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as an hourly fire watch is required and with confusion over the duties of a fire watch.
- B: CORRECT: Per ZF-0018, for an impaired fire door, an hourly fire watch is required and this individual can have other duties.
- C: INCORRECT: Plausible as continuous fire watches are required by the procedure for different situations and they can not have any other duties.
- D: INCORRECT: Plausible as continuous fire watches are required by the procedure for different situations and with confusion over duties.

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

The student must recall procedural information.

**Exam Bank No.:** 3042**Last used on an NRC exam:** 2021**RO Sequence Number:** 23

Answer the following regarding a Control Room Evacuation due to fire:

A fire in the \_\_\_\_ (1) \_\_\_\_ is explicitly listed as an entry condition into OPOP04-ZO-0001, Control Room Evacuation, as directed by the Shift Manager/Unit Supervisor.

The Secondary Reactor Operator will report to the \_\_\_\_ (2) \_\_\_\_ upon completion of control room actions.

- A. 1) Control Room, Relay Room, or 35' Electrical Penetration Area  
2) ESF Train A Switchgear Room
- B. 1) Control Room or Relay Room, ONLY  
2) ESF Train A Switchgear Room
- C. 1) Control Room, Relay Room, or 35' Electrical Penetration Area  
2) Auxiliary Shutdown Panel
- D. 1) Control Room or Relay Room, ONLY  
2) Auxiliary Shutdown Panel

**Answer:** B 1) Control room or Relay Room, ONLY 2)ESF Train A Switchgear Room

**Exam Bank No.:** 3042**Source:** New**Modified from****K/A Catalog Number:** APE068 G2.4.1 Knowledge of the EOP entry conditions and immediate action steps.**RO Importance:** 4.6 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 505.01 **Objective Number:** 38635

Given an abnormal operating event, PREDICT the symptoms expected to occur in accordance with the appropriate off normal operating procedure.

**Reference:** 0POP04-ZO-0001, 0POP04-ZO-0009**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as the correct areas are listed and the Penetration Area is directly adjacent to the Relay Room. This is the correct room assignment for the Secondary RO.
- B: CORRECT: Per 0POP04-ZO-0001 entry conditions, the Control Room and Relay Room are area where a fire would require the crew to enter the procedure. The Secondary RO reports to the ESF Train A Switchgear Room.
- C: INCORRECT: Plausible as the correct areas are listed and the Penetration Area is directly adjacent to the Relay Room and position assignments can be easily confused between operators.
- D: INCORRECT: Plausible as these are the correct areas, and position assignments can be easily confused between operators.

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

The student must recall procedural information.

**Exam Bank No.:** 3075

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 24

Unit 2 was operating at 100% power when an unplanned containment entry was made.

- 4 hours later it is discovered that the Auxiliary Airlock is failed.

Per the design basis events described in the UFSAR, which of the following is the most limiting EXTERNAL pressure transient that would result in the HIGHEST leak rate into Containment from the outside environment?

- A. Main Steam Line Break inside Containment with 3 trains of ECCS injecting.
- B. Large Break LOCA inside Containment with 3 trains of ECCS injecting.
- C. Large Break LOCA inside Containment with 1 train of ECCS injecting.
- D. Inadvertent Containment Spray actuation with spray flow.

**Answer:** D Inadvertent Containment Spray actuation with spray flow.

**Exam Bank No.:** 3075**Source:** New**Modified from****K/A Catalog Number:** APE069 AK1.01**RO Importance:** 2.6    **Tier:** 1    **Group/Category:** 2    **10CFR Reference:** 55.41(b)(5)**STP Lesson:** LOT 502.08    **Objective Number:** 50381

Describe the limiting analysis for the Containment Critical Safety Function

**Reference:** LOT502.08**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as the MSLB produces the highest design basis containment temperature response, but a lower peak pressure. However, it is a limiting INTERNAL pressure transient event.
- B: INCORRECT: Plausible as the LBLOCA is the most limiting INTERNAL pressure transient design basis accident for containment pressure response.
- C: INCORRECT: Plausible as the LBLOCA is the most limiting INTERNAL pressure transient design basis accident for containment pressure response.
- D: CORRECT: The most limiting EXTERNAL pressure transient on the containment design is an inadvertent actuation of Containment Spray.

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

The student must examine the events to determine the one that will cause the greatest external pressure transient.



**Exam Bank No.:** 3043**Last used on an NRC exam:** 2021**RO Sequence Number:** 25

A Large Break LOCA has occurred in the unit.

- The crew transitioned to OPOP05-EO-FRC1, Response to Inadequate Core Cooling.
- Step 1 of OPOP05-EO-FRC1 has been completed to verify proper SI valve alignment.
- ALL trains of HHSI have actuated.
- Trains “A” and “B” of LHSI have actuated. Train “C” CANNOT be actuated.
- CET temperature is 950°F and stable.
- Containment H2 concentration is 6%.

Per the remaining steps of OPOP05-EO-FRC1, which of the following include the major operator actions that will be taken under these conditions? Assume that as each action is taken by the operator, it is successful.

1. Maximize Charging flow
2. Start RCPs
3. Depressurize SGs
4. Place Hydrogen Recombiners in service
5. Establish a vent path via the Pressurizer PORVs
6. Establish a vent path via the Reactor Vessel Head Vents

- A. 1, 2, 3 ONLY
- B. 1, 2, 3, 4 ONLY
- C. 3, 4, 5, 6 ONLY
- D. 4, 5, 6 ONLY

**Answer:** A 1, 2, 3

**Exam Bank No.:** 3043**Source:** New**Modified from****K/A Catalog Number:** EPE074 EK2.04 Knowledge of the interrelations between the Inadequate Core Cooling and the following: HPI pumps.**RO Importance:** 3.9 **Tier:** 1 **Group/Category:** 2 **10CFR Reference:** 55.41(b)(5)**STP Lesson:** LOT 504.30 **Objective Number:** T50430

Discuss the basis for each step, note and caution for 0POP05-EO-FRC1, Response to Inadequate Core Cooling.

**Reference:** 0POP05-EO-FRC1, LOT 504.30**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: With the given conditions that all trains of HHSI and LHSI cannot be actuated the crew will maximize charging, start RCPs, and depressurize the SGs. PORVs and Head Vents are never opened in this procedure. H2 Recombiners will not be placed in service since H2 concentration exceeds 4%.
- B: INCORRECT: Plausible as 1,2, and 3 are correct, and if the student believes that H2 recombiners should be placed in service since H2 concentration is much higher than normal.
- C: INCORRECT: Plausible as steam generators will be depressurized, but H2 recombiners will not be placed in service and if the student believes that venting the head or pressurizer is necessary for adequate SI and Charging flow to be introduced.
- D: INCORRECT: Plausible with a misunderstanding of the conditions and the procedural requirements.

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

The student must assess the conditions given, and determine which required procedural actions would be taken.

**Exam Bank No.:** 3092

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 26

A Small Break LOCA occurred in the unit.

- Actions have been completed in OPOP05-EO-EO10, Loss of Reactor or Secondary Coolant and the crew has transitioned to OPOP05-EO-ES11, SI Termination.

Per Step 6 of OPOP05-EO-ES11, complete the following:

Spent Fuel Pool Cooling is required to be restored within \_\_\_\_\_(1)\_\_\_\_\_ after a loss in order to satisfy a UFSAR 9.2.2.1 commitment, which includes at least \_\_\_\_\_(2)\_\_\_\_\_ CCW pumps running.

- A. (1) 30 MINUTES  
(2) TWO
- B. (1) 30 MINUTES  
(2) THREE
- C. (1) 2.5 HOURS  
(2) TWO
- D. (1) 2.5 HOURS  
(2) THREE

**Answer:** C (1) 2.5 HOURS (2) TWO

**Exam Bank No.:** 3092**Source:** New**Modified from****K/A Catalog Number:** W/E02 EK3.3

Knowledge of the reasons for the following responses as they apply to the SI Termination: Manipulation of controls required to obtain desired operating results during abnormal and emergency situations.

**RO Importance:** 3.9    **Tier:** 1    **Group/Category:** 2    **10CFR Reference:** 55.41(b)(8)**STP Lesson:** LOT 504.07    **Objective Number:** T50407

Discuss the basis for each step, note, and caution for 0POP05-EO-ES11, SI Termination.

**Reference:** WOG ERG SI Termination, page 27, 0POP05-EO-ES11, SI Termination, LOT 504.07, Slide 23

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

- A: INCORRECT: Part 1 is incorrect but plausible as ES11 has a 30 minute requirement for stopping EAB HVAC fans if a LOOP or SI occurs and a train of Essential Chilled Water fails. Part 2 is correct.
- B: INCORRECT: Part 1 is incorrect but plausible as ES11 has a 30 minute requirement for stopping EAB HVAC fans if a LOOP or SI occurs and a train of Essential Chilled Water fails. Part 2 is incorrect but plausible as all 3 trains are automatically started, as required, for this event.
- C: CORRECT: ES11, Step 6 requires restoring SFPCS within 2.5 hours of an SI signal, which includes ensuring at least 2 CCW pumps are running.
- D: INCORRECT: Plausible as part 1 is correct. Part 2 is incorrect but plausible as all 3 trains are automatically started, as required, for this event.

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

The student must recall procedural information.

**Exam Bank No.:** 3044

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 27

Entry criteria into 0POP05-EO-FRZ2, Response to Containment Flooding, is Containment water level equal to \_\_\_(1)\_\_\_ inches.

During a Safety Injection actuation with offsite power available, a potential source of flooding into containment would be \_\_\_(2)\_\_\_ .

- A. (1) 3  
(2) RCB Chilled Water
- B. (1) 3  
(2) CCW
- C. (1) 69  
(2) RCB Chilled Water
- D. (1) 69  
(2) CCW

**Answer:** D (1) 69, (2) CCW

**Exam Bank No.:** 3044**Source:** New**Modified from****K/A Catalog Number:** EPE015 EA1.3

Ability to operate and/or monitor the following as they apply to the (Containment Flooding). Desired operating results during abnormal and emergency situations.

**RO Importance:** 2.8**Tier:** 1**Group/Category:** 2**10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 504.41**Objective Number:** 84131

STATE/IDENTIFY the possible sources for containment flooding.

**Reference:** OPOP05-EO-FRZ2, LOT 504.41, ECCS Big Notes**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as 3" is the HI-HI setpoint for the Containment Normal Sump and RCB Chilled Water is normally supplied to the RCFCs.
- B: INCORRECT: Plausible as 3" is the HI-HI setpoint for the Containment Normal Sump. CCW is the correct water source.
- C: CORRECT: 69 inches is the YELLOW path entry condition for High Containment Water Level and RCB Chilled Water is normally supplied to the RCFCs.
- D: CORRECT: 69 inches is the YELLOW path entry condition for High Containment Water Level. With a Safety Injection in progress, RCB Chill Water is isolated and CCW is supplied to the RCFCs and RHR HXs, either which could be a source of additional leakage into containment.

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

The student must assess the conditions given and determine a source of water into containment.

STP LOT-25 NRC RO EXAM

Print Date 6/2/2021

**Exam Bank No.:** 3045

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 28

The unit is at 100% power.

- 4M03-E-3, RCDT LEVEL HI-HI/LO-LO, is alarming.
- 4M03-B-4, RCP 1B STDPIPE LVL HI, is alarming.

Based on these conditions, the RCP 1B \_\_\_\_\_ failed.

- A. #1 seal
- B. #2 seal
- C. #3 seal
- D. thermal barrier heat exchanger

**Answer:** B #2 seal

**Exam Bank No.:** 3045**Source:** Modified**Modified from** 2774**K/A Catalog Number:** 003 A2.01

Ability to (a) predict the impacts of the following malfunctions or operations on the RCPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations : Problems with RCP Seals, especially rates of seal leak-off.

**RO Importance:** 3.5    **Tier:** 2    **Group/Category:** 1    **10CFR Reference:** 55.41(b)(5)**STP Lesson:** LOT 201.05    **Objective Number:** 91032

In regards to 0POP09-AN-04M8, 0POP09-AN-4M7, and 0POP09-AN-05M2, DESCRIBE the following: A. Probable causes; B. Immediate actions; C. Automatic actions; D. Setpoints.

**Reference:** 0POP04-RC-0002, 0POP04-RC-0003, RCP Big Notes**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible with confusion over the orientation and function of the different seals in the RCP.
- B: CORRECT: When the #2 seal fails the RCDT will fill up more quickly and the standpipe will not be able to drain normally through the #2 seal leakoff flowpath. The two alarms listed would be the result of this occurrence.
- C: INCORRECT: Plausible with confusion over the orientation and function of the different seals in the RCP.
- D: INCORRECT: Plausible with confusion over the thermal barrier heat exchanger and its failure mechanisms.

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

The student must evaluate alarms and determine the cause.



**Exam Bank No.:** 3046

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 29

FV-0011, Letdown Orifice Header Isolation Valve, closes on \_\_\_\_\_(1)\_\_\_\_\_.

1. High CVCS Room temperature
2. Containment Isolation Phase A
3. Pressurizer level <17%
4. Loss of Air

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

**Answer:** D 2, 3, 4

**Exam Bank No.:** 3046**Source:** New**Modified from****K/A Catalog Number:** 004 A3.02Ability to monitor automatic operation of the CVCS,  
including: Letdown isolation.**RO Importance:** 3.6**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(5)**STP Lesson:** LOT 201.14**Objective Number:** 50297

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

**Reference:** Z42451, Z42408#2, OPOP04-CV-0004**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as 2 and 3 are correct and with a misconception about which valves in the letdown line respond to a HELB signal.
- B: INCORRECT: Plausible as 2 and 4 are correct and with a misconception about which valves in the letdown line respond to a HELB signal.
- C: INCORRECT: Plausible as 3 and 4 are correct and with a misconception about which valves in the letdown line respond to a HELB signal.
- D: CORRECT: FV-0011 closes on a Phase A, low pressurizer level, and loss of air signal. High CVCS Room Temperature affects MOV-0023 and MOV-0024 which are the HELB valves in the letdown line.

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

The student must recall interlocks for FV-0011.

**Exam Bank No.:** 3047**Last used on an NRC exam:** 2021**RO Sequence Number:** 30

The crew is preparing to place RHR Train 1A in service per OPOP02-RH-0001, Residual Heat Removal System Operation, Section 6.0, Mode 4, System Startup with RCS Temperature Greater Than or Equal to 200F.

- Prior to opening the RHR Pump 1A Suction MOV, the RO will ensure that RCS pressure is less than or equal to \_\_\_\_ (1) \_\_\_\_.
- After placing RHR Pump 1A to START, the pump will trip if DISCH FLOW does not rise above at least \_\_\_\_ (2) \_\_\_\_ within 5 seconds.

- A. 1. 425 psig  
2. 925 gpm
- B. 1. 425 psig  
2. 1200 gpm
- C. 1. 350 psig  
2. 925 gpm
- D. 1. 350 psig  
2. 1200 gpm

**Answer:** C 1. 350 psig 2. 925 gpm

**Exam Bank No.:** 3047**Source:** New**Modified from****K/A Catalog Number:** 005 A4.01

Ability to manually operate and/or monitor in the control room: Controls and indication for RHR pumps.

**RO Importance:** 3.6**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(5)**STP Lesson:** LOT 201.09**Objective Number:** T20109

DEMONSTRATE a thorough understanding of the theory and fundamentals concepts of design, operation, monitoring, and evaluation of control room equipment, controls and instrumentation contained within the residual heat removal system.

**Reference:** LOT 201.09, LOT 201.12, 0POP02-RH-0001**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as this pressure is the upper procedural limit for RHR operation. This is the right low flow trip setpoint
- B: INCORRECT: Plausible as this pressure is the upper procedural limit for RHR operation and this is the setpoint for the low flow alert alarm.
- C: CORRECT: Procedurally, the RCS must be below 350 psig to place RHR in service. The low flow trip setpoint set at 925 gpm.
- D: CORRECT: Plausible as the RCS must be below 350 psig to place RHR in service and this is the setpoint for the low flow alert alarm.

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

The student must interlocks and procedural information regarding the RHR system.

**Exam Bank No.:** 3048

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 31

Which of the following QDPS parameters and/or control features are functions of the APC-1s (APC-A1/B1/C1/D1)

1. AFW Flow
  2. AFWST Level
  3. AFW Flow Control
  4. SG WR Level
  5. SG PORV Control
  6. SG PORV Position
- A. 1, 2, 4, 6
- B. 3, 5
- C. 1, 2, 3
- D. 4, 5, 6

**Answer:** A 1, 2, 4, 6

**Exam Bank No.:** 3048**Source:** New**Modified from****K/A Catalog Number:** 006 2.1.19

Ability to use plant computers to evaluate system or component status.

**RO Importance:** 3.9**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(5)**STP Lesson:** LOT 202.44**Objective Number:** T20244

DEMONSTRATE a thorough understanding of the theory and fundamental concepts of design, operation, monitoring, and evaluation of control room equipment, controls and instrumentation of the Qualified Display Processing System (QDPS).

**Reference:** LOT 202.44, OPOP04-AM-0001, LOT 201.10**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: The APC #1s monitor and transmit information but do not provide control functions. AFW Flow Control and SG PORV Control are accomplished by the APC #2s. A loss of the APC #1s will affect the ability to adjust the SG PORV automatic setpoint, but it will still allow automatic control at the last setpoint.
- B: INCORRECT: Plausible with confusion over the APC #1s and APC#2s.
- C: INCORRECT: Plausible with confusion over the APC #1s and APC#2s.
- D: INCORRECT: Plausible with confusion over the APC #1s and APC#2s.

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

The student must recall information about QDPS.

**Exam Bank No.:** 3049

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 32

Unit 2 had a Main Steam Line Break (Outside Containment)

- The affected Steam Generator is isolated.
- RCS pressure is 1800 psig and rising.
- 4M07-D-1, PRT PRESS HI, alarms.
- PRT level and pressure are RISING slowly.

The cause of the PRT level and pressure rise is...

- A. RCP Seal Leakoff relieving to the PRT.
- B. a Pressurizer PORV open.
- C. Normal Letdown diverting to the PRT.
- D. SPRAY ISOL FV-3650, RMW to PRT, failed OPEN.

**Answer:** A RCP Seal Leakoff relieving to the PRT.

**Exam Bank No.:** 3049**Source:** Bank**Modified from** 160**K/A Catalog Number:** 007 K1.03

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

**RO Importance:** 3.0    **Tier:** 2    **Group/Category:** 1    **10CFR Reference:** 55.41(b)(3)**STP Lesson:** LOT 201.04    **Objective Number:** 91017

LIST all the reliefs which discharge into the PRT.

**Reference:** 0POP09-AN-04M7, LOT 201.04**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: The RCP Seal Return Isolation Valve closes on an SI Actuation. This will result in the seal return header relief lifting and discharging to the PRT.
- B: INCORRECT: Plausible as the PORVS do discharge to the PRT.
- C: INCORRECT: Plausible as a Letdown line relief discharges to the PRT.
- D: INCORRECT: FV-3650 does fill the PRT but has failed closed on a loss of air to containment, not open.

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

The student must assess the conditions and determine the cause of the plant response.



**Exam Bank No.:** 3050

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 33

Unit 1 is at 100% power.

- CCW Pump 1A is OFF with Mode Selector Switch is in STANDBY.
- CCW Pump 1B is RUNNING with Mode Selector Switch is in RUN.
- CCW Pump 1C is OFF with Mode Selector Switch is in OFF.

A North Bus lockout occurs.

Following completion of all automatic actions ...

- A. CCW Pumps 1B and 1C are running.
- B. CCW Pumps 1A and 1B are running.
- C. ONLY CCW Pump 1C is running.
- D. ONLY CCW Pump 1A is running

**Answer:** B CCW Pumps 1A and 1B are running.

**Exam Bank No.:** 3050**Source:** Bank**Modified from** 2825**K/A Catalog Number:** 008 K2.02

Knowledge of bus power supplies to the following: CCW pump, including emergency backup.

**RO Importance:** 3.0**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(5)**STP Lesson:** LOT 201.12**Objective Number:** 32919

Describe the instrumentation and controls available to monitor and operate the CCW system.

**Reference:** LOT 201.12**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible with confusion over sequencer loads and automatic start signals.
- B: CORRECT: A North Bus lockout will cause the loss of Standby Bus G and 4.16KV ESF Bus E1B. CCW Pump 1B will strip from the bus, CCW pressure will degrade below 76 psig and CCW Pump 1A will start as its Mode Selector Switch is in STANDBY. The LOOP ESF Load Sequencer will load CCW Pump 1B back on the bus powered from ESF DG 12.
- C: INCORRECT: Plausible with confusion over sequencer loads and automatic start signals. Even with the Mode Selector Switch in the OFF position, the CCW pumps will start for an ESF Load Sequencer actuation.
- D: Plausible with confusion over sequencer loads and automatic start signals, especially if the student doesn't recognize CCW Pump 1B is sequenced onto the bus after being stripped.

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

The student must assess the given conditions and determine system response.

**Exam Bank No.:** 3051

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 34

The Unit is at 30% power and raising power to 100%.

- Automatic Pressurizer pressure control is selected to P455/456.
- Controlling pressure channel PT-455 fails to 2310 psig.
- The crew enters 0POP04-RP-0001, Loss of Automatic Pressurizer Pressure Control

If NO Operator action is taken, the Reactor will trip on \_\_\_\_ (1) \_\_\_\_.

AND

Per 0POP04-RP-0001, Loss of Automatic Pressurizer Pressure Control, the crew should first place the \_\_\_\_ (2) \_\_\_\_.

- A. 1) OTΔT  
2) Master Pressure Controller in MANUAL
- B. 1) OTΔT  
2) Pressurizer Pressure Control Selector switch to P457/456
- C. 1) low pressurizer pressure  
2) Master Pressure Controller in MANUAL
- D. 1) low pressurizer pressure  
2) Pressurizer Pressure Control Selector switch to P457/456

**Answer:** D 1) low pressurizer pressure 2) Pressurizer Pressure Control Selector switch to P457/456

**Exam Bank No.:** 3051**Source:** Modified**Modified from** 2899**K/A Catalog Number:** 010 K3.02

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

**RO Importance:** 2.7**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.14**Objective Number:** 92279

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

**Reference:** LOT 201.14, 0POP04-RP-0001, Pressurize Pressure and Level Control Big Notes**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as OTdeltaT would occur first from 100% power but with a high failure the channel must be deselected first.
- B: INCORRECT: Plausible as OTdeltaT would occur first from 100% power, but the setpoint rises as power lowers. This is the correct action.
- C: INCORRECT: Plausible as the reactor does trip on low pressurizer pressure but with a high failure the channel must be deselected first.
- D: CORRECT: With this high failure, the spray valves are open and will remain open. Pressurizer pressure will lower quickly to the reactor trip setpoint of 1870 psig with no operator action. OTDT will not actuate first due to being at 30% power, where the setpoint is very high. For high failures, the channel must be deselected first.

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

The student must recall information about the system and the abnormal operating procedure for the system.

**Exam Bank No.:** 3006

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 35

Which of the following reactor trip signals is blocked with reactor power at 15%?

- A. Pressurizer Pressure - Low
- B. Pressurizer Water Level - High
- C. Single Loop Reactor Coolant Flow - Low
- D. Undervoltage – Reactor Coolant Pumps

**Answer:** C Single Loop Reactor Coolant Flow - Low

**Exam Bank No.:** 3006**Source:** Bank**Modified from** 2373**K/A Catalog Number:** 012 K4.06

Knowledge of RPS design feature (s) and/or interlock(s) which provide for the following: Automatic or manual enable/disable of RPS trips.

**RO Importance:** 3.3**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.14**Objective Number:** 3832

Describe the reactor protection system control and permissive interlocks including inputs, setpoints, coincidence, and functions.

**Reference:** LOT 201.20, TS Table 2.2-1**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as the pressurizer low pressure trip is blocked at less than 10% power.
- B: INCORRECT: Plausible as the pressurizer level trip is blocked at less than 10% power.
- C: CORRECT: Low flow in a single loop is blocked at less than 40% power.
- D: INCORRECT: Plausible as the RCP UV trip is blocked at less than 10% power.

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

The student must recall information about reactor trip signals.

**Exam Bank No.:** 3007

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 36

Which of the following reactor trip signals is designed to protect the reactor from Departure for Nuclear Boiling (DNB), AND is NOT blocked below P-7?

- A. Overpower Delta T ( $OP\Delta T$ )
- B. Pressurizer Pressure - Low
- C. Overtemperature Delta T ( $OT\Delta T$ )
- D. Undervoltage – Reactor Coolant Pumps

**Answer:** C Overtemperature Delta T ( $OT\Delta T$ )

**Exam Bank No.:** 3007**Source:** New**Modified from****K/A Catalog Number:** 012 K5.01

Knowledge of the operational implications of the following concepts as they apply to the RPS: DNB.

**RO Importance:** 3.3**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.20**Objective Number:** 91160

Discuss the design bases for the solid state protection system.

**Reference:** LOT 201.20**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as OPdelta T is similar to OTDT which provides reactor core protection against DNB.
- B: INCORRECT: Plausible as this trip provides reactor core protection against DNB but is blocked below P-7.
- C: CORRECT: This trip provides reactor core protection and is NOT blocked below P-7.
- D: INCORRECT: Plausible as this trip provides reactor core protection against DNB but is blocked below P-7.

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

The student must recall information about reactor trips.



**Exam Bank No.:** 3083

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 37

The unit is operating at 49% power.

- A Steam Pressure instrument on the SG 1D steam line is OOS and in the tripped condition.

Which of the following ADDITIONAL malfunctions will cause an ESF actuation?

A Steam Pressure instrument from steam line...

- A. 'A,' 'B,' OR 'C' fails LOW.
- B. 'D' fails LOW.
- C. 'A,' 'B,' OR 'C' detects steam pressure dropping at greater than 100 psig/10 sec.
- D. 'D' detects steam pressure dropping at greater than 100 psig/10 sec.

**Answer:** B "D" fails LOW.

**Exam Bank No.:** 3083      **Source:** Modified      **Modified from** 1117

**K/A Catalog Number:** 013 K6.01      Knowledge of the effect of a loss or malfunction on the following will have on the ESFAS: Sensors and detectors.

**RO Importance:** 2.7      **Tier:** 2      **Group/Category:** 1      **10CFR Reference:** 55.41(b)(5)

**STP Lesson:** LOT 201.22      **Objective Number:** 80802

Describe the function of the instrumentation and controls available for operation and monitoring of the engineered safety features.

**Reference:** LOT201.22, UFSAR Chapter 15, OPOP04-AM-06M3, SSPS Big Notes

**Attached Reference**  **Attachment:**

**NRC Reference Req'd**  **Attachment:**

**Distractor Justification**

- A: INCORRECT: Plausible as this makes 2 channels failed, but 2 channels must be failed on the same steam line to actuate ESF.
- B: CORRECT: With the S/G "D" channel in a tripped condition, the failure of another S/G transmitter on "D" will lead to a safety injection.
- C: INCORRECT: Plausible as this makes 2 channels failed, but 2 channels must be failed on the same steam line to actuate ESF, as well as same type of failure.
- D: INCORRECT: Plausible as this makes 2 channels failed, but 2 channels must be failed on the same steam line to actuate ESF, as well as same type of failure.

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

**Justification:**

The student must assess the conditions and determine what would cause an actuation.

**Exam Bank No.:** 3096

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 38

Per Technical Specification 3.6.1.4, Containment Systems: Internal Pressure, the MAXIMUM allowed primary containment internal pressure is \_\_\_\_ (1) \_\_\_\_.

Under ACCIDENT conditions, the APPROXIMATE range of expected cooling medium flow to each Reactor Containment Fan Cooler is \_\_\_\_ (2) \_\_\_\_.

- A. 1) +0.3 psig  
2) 1800 to 2300 gpm
- B. 1) +0.3 psig  
2) 400 to 700 gpm
- C. 1) +0.1 psig  
2) 1800 to 2300 gpm
- D. 1) +0.1 psig  
2) 400 to 700 gpm

**Answer:** A (1) +0.3 psig (2) 1900 to 2300 gpm

**Exam Bank No.:** 3096**Source:** New**Modified from****K/A Catalog Number:** 022 A1.02

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

**RO Importance:** 3.6**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(5)**STP Lesson:** LOT 202.32**Objective Number:** 50381

Explain the limiting analysis for the Containment Critical Safety Function.

**Reference:** LOT202.32, LOT 202.33, USFAR Chapter 9, Section 2.2.2.1, USFAR Chapter 6, Section 2.2.2.1.1.2, Technical Specification 3.6.1.4**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: TS 3.6.1.4 allowed containment pressure in MODES 1-4 is -0.1 to +0.3 psig. Under accident conditions, RCFCs are supplied by CCW, at a GREEN Band rate of 1800-2300 gpm approximate.
- B: INCORRECT: Plausible as this is the correct maximum containment pressure and this is the flow rate range for the normal RCB Chilled Water source.
- C: INCORRECT: Plausible with confusion over -0.1 psig and +0.3 psig. This is the correct flow range.
- D: INCORRECT: Plausible with confusion over -0.1 psig and +0.3 psig and this is the flow rate range for the normal RCB Chilled Water source.

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

The student must determine the water flow to the RCFCs given a specific plant condition.

**Exam Bank No.:** 3052

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 39

The Unit is in Mode 1

- 22M01-D-3, RCB CHLD WTR EXPTK LVL HI/LO, alarms

Per the associated Annunciator Response Procedure, the probable cause for a LOW level includes a \_\_\_\_ (1) \_\_\_\_.

If the level is low the control room should direct an operator to adjust RCB Expansion Tank Level Controller to RAISE expansion tank level, with water from the \_\_\_\_ (2) \_\_\_\_.

- A. (1) Lifted Relief  
(2) Demineralized Water System
- B. (1) Lifted Relief  
(2) Reactor Makeup Water system
- C. (1) RCB Chilled Water Pump Trip  
(2) Demineralized Water System
- D. (1) RCB Chilled Water Pump Trip  
(2) Reactor Makeup Water System

**Answer:** A (1) Lifted Relief (2) Demineralized Water System

**Exam Bank No.:** 3052**Source:** New**Modified from****K/A Catalog Number:** 022 A2.05

Ability to (a) predict the impacts of the following malfunctions or operations on the CCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Major leak in CCS.

**RO Importance:** 3.1    **Tier:** 2    **Group/Category:** 1    **10CFR Reference:** 55.41(b)(5)**STP Lesson:** LOT 202.32    **Objective Number:** 91942

Given a plant or system condition, PREDICT the operation of the Reactor Containment Chilled Water System. IDENTIFY the makeup source of the RCB Chilled Water Expansion Tank and how level is maintained.

**Reference:** LOT 202.32, OPOP09-AN-22M1**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: Per the ARP, possible causes of a low level include a makeup malfunction, system leakage, or a lifted relief due to isolation of components (such as would occur on an SI signal when RCB Chilled Water is isolated to the RCFCs). Makeup is from demin water.
- B: INCORRECT: Plausible as this is the cause and the CCW Surge Tank has makeup from RMW available if needed.
- C: INCORRECT: Plausible with confusion over causes for low or high level in this complex system. This is the correct makeup source.
- D: INCORRECT: Plausible with confusion over causes for low or high level in this complex system and the CCW Surge Tank has makeup from RMW available if needed.

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

The student must determine the cause of an alarm and the action required.

**Exam Bank No.:** 3076

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 40

A Design Basis Large Break LOCA occurs.

- Containment Spray Pumps 1A and 1B start.
- Containment Spray Pump 1C does NOT start.

Complete the following for this condition:

In order to have adequate Containment heat removal per the STP Design Basis, at least \_\_\_\_ (1) \_\_\_\_ RCFCs must be running and the crew \_\_\_\_ (2) \_\_\_\_ start Containment Spray Pump 1C.

- A. (1) 5  
(2) must
- B. (1) 5  
(2) does NOT need to
- C. (1) 3  
(2) must
- D. (1) 3  
(2) does NOT need to

**Answer:** D (1) 3 (2) does NOT need to

**Exam Bank No.:** 3076**Source:** New**Modified from****K/A Catalog Number:** 026 A2.04

Ability to (a) predict the impacts of the following malfunctions or operations on the CSS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Failure of spray pump

**RO Importance:** 3.9    **Tier:** 2    **Group/Category:** 1    **10CFR Reference:** 55.41(b)(5)**STP Lesson:** LOT 201.11    **Objective Number:** 2009

Given a plant or system condition, predict the operation of the Containment Spray System.

**Reference:** RCB HVAC DBD, Section 3.1.1.1**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Part 1 is incorrect but plausible since 5 RCFCs are required by Technical Specifications and all 3 trains are supposed to sequence on for this event.
- B: INCORRECT: Part 1 is incorrect but plausible since 5 RCFCs are required by Technical Specifications. Part 2 is correct.
- C: INCORRECT: Part 1 is correct, Part 2 is plausible as all 3 trains automatically sequence on a HI-3 containment pressure.
- D: CORRECT: Per the DBD for RCB HVAC, 3 RCFCs along with 2 Containment Spray trains must be inservice to respond to adequately to a the Design Basis LOCA. Only 2 CS pumps are required for this response.

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

The student must analyze the stem conditions and determine a course of action.



**Exam Bank No.:** 3077

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 41

The unit is at 100% power.

- Containment parameters are normal.
- An inadvertent Containment Pressure HI-3 Actuation occurs.

As a result, Containment Spray Pumps will \_\_\_\_ (1) \_\_\_\_ and their discharge valves will \_\_\_\_ (2) \_\_\_\_.

- A. (1) NOT start  
(2) remain CLOSED
- B. (1) NOT start  
(2) OPEN
- C. (1) START  
(2) remain CLOSED
- D. (1) START  
(2) OPEN

**Answer:** B (1) NOT start (2) OPEN

**Exam Bank No.:** 3077**Source:** New**Modified from****K/A Catalog Number:** 026 A3.01Ability 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:** LOT 201.11**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as CS pumps will not start, but discharge MOVs will open.
- B: CORRECT: On a HI-III signal, the discharge valves will open, but the CS pumps only start from a MODE I or MODE III sequence.
- C: INCORRECT: Plausible with misunderstanding of the signals to open the discharge valves and start the pumps.
- D: INCORRECT: Plausible as discharge MOVs will open, but CS pumps will not start.

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

The student must assess the conditions and determine the system response.

**Exam Bank No.:** 3008**Last used on an NRC exam:** 2021**RO Sequence Number:** 42

The unit was at 100% when a Reactor Trip and SI occurred.

- RCPs are all running.
- 5M23-A-3, C9 COND AVAILABLE FOR STEAM DUMP, is LIT.
- RCS Tave is 569°F and slowly rising.
- Containment pressure is 4.0 psig.
- S/G NR Levels are as follows:
  - S/G A: 18%
  - S/G B: 12%
  - S/G C: 10%
  - S/G D: 12%

When performing 0POP05-EO-E000, Reactor Trip or Safety Injection, Step 9:

Monitor RCS Temperatures –

- With any RCP running, RCS Tavg stable at or trending to 567F  
OR
- Without any RCP running, RCS Tcold stable at or trending to 567F

the crew will...

- A. allow SG PORVs to automatically control RCS temperature.
- B. take manual control of the SG PORVs to control RCS temperature.
- C. dump steam to the condenser.
- D. ensure total AFW flow GREATER THAN 576 GPM.

**Answer:** C dump steam to the condenser.

**Exam Bank No.:** 3008**Source:** New**Modified from****K/A Catalog Number:** 039 G2.1.20 Ability to interpret and execute procedure steps.**RO Importance:** 4.6 **Tier:** 2 **Group/Category:** 1 **10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 504.05 **Objective Number:** Terminal

Discuss the basis for each step, note, and caution for OPOP05-EO-EO00.

**Reference:** OPOP05-EO-EO00**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible because the PORVs will automatically maintain temperature at 571F but are only used if the condenser is not available.
- B: INCORRECT: Plausible because the PORVs can be used to manually maintain temperature at 571F but are only used if the condenser is not available.
- C: CORRECT: Step 9 requires the crew to dump steam to the condenser if RCS Tave > 567F. Since the Condenser is available, this method will be used.
- D: INCORRECT: Plausible as temperature can be controlled this way, but is only to be done if RCS temperature is <567F

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

The student must assess the given conditions and determine a course of action.

**Exam Bank No.:** 3009

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 43

The unit is at 26% power.

- SGFPT 11 is in service.
- All Main Feedwater Regulating Valves are in AUTO.
- The SGFP Master Speed Controller is in AUTO

As SGFPT 12 is placed in service, the Main Feedwater Regulating Valves will \_\_\_\_ (1) \_\_\_\_  
and the speed of SGFWP 11 will \_\_\_\_ (2) \_\_\_\_.

- A. (1) throttle closed  
(2) decrease
- B. (1) throttle open  
(2) increase
- C. (1) throttle open  
(2) decrease
- D. (1) throttle closed  
(2) increase

**Answer:** A (1) throttle closed (2) decrease

**Exam Bank No.:** 3009**Source:** New**Modified from****K/A Catalog Number:** 059 K1.04

Knowledge of the physical connections and/or cause-effect relationships between the MFW and the following system: S/GS water level control system.

**RO Importance:** 3.4    **Tier:** 2    **Group/Category:** 1    **10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 204.01    **Objective Number:** 1

Given a plant or system condition, predict the response of the plant and/or systems.

**Reference:** LP 202.15**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: As the SGFP is placed in service and its speed raised, both feed rate and SG level will rise. SGWLC will respond by throttling closed on the FRV to maintain program level. This will cause a rise in DP across the SG which will slow feed pump speed.
- B: INCORRECT: Plausible with confusion over the response of the system upon a feed pump start.
- C: INCORRECT: Plausible with confusion over the response of the system upon a feed pump start.
- D: INCORRECT: Plausible with confusion over the response of the system upon a feed pump start.

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

The student must assess the conditions given and determine system response.

**Exam Bank No.:** 3010

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 44

Unit 1 is operating at 100% power.

With NO operator action, if Instrument Air is lost to SG "A" MFRV, then "A" MFRV will...

- A. CLOSE and S/G "A" water level will lower to the LO-LO level setpoint, starting "A" AFW pump ONLY.
- B. REMAIN in AUTOMATIC mode because solenoids remain powered and S/G "A" water level will remain steady.
- C. CLOSE and S/G "A" water level will lower to the LO-LO level setpoint, starting ALL AFW pumps.
- D. OPEN and S/G "A" water level will rise to the HI-HI level setpoint, tripping the main turbine.

**Answer:** C CLOSE and S/G "A" water level will rise to the LO-LO level setpoint, starting ALL AFW pumps.

**Exam Bank No.:** 3010**Source:** New**Modified from****K/A Catalog Number:** 059 K3.02

Knowledge of the effect that a loss or malfunction of the MFW will have on the following: AFW system.

**RO Importance:** 3.6**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 202.13**Objective Number:**

Given plant/system conditions, predict the operation of the Feedwater System.

**Reference:** LOT 202.13, LOT 202.28**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as level will lower, and if the student believes the AFW pump starts are train specific.
- B: INCORRECT: Plausible if the student misunderstands the loss of air to the FRV.
- C: CORRECT: On a loss of electrical power to the solenoids, the FRV will remain in AUTO. This allow modulating air through the 4-way valve to thea ctuator. However, on a loss of instrument air to the FRVs, the valves will fail closed. The "A" SG water level will eventually lower to the LO-LO setpoint if the FRV for SG A failed shut and no operator action was taken.
- D: INCORRECT: Plausible if the student believes the valve fails open.

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

The student must assess the failure and determine the effect on the system.



**Exam Bank No.:** 3011

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 45

Unit 1 was operating at 100%.

- All SGFPTs tripped resulting in a SG LO-LO Level Reactor Trip.
- All AFW pumps started automatically.

Which of the following malfunctions will cause RCS Loop A Tcold to RISE?

- A. SG A AFW Flow Transmitter FT-7525 fails HIGH
- B. SG A AFW Flow Transmitter FT- 7525 fails LOW
- C. SG A controlling Level Channel fails HIGH
- D. SG A controlling Level Channel fails LOW

**Answer:** A SG A AFW Flow Transmitter FT-7525 fails HIGH

**Exam Bank No.:** 3011**Source:** New**Modified from****K/A Catalog Number:** 061 K3.01

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

**RO Importance:** 4.4**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 202.28**Objective Number:** 8

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

**Reference:** LOT 202.28**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: AFW flow is controlled by flow through the flow transmitters, not level in the SGs. A failed high transmitters for the AFW FRVs would cause QDPS to control actual flow of AFW to approximately 0 gpm. Reducing AFW flow to the SG would result in less heat transfer from the RCS causing RCS temperature to rise.
- B: INCORRECT: Plausible with a misunderstanding of the operation of AFW flow control. The AFW flow transmitter failing low would cause actual flow to rise to the maximum value of 640 gpm which would cause TC to lower not rise.
- C: INCORRECT: Plausible with a misunderstanding of when SGWLCS controls flow to the SG. In this case the AFW FRV is in service and provides flow based on the signal from its flow transmitter.
- D: INCORRECT: Plausible with a misunderstanding of when SGWLCS controls flow to the SG. In this case the AFW FRV is in service and provides flow based on the signal from its flow transmitter.

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

The student must assess a failure and determine the effect on the RCS.

**Exam Bank No.:** 3012

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 46

The QDPS provides a control signal to limit AFW discharge flow to a MAXIMUM of \_\_\_\_\_(1)\_\_\_\_\_ in order to avoid pump runout of \_\_\_\_\_(2)\_\_\_\_\_gpm.

- A. (1) 605  
(2) 675
- B. (1) 640  
(2) 675
- C. (1) 605  
(2) 650
- D. (1) 640  
(2) 650

**Answer:** B (1) 640 (2) 675

**Exam Bank No.:** 3012**Source:** New**Modified from****K/A Catalog Number:** 061 K4.04

Knowledge of AFW design feature(s) and/or interlock(s) which provide for the following: Prevention of AFW runout by limiting AFW flow.

**RO Importance:** 3.1**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 202.28**Objective Number:** 4

Describe the AFW system controls and instrumentation in the Main Control Room.

**Reference:** LOT 202.28**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as this is the value that the QDPS throttles AFW back to as flow rises to 640 gpm. Part 2 is correct.
- B: CORRECT: The AFW flow transmitter and QDPS work together to control flow between 550 and 640 gpm to ensure adequate flow and prevent pump runout at 675 gpm. Additionally, the low pump discharge pressure is monitored on each AFW train and alarms to indicate the pump is near runout (675 gpm)
- C: INCORRECT: Plausible as this is the value that the QDPS throttles AFW back to as flow rises to 640 gpm. Part 2 is incorrect but plausible as 650 gpm can be easily confused with 550 gpm.
- D: INCORRECT: Plausible as Part 1 is correct. Part 2 is incorrect but plausible as 650 gpm can be easily confused with 550 gpm.

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

The student must recall information about the AFW system.

**Exam Bank No.:** 3013

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 47

Unit 1 is operating at 100% power.

- An inverter output failure to DP-1203 (Class 1E 120VAC, Channel III) has occurred.

The new power supply to DP-1203 will be from \_\_\_(1)\_\_\_.

With NO operator action, when the inverter regains power the associated static transfer switch \_\_\_(2)\_\_\_ to the normal source.

- A. (1) 480 VAC MCC E1B1  
(2) will automatically transfer
- B. (1) 125 VDC battery bus E1B11  
(2) must be manually transferred
- C. (1) 125 VDC battery bus E1B11  
(2) will automatically transfer
- D. (1) 480 VAC MCC E1B1  
(2) must be manually transferred

**Answer:** A (1) 480 VAC MCC E1B1 (2) will automatically transfer

**Exam Bank No.:** 3013**Source:** New**Modified from****K/A Catalog Number:** 062 K4.10

Knowledge of AC distribution system design feature(s) and/or interlock(s) which provide for the following: Ininterruptable AC power sources.

**RO Importance:** 3.1**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.38**Objective Number:** 5

Compare and contrast the normal and alternate/backup sources of power for the Class 1E Vital 120 VAC to include methods to switch power supplies.

**Reference:** LOT 201.38**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: The normal power supplies to Class 1E 120V System (channels 1-4) are from ESF Trains A, B, and C which is fed to each channel via rectifier/inverter setup. An inverter output failure will cause the Static Transfer Switch to realign and provide uninterrupted power from the Bypass Source via the VRT. Upon restoration of the inverter, there will be a 25-35 second delay before the Static transfer Switch transfers back to its normal source (from the inverter). The battery bus will be the source of power only if there is a loss of power from the rectifier only, not the inverter output.
- B: INCORRECT: Plausible with a misunderstanding of the setup of the power supplies to the channel. The battery is not available with an inverter failure.
- C: INCORRECT: Plausible with a misunderstanding of the setup of the power supplies to the channel. The battery is not available with an inverter failure. The static transfer switch does automatically transfer back from the VRT to the inverter as described above.
- D: INCORRECT: Plausible as the static transfer switch can be manually transferred but has an automatic function.

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

The student must recall interlocks and operation of the system.

**Exam Bank No.:** 3014

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 48

A loss of 125 VDC power to the E1D11 switchboard will result in which of the following?

- A. Loss of field flash to the “B” ESF Diesel Generator.
- B. Loss of control power to one train of reactor trip breakers.
- C. Loss of power to pressurizer PORV (PCV-655A).
- D. Loss of the Turbine Driven Auxiliary Feed Water Pump.

**Answer:** D Loss of the Turbine Driven Auxiliary Feedwater Pump

**Exam Bank No.:** 3014

**Source:** New

**Modified from**

**K/A Catalog Number:** 063 K.2.01

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

**RO Importance:** 2.9

**Tier:** 2

**Group/Category:** 1

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

**STP Lesson:** LOT 201.37

**Objective Number:** 11

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

**Reference:** LOT 201.37

**Attached Reference**  **Attachment:**

**NRC Reference Req'd**  **Attachment:**

**Distractor Justification**

A: INCORRECT: Plausible as this is powered from E1B11.

B: INCORRECT: Plausible as either train of reactor trip breakers is from E1B11 or E1A11.

C: INCORRECT: Plausible as this is powered from E1A11.

D: CORRECT: The E1D11 switchboard provides power to the MOVs necessary to start and control steam flow to the TDAFWP.

**Question Level:** F

**Question Difficulty** 3

**Justification:**

The student must recall loads on DC switchboards.



**Exam Bank No.:** 3078

**Last used on an NRC exam:** 2021

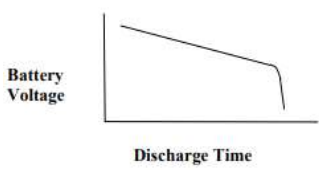
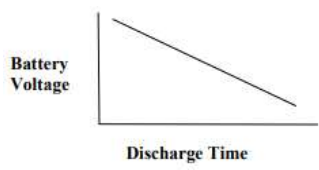
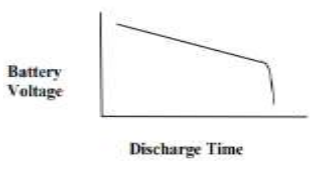
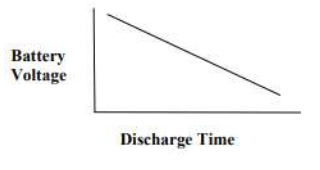
**RO Sequence Number:** 49

Unit 1 has experienced a loss of all AC event.

- One battery cell has been jumpered out in Battery E1C11.

The expected response of Battery E1C11 voltage would look like \_\_\_\_ (1) \_\_\_\_.

The crew \_\_\_\_ (2) \_\_\_\_ monitor the voltage on the E1C11 bus in the Control Room.

- |    |   |         |
|----|---|---------|
|    | (1)   | (2)     |
| A. |    | can     |
| B. |    | can     |
| C. |  | can NOT |
| D. |  | can NOT |

**Answer:** A (1) see graph (2) can

**Exam Bank No.:** 3078**Source:** New**Modified from****K/A Catalog Number:** 063 A1.01

Ability to predict and/or monitor changes in parameters associated with operating the DC electrical system controls including: Battery capacity as it is affected by discharge rate.

**RO Importance:** 2.5**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 201.33**Objective Number:** 14

Discuss the principles of operation of a station battery to include: 1. Battery construction 2. Chemical reactions 3. Factors affecting discharge 4. Battery health

**Reference:** 0POP05-EO-EC00, LOT201.37**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: With a loss of all AC power, the batteries will be discharging and providing power to DC and 120V vital AC loads. Battery voltage can be monitored in the CR.
- B: INCORRECT: Plausible as the discharge is linear for a period of time and other battery chargers and batteries can be monitored in the CR.
- C: INCORRECT: Plausible as this is the correct curve and other battery charger and battery voltages cannot be monitored in the CR.
- D: INCORRECT: Plausible as the discharge is linear for a period of time and other battery charger and battery voltages cannot be monitored in the CR.

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

The student must assess the plant condition and determine battery response from a series of graphs.

**Exam Bank No.:** 3015

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 50

Unit 1 is at 100% power.

- The crew is performing 0PSP03-DG-0001, Standby Diesel 11 Operability Test.

The GOV MODE SEL switch is in \_\_\_\_ (1) \_\_\_\_.

Prior to closing the Standby Diesel 11 “DG OUTP BKR”, the RO will ensure the synchroscope is moving \_\_\_\_ (2) \_\_\_\_.

- A. (1) ISOCHRONOUS  
(2) slow in the fast direction
- B. (1) PARALLEL  
(2) slow in the slow direction
- C. (1) PARALLEL  
(2) slow in the fast direction
- D. (1) ISOCHRONOUS  
(2) slow in the slow direction

**Answer:** C (1) PARALLEL (2) slow in the fast direction

**Exam Bank No.:** 3015**Source:** New**Modified from****K/A Catalog Number:** 064 A2.09

Ability to (a) predict the impacts of the following malfunctions or operations on the ED/G systems; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those malfunctions or operations; Synchronization of the ED/G with other electric power supplies.

**RO Importance:** 3.1    **Tier:** 2    **Group/Category:** 1    **10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.39    **Objective Number:** 18

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

**Reference:** 0POP02-DG-0001, LOT 201.39**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as the synchroscope will be moving slow in the fast direction. However the machine will be paralleled with the grid and not operating in ISOCH mode which is only used on a loss of offsite power.
- B: INCORRECT: Plausible as the synchroscope moving slow in the slow direction would be used when reconnecting a 4.16KV ESF bus back to the grid.
- C: CORRECT: Per 0POP02-DG-0001, step 6.1.8 and 6.1.22 requires that both these conditions are satisfied before closing the DG output breaker. With the synchroscope traveling slow in the fast direction, the DG will pick up load. A slow movement allows for better synchronization. The GOV MODE SEL switch must be in parallel so the machine may parallel with offsite power for speed droop characteristics.
- D: INCORRECT: Plausible as the synchroscope moving slow in the slow direction would be used when reconnecting a 4.16KV ESF bus back to the grid. The ISOCH mode is only used on a loss of offsite power.

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

The student must recall the process for synchronizing a diesel to the grid.

**Exam Bank No.:** 3016

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 51

The crew is performing 0PSP03-DG-0001, “Standby Diesel 11 Operability Test.”

Standby Diesel 11 is started with the “ENGINE START MODE” in “RATED”.

Per 0PSP03-DG-0001, what is the ACCEPTANCE CRITERIA for the DG to reach rated voltage and frequency bands?

- A.  $\leq 12$  seconds
- B.  $\leq 10$  seconds
- C.  $\leq 8$  seconds
- D.  $\leq 3$  seconds

**Answer:** B  $\leq 10$  seconds

**Exam Bank No.:** 3016

**Source:** New

**Modified from**

**K/A Catalog Number:** 064 A3.02

Ability to monitor automatic operation of the ED/G system, including minimum time for load pickup.

**RO Importance:** 3.4

**Tier:** 2

**Group/Category:** 1

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

**STP Lesson:** LOT 201.39

**Objective Number:** 6

STATE the limits of the Emergency Diesel Generator load, field current and voltage

**Reference:** 0PSP03-DG-0001

**Attached Reference**  **Attachment:**

**NRC Reference Req'd**  **Attachment:**

**Distractor Justification**

- A: INCORRECT: Plausible as this value is for testing the DG from the initiation of a LOOP in 0PSP03-DG-0007.
- B: CORRECT: Per 0PSP03-DG-0001, the acceptance criteria is less than or equal to 10 seconds.
- C: INCORRECT: Plausible as this value is a trending threshold for engineering in 0POP02-DG-0001.
- D: INCORRECT: Plausible as this value is for testing the DG following a load rejection in 0PSP03-DG-0013.

**Question Level:** F

**Question Difficulty** 3

**Justification:**

The student must recall information about a surveillance procedure.

**Exam Bank No.:** 3017

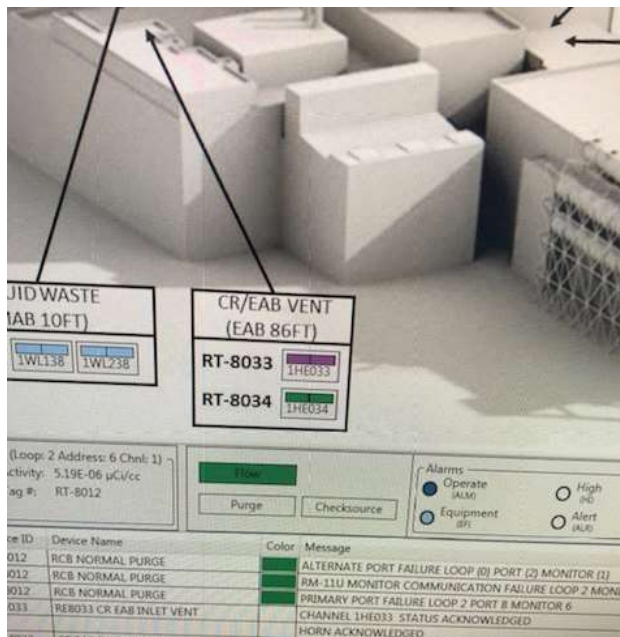
**Last used on an NRC exam:** 2021

**RO Sequence Number:** 52

Using the RM-11 screen shown below, the indicated color for radiation monitor RT-8033, Control Room/EAB Ventilation Radiation Monitor, means \_\_\_\_ (1) \_\_\_\_.

After resolving this issue, the setpoint for this radiation monitor can be changed from the \_\_\_\_ (2) \_\_\_\_ in the control room.

- A. (1) Equipment Failure  
(2) RM-23A
- B. (1) Communications Failure  
(2) RM-11
- C. (1) Equipment Failure  
(2) RM-11
- D. (1) Communications Failure  
(2) RM-23A



**Answer:** D (1) Communications Failure (2) RM-23A

**Exam Bank No.:** 3017**Source:** New**Modified from****K/A Catalog Number:** 073 A4.02

Ability to manually operate and/or monitor in the control room: Radiation monitoring system control panel.

**RO Importance:** 3.7**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(11)**STP Lesson:** LOT 202.41**Objective Number:** 9

Relate the functions of RM11 and RM23 controls to include: Norm/Sup password usage.

**Reference:** LOT 202.41**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as the student could confuse the different color indications on the RM-11. Part 2 is correct.
- B: INCORRECT: The magenta indicator for RT-8033 means "No Communications to Monitor." Equipment Failure would have a Light Blue (Cyan) light. Setpoints for this particular radiation monitor RT-8033 can only be changed in the RM-23A.
- C: INCORRECT: Plausible as the student could confuse the different color indications on the RM-11 and the RM-11 is used to change setpoints for multiple monitors.
- D: CORRECT: The magenta indicator for RT-8033 means "No Communications to Monitor." Equipment Failure would have a Light Blue (Cyan) light. Setpoints for this particular radiation monitor RT-8033 can only be changed in the RM-23A.

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

The student must recall information about the Radiation Monitoring System.



**Exam Bank No.:** 3018

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 53

The unit is at 100% power.

- ECW Pump “A” is SECURED and in AUTO with its transfer switch in LOCAL.
- ECW Pump “B” is RUNNING with its transfer switch in REMOTE.
- ECW Pump “C” is RUNNING with its transfer switch in REMOTE.
- BYP/INOP for ECW Pump “A” is LIT.
- Train A Mode Selector Switch is in STBY.

ECW PUMP “B” trips.

ECW Pump “A” will \_\_\_\_\_.

- A. immediately start.
- B. start after a 25 second delay.
- C. start after a 15 sec delay.
- D. remain off.

**Answer:** D remain off

**Exam Bank No.:** 3018**Source:** New**Modified from****K/A Catalog Number:** 076 G2.4.45

Ability to prioritize and interpret the significance of each annunciator or alarm.

**RO Importance:** 4.1**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.13**Objective Number:** 5

List all automatic functions, switch locations, switch positions, annunciators, local/remote functions, interlocks, and permissives for ECW Pumps and Motors.

**Reference:** LOT 201.13, OPOP02-EW-0001**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible with a misunderstanding of the transfer switch and its effect on automatic control. Additionally, the only ECW Pump auto start feature is from low CCW header pressure (which was not affected in this question).
- B: INCORRECT: Plausible with a misunderstanding of the transfer switch and its effect on automatic control.. In addition to automatic features being disabled, the 25 second start delay is associated with an SI or a LOOP which did not occur here.
- C: INCORRECT: Although the loss of the running pump will eventually cause ECW header pressure to drop <30 psig, the auto start feature for the pump has been disabled due to the transfer switch position.
- D: CORRECT: When the transfer switch is placed in LOCAL, the component will not respond to automatic start signals or any other auto/remote control. The important alarm to note is the BYP/INOP alarm which indicate all automatic functions associated with the component are not working because of the status of the transfer switch.

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

The student must recall information about ECW controls.

**Exam Bank No.:** 3053

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 54

Unit 1 is at 100% power.

- 9M01-E-4, ACW CLOSE LOOP SRGTK LVL LO-LO, alarms.
- The Surge Tank sight glass is empty.
- CLACW system pressure is unstable.
- The crew enters OPOP04-AC-0003, Loss of Closed Loop Auxiliary Cooling Water.

Per OPOP04-AC-0003, the crew should trip the reactor \_\_\_\_ (1) \_\_\_\_ starting/loading Instrument Air Compressor No. 14.

Instrument Air Compressor No. 14 is chosen because it is \_\_\_\_ (2) \_\_\_\_.

- A. (1) after  
(2) cooled by the emergency cooling water pump
- B. (1) before  
(2) air cooled
- C. (1) after  
(2) air cooled
- D. (1) before  
(2) cooled by the emergency cooling water pump

**Answer:** B (1) before (2) air cooled

**Exam Bank No.:** 3053**Source:** New**Modified from****K/A Catalog Number:** 078 K1.04

Knowledge of the physical connections and/or cause-effect relationships between the IAS and the following systems: Cooling water to compressor.

**RO Importance:** 2.6**Tier:** 2**Group/Category:** 1**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 202.26**Objective Number:** 9

Given a plant or system condition, predict the operation of the instrument and service air system.

**Reference:** 0POP04-AC-0003, 0POP04-IA-0001, LOT202.24, LOT 202.26, 0POP09-AN-0150**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as recovering IA is very important, but the reactor must be tripped first for these conditions. The emergency cooling water pump can cool IA 11 or 12, but not 14.
- B: CORRECT: 0POPO4-AC-0003 requires that, for the initial conditions given here, the plant is to perform a reactor trip. Additionally, the crew must verify that IA 14 starts and loads. IA 14 is air cooled.
- C: INCORRECT: Plausible as recovering IA is very important, but the reactor must be tripped first for these conditions. IA 14 is air cooled.
- D: INCORRECT: Plausible as the reactor should be tripped prior to verifying IA 14 starts and loads. The emergency cooling water pump can cool IA 11 or 12, but not 14.

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

The student must recall information about the Instrument Air system.

**Exam Bank No.:** 3054

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 55

Unit 1 is at 100% power.

- A Reactor Trip and Safety Injection occurs.
- Operators are performing the immediate actions of OPOP05-EO-EO00, Reactor Trip or Safety Injection.

The following conditions are observed:

- Containment pressure is 5.1 psig.
- RCS pressure is at 1800 psig.
- SG A NR level is 30%.
- SG B NR level is 19%.
- SG C NR level is 29%.
- SG D NR level is 30%.
- Total AFW flow is 580 GPM.
- NO RCFCs are running.
- SG A and B Blowdown Containment Isolation Valves failed to close.

According to station Emergency Operating Procedures which of the following actions will be procedurally performed first?

- A. Start the RCFCs.
- B. Trip all RCPs.
- C. Manually actuate Phase "B" Containment Isolation.
- D. Verify Containment Spray is initiated.

**Answer:** A Start the RCFCs.

**Exam Bank No.:** 3054**Source:** New**Modified from****K/A Catalog Number:** 103 A1.01

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

**RO Importance:** 3.7    **Tier:** 2    **Group/Category:** 1    **10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 201.01    **Objective Number:** 91027

Describe how the following system interfaces with the RCB: Containment Heat Removal System.

**Reference:** 0POP05-EO-FRH1, 0POP05-EO-EO00, LOT201.01, LOT 202.33**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: Although an event in the RCB has occurred, the RCPs do not need to be tripped yet. Heat sink criteria are met due to 580 gpm AFW flow. Although Blowdown Isolation Valves did not close, the Flow Control Valves are not used in this procedure. The RCFCs will be started during the performance of Addendum 5.
- B: INCORRECT: Plausible as an event in the RCB has caused an SI and pressure has lowered but not to the RCP Trip Criteria value.
- C: INCORRECT: Plausible as all SG Blowdown Isolation Valves should have closed and they do close on an automatic signal, but not from Phase B.
- D: INCORRECT: Plausible if the adverse containment pressure value of 5 psig is confused with the HI-3 setpoint of 9.5 psig.

**Question Level:** H    **Question Difficulty** 4**Justification:**

The student must assess the conditions given, and determine which procedural actions are required.

**Exam Bank No.:** 3055

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 56

With the unit at 100% power, the crew is recovering a Control Bank C Dropped Rod.

- 5M03-B-5, ROD CONT URGENT ALARM, alarms.

The cause of this alarm is...

- A. the Rod Hold Out Sequence is initiated for Control Bank C.
- B. the Bank Overlap Unit indicates that proper rod sequencing is not occurring during the recovery.
- C. the Lift Coil Disconnect Switches for ALL other rods in Control Bank C are in the ROD DISCONNECTED position.
- D. mismatch between Control Bank C Pulse to Analog Converter and Control Bank C unaffected group step counter.

**Answer:** C the Lift Coil Disconnect Switches for ALL other rods in Control Bank C are in the ROD DISCONNECTED position.

**Exam Bank No.:** 3055**Source:** Bank**Modified from** 488**K/A Catalog Number:** 001 A4.03

Ability to manually operate and/or monitor in the control room: CRDS mode control.

**RO Importance:** 4.0**Tier:** 2**Group/Category:** 2**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.18**Objective Number:** 91296

State the cause and automatic action and the most likely subsequent action for the following alarms: A. Urgent alarm in power cabinet; B. Non-urgent alarm in power cabinet; C. Urgent alarm in logic cabinet.

**Reference:** 0POP04-RS-0001, 0POP04-AN-05M3, LOT 201.18**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible since selection provides the means to lock rods in the withdrawn position without requiring the continual use of electric power but only used during refueling.
- B: INCORRECT: Plausible as the BOU is applicable if there are multiple misaligned rods but not in the control scheme when withdrawing the dropped rod because the Rod Bank Selector Switch position is CB C, not manual or automatic.
- C: CORRECT: The lift coils on the unaffected group in Control Bank C do not receive current orders because their disconnect switches are open. The lift coils for all unaffected rods in Control Bank C are disconnected, but the alarm signal comes from the unaffected group power cabinet.
- D: INCORRECT: Plausible as there will be a mismatch between the unaffected group step counter and the P/A Converter, but this is not a driver for the alarm.

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

The student must recall information about the Rod Control System and abnormal occurrences in the system.



**Exam Bank No.:** 3056

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 57

Unit 2 is operating at 100% power.

- 5M03-A-4, DELTA T ROD WITHDRWL BLK ALERT, alarms.
- C-3, OTAT ROD WITHDRAWAL BLOCK, logic is MET.

Based on the above, \_\_\_\_\_(1)\_\_\_\_\_ outward rod motion will be blocked to help prevent exceeding the COLR OTAT setpoint of \_\_\_\_\_(2)\_\_\_\_\_ .

- A. (1) ONLY Auto  
(2) 108%
- B. (1) ONLY Auto  
(2) 114%
- C. (1) Auto and Manual  
(2) 108%
- D. (1) Auto and Manual  
(2) 114%

**Answer:** D (1) Auto and Manual (2) 114%

**Exam Bank No.:** 3056**Source:** New**Modified from****K/A Catalog Number:** 015 K6.04

Knowledge of the effect of a loss or malfunction on the following will have on the NIS: Bistables and logic circuits.

**RO Importance:** 3.1**Tier:** 2**Group/Category:** 2**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.16**Objective Number:** 4886

DESCRIBE all the interlocks, trips, permissive, alarms, and/or indications associated with the Nuclear Instrument System, include set points and coincidences.

**Reference:** LOT201.16, USFAR, Chapter 7, OPOP04-AN-05M3**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible if the student uses the C-4 rod stop setpoint (the Opdelta T setpoint is 108%). Also, the C-3 rod stop stops all outward rod motion (automatic and manual).
- B: INCORRECT: Plausible since the C-3 rod stop setpoint is 114% yet not correct since the choice only addresses auto outward rod motion.
- C: INCORRECT: Plausible if the student uses the C-4 rod stop setpoint vice the C-3 setpoint. The answer is partially correct since both auto and manual outward rod motion is correct.
- D: CORRECT: C-3 stops all outward rod motion at 114%.

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

The student must assess an alarm and determine the status of plant equipment.

**Exam Bank No.:** 3019**Last used on an NRC exam:** 2021**RO Sequence Number:** 58

Which of the following describes the DESIGN number of Core Exit Thermocouples (CETs) and their function(s) in the Reactor Coolant System (RCS)?

There are \_\_\_\_ (1) \_\_\_\_ CETs positioned above selected fuel assemblies; they are used to calculate \_\_\_\_ (2) \_\_\_\_.

- A. (1) 25  
(2) RCS Subcooling
- B. (1) 25  
(2) RCS Subcooling AND Cold Overpressure Mitigation actuation setpoints
- C. (1) 50  
(2) RCS Subcooling AND Cold Overpressure Mitigation actuation setpoints
- D. (1) 50  
(2) RCS Subcooling

**Answer:** D (1) 50 (2) RCS Subcooling

**Exam Bank No.:** 3019**Source:** New**Modified from****K/A Catalog Number:** 017 K1.02

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

**RO Importance:** 3.3**Tier:** 2**Group/Category:** 2**10CFR Reference:** 55.41(b)(2)**STP Lesson:** LOT 201.17**Objective Number:** 91337

Describe the operation of the Incore Thermocouples.

**Reference:** LOT 201.17**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as there were originally 50 CETs, but 25 per train. They are used for a subcooling calculation.
- B: INCORRECT: Plausible as there were originally 50 CETs, but 25 per train. They are used for a subcooling calculation but not for COMS. Wide Range Th and Tc is used for COMS setpoints.
- C: INCORRECT: Plausible as there were originally 50 CETs and they are used for a subcooling calculation but not for COMS. Wide Range Th and Tc are used for COMS setpoints.
- D: CORRECT: There were originally 50 CETs The CETs are used for display and for a subcooling calculation.

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

The student must recall information about the CETs.

**Exam Bank No.:** 3079

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 59

The power supply to Hydrogen Recombiner 2B is 480V MCC

- A. E2B2
- B. E2B3
- C. E2C2
- D. E2C3

**Answer:** C E2C2

**Exam Bank No.:** 3079**Source:** New**Modified from****K/A Catalog Number:** 028 K2.01Knowledge of bus power supplies to the following:  
Hydrogen recombiners.**RO Importance:** 2.5**Tier:** 2**Group/Category:** 2**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.27**Objective Number:** T20127

The student will be able to demonstrate a thorough understanding of the theory and fundamental concepts of design, operation, monitoring, and evaluation of control room equipment, controls, and instrumentation contained within the Containment Combustible Gas Control System.

**Reference:** LOT 201.27**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible that a student would think that Hydrogen Recombiner 2B would have a B train power supply.
- B: INCORRECT: Plausible that a student would think that Hydrogen Recombiner 2B would have a B train power supply.
- C: CORRECT: The power supply for Hydrogen Recombiner 2B is E2C2.
- D: INCORRECT: Plausible as this is another C train MCC.

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

The student must recall power supplies for Hydrogen Recombiners.

**Exam Bank No.:** 3020

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 60

The unit is in MODE 4.

- Containment pressure is +0.05 psig.
- The crew has decided to perform OPOP02-HC-0003, Supplementary Containment Purge, for ALARA.

The crew aligns the system and starts Supplementary Purge Exhaust Fan 11A

- NEITHER Supplementary Purge Supply Fan will start.

Complete the following:

With NO operator action, containment pressure will \_\_\_\_\_(1)\_\_\_\_\_.

The required entry time for Technical Specification 3.6.1.4, Internal Pressure, is WHEN containment pressure \_\_\_\_\_(2)\_\_\_\_\_ psig.

- A. (1) lower  
(2) lowers below -0.1
- B. (1) lower  
(2) lowers below -0.3
- C. (1) rise  
(2) rises above +0.1
- D. (1) rise  
(2) rises above +0.3

**Answer:** A (1) lower (2) lowers below -0.1

**Exam Bank No.:** 3020**Source:** New**Modified from****K/A Catalog Number:** 029 K3.01

Knowledge of the effect that a loss or malfunction of the Containment Purge System will have on the following: Containment parameters.

**RO Importance:** 2.9**Tier:** 2**Group/Category:** 2**10CFR Reference:** 55.41(b)(11)**STP Lesson:** LOT 202.33**Objective Number:** 34307

Knowledge of the effect that a loss or malfunction of the Containment Purge System will have on the following Containment parameters.

**Reference:** 0POP02-HC-0002, LOT 202.33, 0POP04-AN-02M2**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: With a Supplemental Purge Exhaust Fan in service, but no supply fan, containment pressure will lower. The low limit per TS 3.6.1.4 is -0.1 psig.
- B: INCORRECT: Plausible as with a Supplemental Purge Exhaust Fan in service, but no supply fan, containment pressure will lower and with confusion over -0.1 and +0.3 psig in TS 3.6.1.4.
- C: INCORRECT: Plausible with confusion over the effect of supplementary purge on containment pressure and also with confusion over -0.1 and +0.3 psig in TS 3.6.1.4.
- D: INCORRECT: Plausible with confusion over the effect of supplementary purge on containment pressure. 0+0.3 psig is the correct upper limit per TS 3.6.1.4.

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

The student must assess the conditions given, and determine the effect on containment.



**Exam Bank No.:** 3021

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 61

Complete the following regarding the Refueling Machine:

The Refueling Machine Hoist has a preset overload limit of \_\_\_\_ (1) \_\_\_\_.

The Refueling Machine Hoist overload limit \_\_\_\_ (2) \_\_\_\_ be bypassed.

- A. (1) 1200  
(2) can
- B. (1) 1200  
(2) can NOT
- C. (1) 3000  
(2) can
- D. (1) 3000  
(2) can NOT

**Answer:** C (1) 3000 (2) can

**Exam Bank No.:** 3021

**Source:** New

**Modified from**

**K/A Catalog Number:** 034 K4.03

Knowledge of design feature(s) and/or interlock(s) which provide for the following: Overload protection.

**RO Importance:** 2.6

**Tier:** 2

**Group/Category:** 2

**10CFR Reference:** 55.41(b)(10)

**STP Lesson:** LOT 201.45

**Objective Number:** 7

Describe the interlocks associated with the operation of the Refueling Bridge, Trolley, and Hoist.

**Reference:** LOT 201.45

**Attached Reference**  **Attachment:**

**NRC Reference Req'd**  **Attachment:**

**Distractor Justification**

- A: INCORRECT: Plausible as 1200 pounds is the hoist bypass setpoint and the 2nd part is correct.
- B: INCORRECT: Plausible as 1200 pounds is the hoist bypass setpoint and with a lack of understanding of bypasses.
- C: CORRECT: The preset overload limit is 3000 pounds and can be bypassed.
- D: INCORRECT: : Plausible as this is the correct load limit and with a lack of understanding of bypasses.

**Question Level:** F

**Question Difficulty** 3

**Justification:**

The student must recall setpoints and interlocks.

**Exam Bank No.:** 3022

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 62

Unit 1 is at 100% power.

- SG 1A NR level instrument LT-571 fails HIGH.
- SG 1A WR level instrument LT-501 fails LOW.

With NO operator action, the \_\_\_\_ (1) \_\_\_\_ failed instrument will have the dominant effect causing actual SG 1A level to go \_\_\_\_ (2) \_\_\_\_.

- A. 1) NR  
2) down
- B. 1) WR  
2) up
- C. 1) NR  
2) up
- D. 1) WR  
2) down

**Answer:** A 1) NR 2) down

**Exam Bank No.:** 3022**Source:** New**Modified from****K/A Catalog Number:** 035 A1.01

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the S/G wide and narrow range level during startup, shutdown, and normal operations.

**RO Importance:** 3.6    **Tier:** 2    **Group/Category:** 2    **10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 202.15    **Objective Number:** 5

State the consequences of S/G Lo level/pressure when the plant is in various conditions.

**Reference:** LOT 202.15, LOT 202.01**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: SGWLCS uses inputs from one of two NR level (LT-519 or LT-571). The WR instruments have no control features. If the controlling NR level channel fails HIGH then SGWLCS would lower flow to the SG in an attempt to lower level. This would lower level until a LO-LO level Reactor Trip and AFW actuation.
- B: INCORRECT: Plausible with confusion over the functions of the level transmitters and the effect of the failure on SG level.
- C: INCORRECT: Plausible as this is the correct instrument and with confusion over the effect of the failure on SG level.
- D: INCORRECT: Plausible with confusion over the functions of the level transmitters. Level does lower due to the NR level failure.

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

The student must assess the failures and determine the effect on the SGs.

**Exam Bank No.:** 3057

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 63

UNIT 2 is at 100%.

- Tave = 592°F

PT-506 subsequently fails to 0 psig

Which of the following identifies the status of the Steam Dump Valves and the demand indication on UI-0555?

- A. All valves CLOSED; UI-0555 indicates 100% demand
- B. All valves CLOSED; UI-0555 indicates 0% demand
- C. Bank #1 and #2 valves OPEN; UI-0555 indicates 50% demand
- D. Bank #1, #2, #3, and #4 valves OPEN, UI-0555 indicates 100% demand

**Answer:** B All valves CLOSED; UI-0555 indicates 0% demand.

**Exam Bank No.:** 3057**Source:** Modified**Modified from** CPSES 2011**K/A Catalog Number:** 041 A3.02

Ability to monitor automatic operation of the SDS, including RCS pressure, RCS temperature, and reactor power.

**RO Importance:** 3.3**Tier:** 2**Group/Category:** 2**10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 202.09**Objective Number:** 11

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

**Reference:** LOT 202.09**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible if the student believes that the PT-506 failure would cause a demand signal output but since there is no Tave-Tref deviation, the valves do not open.
- B: CORRECT: To open steam dumps there must be an arming signal and a Tave-Tref deviation signal of sufficient magnitude. With PT506 failed low, the steam dumps are armed, but do not have a signal from a Tave-Tref deviation signal to open.
- C: INCORRECT: Plausible if the student incorrectly thought that with an arming signal from PT-506, half of the valves would open.
- D: INCORRECT: Plausible if the student incorrectly thought that with an arming signal from PT-506, the valves would open.

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

The student must assess conditions and determine the effect on the system.

**Exam Bank No.:** 3080

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 64

The unit is at 70%

- Rods are in MANUAL.

Turbine load is RAISED 10%.

The largest POSITIVE reactivity addition due to moderator temperature change would occur at...

- A. BOL with LOW boron concentration
- B. BOL with HIGH boron concentration
- C. EOL with LOW boron concentration
- D. EOL with HIGH boron concentration

**Answer:** C EOL with LOW boron concentration

**Exam Bank No.:** 3080**Source:** New**Modified from****K/A Catalog Number:** 045 K5.17

Knowledge of the operational implications of the following concepts as they apply to the MT/G System: Relationship between moderator temperature coefficient and boron concentration in RCS as T/G load increases.

**RO Importance:** 2.5    **Tier:** 2    **Group/Category:** 2    **10CFR Reference:** 55.41(b)(1)**STP Lesson:** LOT 101.21    **Objective Number:** N99680

Describe the effect on the moderator temperature coefficient of reactivity from changes in : boron concentration, core age, control rod position.

**Reference:** LOT 101.21**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible with confusion over the behavior of MTC over core life and with changes in boron concentration.
- B: INCORRECT: Plausible with confusion over the behavior of MTC over core life and with changes in boron concentration.
- C: CORRECT: As the core ages, there will be less fuel and more fission product poisons building which makes the MTC more negative. Changing boron concentration has the effect of changing both the density of boron in the coolant as well as the water density when Tave changes. A low boron concentration will have the effect of making the MTC more negative.
- D: INCORRECT: Plausible with confusion over the behavior of MTC over core life and with changes in boron concentration.

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

For a given evolution, the student must determine when the greatest positive reactivity addition would occur.



**Exam Bank No.:** 3058

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 65

The unit is at 100% power.

- A leak develops in the Instrument Air system.
- Instrument Air pressure is 78 psig and stable.

Which one of the below correctly lists the valve(s) that should be verified in the OPEN position per OPOP04-IA-0001, Loss of Instrument Air?

1. PV-8568, Instrument Air to Yard Isolation Valve
2. PV-9785, Service Air Isolation Valve
3. PV-9983, Instrument Air Dryer Bypass Valve

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

**Answer: B 3 ONLY**

**Exam Bank No.:** 3058**Source:** Modified**Modified from** 1478**K/A Catalog Number:** 079 A2.01

Ability to (a) predict the impacts of the following malfunctions or operations on the SAS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Cross-connections with IAS.

**RO Importance:** 2.8    **Tier:** 2    **Group/Category:** 2    **10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 202.26    **Objective Number:** 9

Given a plant or system condition PREDICT the operation of the instrument and Service Air System.

**Reference:** 0POP04-IA-0001, LOT 202.26**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible with a misunderstanding of the automatic feature and its purpose to stabilize the IA system upon a leak.
- B: CORRECT: The automatic response of the IA system to lowering pressure is to close PV-8795 at 100 psig, close PV-8568 at 90 psig, and open PV-9938 at 80 psig.
- C: INCORRECT: Plausible with a misunderstanding of the automatic feature and its purpose to stabilize the IA system upon a leak.
- D: INCORRECT: Plausible with a misunderstanding of the automatic feature and its purpose to stabilize the IA system upon a leak.

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

The student recall features of the Instrument Air system.

**Exam Bank No.:** 3023**Last used on an NRC exam:** 2021**RO Sequence Number:** 66

In accordance with OPGP03-ZA-0010, Performing and Verifying Station Activities, which of the following methods are an approved way to assure that a working copy of a procedure is current?

1. Document/Records Management Tracking System.
  2. Inquiry to Document Control.
  3. Review of daily listing of procedure changes for continual use operational procedures.
  4. Verify the working copy is the same revision and contains the same Field Changes as the last completed copy of the procedure.
- 
- A. 1, 2, 3
  - B. 1, 2, 4
  - C. 1, 3, 4
  - D. 2, 3, 4

**Answer:** A 1, 2, 3

**Exam Bank No.:** 3023**Source:** New**Modified from****K/A Catalog Number:** G2.1.21

Ability to verify the controlled procedure copy.

**RO Importance:** 3.5**Tier:** 3**Group/Category:** 1**10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 507.01**Objective Number:**

GIVEN the title of an administrative procedure, DISCUSS the requirements associated with the referenced procedure (92182).

**Reference:** LOT 507.01, 0PGP03-ZA-0010, 0PAP01-ZA-0102**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: 0PGP03-ZA-0010, Section 50, states that the procedure user verifies procedures are current prior to use. Specifically, the bulleted attributed in Section 5.2 are the applicable choices.
- B: INCORRECT: Plausible as 1 and 2 are correct, 4 is not, based on common sense and normal frequency of evolutions conducted at power plants. Working copy is defined in 0PAP01-ZA-0102, Step 2.2.24. Comparison to the last completed copy is not a listed method of verification.
- C: INCORRECT: Plausible as 1 and 3 are correct, 4 is not, based on common sense and normal frequency of evolutions conducted at power plants. Working copy is defined in 0PAP01-ZA-0102, Step 2.2.24. Comparison to the last completed copy is not a listed method of verification.
- D: INCORRECT: Plausible as 2 and 3 are correct, 4 is not, based on common sense and normal frequency of evolutions conducted at power plants. Working copy is defined in 0PAP01-ZA-0102, Step 2.2.24. Comparison to the last completed copy is not a listed method of verification.

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

The student must recall procedural information.

**Exam Bank No.:** 3059

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 67

Which ONE of the following describes the status of a Safety Injection Train when the ESFAS Status Monitoring Panel Lampbox for a High Head Safety Injection Pump in that train is LIT following an actuation signal?

The High Head Safety Injection Pump...

- A. is in its required safeguards condition.
- B. is NOT in its required safeguards condition.
- C. transfer switch is selected to CONTROL ROOM.
- D. discharge valve is closed.

**Answer:** B is NOT is its required safeguards condition.

**Exam Bank No.:** 3059**Source:** Modified**Modified from** 193**K/A Catalog Number:** G2.1.31

Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.

**RO Importance:** 3.8**Tier:** 3**Group/Category:****10CFR Reference:** 55.41(b)(7)**STP Lesson:** LOT 201.22**Objective Number:** 13

Describe the function of the instrumentation and controls available for operation and monitoring of the engineered safety features.

**Reference:** LOT 201.22**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible with a misunderstanding of how the lights work and their purpose.
- B: CORRECT: The individual component's status light will be lit if the component failed to actuate to the expected condition.
- C: INCORRECT: Plausible with a misunderstanding of how the lights work and their purpose.
- D: INCORRECT: Plausible with a misunderstanding of how the lights work and their purpose.

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

The student must recall how the ESF Status Monitoring Panel functions.

**Exam Bank No.:** 3060

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 68

Per OPOP01-ZO-0012, Operations Troubleshooting Process:

A formal process for assessing and documenting any required interim change in normal plant operating doctrine is defined as a \_\_\_\_\_(1)\_\_\_\_\_.

The \_\_\_\_\_(2)\_\_\_\_\_ provides approval to enter the Operations Troubleshooting Process procedure.

- A.    1. Troubleshooting Plan  
      2. Shift Manager
- B.    1. Troubleshooting Plan  
      2. Unit Supervisor
- C.    1. Condition Report Operations Evaluation (CROE)  
      2. Shift Manager
- D.    1. Condition Report Operations Evaluation (CROE)  
      2. Unit Supervisor

**Answer:** C 1. Condition Report Operations Evaluation (CROE) 2. Shift Manager.

**Exam Bank No.:** 3060

**Source:** New

**Modified from**

**K/A Catalog Number:** G2.2.20

Knowledge of the process for managing troubleshooting activities.

**RO Importance:** 2.6

**Tier:** 3

**Group/Category:**

**10CFR Reference:** 55.41(b)(10)

**STP Lesson:** LOT 507.01

**Objective Number:** 92186

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

**Reference:** 0POP01-ZO-0012

**Attached Reference**  **Attachment:**

**NRC Reference Req'd**  **Attachment:**

**Distractor Justification**

- A: INCORRECT: Plausible as Part 2 is correct.
- B: INCORRECT: Plausible with a misunderstanding of the different parts of the troubleshooting process and the approval for these activities.
- C: CORRECT: The CROE is the document defined here and the SM provides approval to enter the Troubleshooting process.
- D: INCORRECT: Plausible as Part 1 is correct.

**Question Level:** F

**Question Difficulty** 3

**Justification:**

The student must recall information from a procedure.



**Exam Bank No.:** 3061

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 69

Per OPGP03-ZG-EC01A, Equipment Clearance Order Instructions, Double Valve Protection SHOULD be used when fluid conditions have pressures at a MINIMUM of \_\_\_\_\_(1)\_\_\_\_\_ psig or temperatures at a MINIMUM of \_\_\_\_\_(2)\_\_\_\_\_ °F.

- A. (1) 60  
(2) 120
- B. (1) 60  
(2) 200
- C. (1) 150  
(2) 120
- D. (1) 150  
(2) 200

**Answer:** D (1) 150 (2) 200

**Exam Bank No.:** 3061**Source:** New**Modified from****K/A Catalog Number:** EAPE 2.2.13 Knowledge of tagging and clearance procedures.**RO Importance:** 4.1 **Tier:** 3 **Group/Category:** **10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 507.01 **Objective Number:** 5

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

**Reference:** 0PGP0-3-ZO-ECO1A,**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as 60 psig hydraulic is included in ECO1 as hazardous energy and 120F is included in ECO1 as hazardous energy.
- B: INCORRECT: Plausible as 60 psig hydraulic is included in ECO1 as hazardous energy.
- C: INCORRECT: Plausible as this is the correct pressure and 120F is included in ECO1 as hazardous energy.
- D: CORRECT: Per ECO1A, systems with fluid conditions greater than 150 psig or 200F require double valve protection when possible.

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

The student must recall the requirements of a procedure.

**Exam Bank No.:** 3024

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 70

Unit 1 is preparing to commence a reactor startup.

Per OPOP03-ZG-0004, Reactor Startup, Initial Count Rate (Co) should be recorded on Data Sheet 1, ICRR Data Sheet, just prior to \_\_\_\_\_(1)\_\_\_\_\_ .

If during startup the procedure directs that all CONTROL RODS shall be inserted, then the crew shall insert \_\_\_\_\_(2)\_\_\_\_\_.

- A. (1) Shutdown Bank withdrawal  
(2) All Control Banks and Shutdown Banks
- B. (1) Control Bank withdrawal  
(2) All Control Banks and Shutdown Banks
- C. (1) Shutdown Bank withdrawal  
(2) All Control Banks, at a minimum
- D. (1) Control Bank withdrawal  
(2) All Control Banks, at a minimum

**Answer:** B (1) Control Bank withdrawal (2) All Control Banks and Shutdown Banks

**Exam Bank No.:** 3024      **Source:** Modified      **Modified from** 2571

**K/A Catalog Number:** G2.2.2      Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.

**RO Importance:** 4.6      **Tier:** 3      **Group/Category:**      **10CFR Reference:** 55.41(b)(7)

**STP Lesson:** LOT 201.20      **Objective Number:** 99741

List the parameters that should be monitored and controlled during the intermediate phase of the reactor startup (from critically to the POAH). N99741

**Reference:** LOT 201.20, OPOP03-ZG-0004

**Attached Reference**  **Attachment:**

**NRC Reference Req'd**  **Attachment:**

**Distractor Justification**

- A: INCORRECT: Plausible because Part 2 is correct. Part 1 is incorrect. Step 4.5 specifies just prior to control bank withdrawal, operators record the initial count rate.
- B: CORRECT: Per OPGP03-ZG-0004, Step 4.5, specifies just prior to control bank withdrawal, operators record the initial count rate. Section 3.4 defines all control rods as both shutdown and control banks.
- C: INCORRECT: Plausible with confusion over requirements. Part 1 and 2 are both incorrect.
- D: INCORRECT: Plausible as Part 1 is correct. Part 2 is incorrect.

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

**Justification:**

The student must recall procedural information.

**Exam Bank No.:** 3062

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 71

A plant operator is required to perform a lengthy valve lineup in an area where radiation levels are 380 mrem/hour. The operator is currently AT STP's Administrative Action Level (AAL) for annual Total Effective Dose Equivalent (TEDE).

Which of the following is the **MAXIMUM** cumulative whole hours the operator can work in this area and not exceed NRC's annual TEDE limit, with proper approvals?

- A. 10 hours
- B. 7 hours
- C. 5 hours
- D. 2 hours

**Answer:** B 7 hours

**Exam Bank No.:** 3062**Source:** Modified**Modified from** 59**K/A Catalog Number:** G2.3.4

Knowledge of radiation exposure limits under normal or emergency conditions.

**RO Importance:** 3.2**Tier:** 3**Group/Category:****10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 103.04**Objective Number:** 6

State the 10 CFR 20 and STP exposure limitations including extensions for the whole body, skin, and extremities for adults.

**Reference:** OPGP03-ZR-0050**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT:  $380 \text{ mrem} * 10 \text{ hrs} = 3800 \text{ mrem}$ . This would be over the limit. If the applicant incorrectly assumed that AAL was 1000 mrem (which can be confused with 2000 mrem) then this incorrectly give a margin of  $5000 \text{ mrem} - 1000 \text{ mrem} = 4000 \text{ mrem}$  before exceeding NRC limits. Therefore  $4000 \text{ mrem} / (380 \text{ mrem/hr}) = 10.5 \text{ hours}$
- B: CORRECT: Per OPGP03-ZR-0050, "Radiation Protection Program", Section 6.5.2 the station's AAL for TEDE is 2000 mrem (2 rem). The NRC's annual limit is 5000 mrem (5 rem) per 10 CFR 20.1201.  $5000 \text{ mrem} - 2000 \text{ mrem} = 3000 \text{ mrem}$  before exceeding NRC limits.  $3000 / 380 = 7.89 \text{ hours}$
- C: INCORRECT: If the applicant incorrectly assumed AAL was 3000 mrem then this would give a margin of  $5000 \text{ mrem} - 3000 \text{ mrem} = 2000 \text{ mrem}$  before exceeding NRC limits. Therefore  $2000 / (380) = 5.2 \text{ hrs}$ . Although  $5.2 \text{ hrs} * (380 \text{ mrem/hr}) = 1976 \text{ mrem}$  is less than the NRC limit (lower than choice B), this is not the MAXIMUM number of hours the operator can spend in that field.
- D: INCORRECT: The applicant might confuse AAL for 4 rem (this is the limit for total annual dose that requires both Plant Manager and a Member of the Executive Team to sign for approval on the Personnel Dose Extension Authorization). Then  $5000 - 4000 = 1000 \text{ mrem}$  before exceeding NRC limits. Therefore  $1000 / 380 = 2.6 \text{ hrs}$ . The dose received in the field would be  $2.6 * 380 = 988 \text{ mrem}$  which would be less than the NRC limit but is not the MAXIMUM hours the operator can spend in the field.

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

The student must recall procedural requirements and then perform a calculation.

**Exam Bank No.:** 3093

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 72

In accordance with OPOP08-FH-0009, Core Refueling, which of the following is a task for a Control Room Reactor Operator during refueling operations?

- A. Direct the Refueling Machine Operator to load the next fuel assembly at the proper core location.
- B. Perform a Level 1 Inventory of the Reactor Vessel and Core Alignment Check.
- 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.:** 3093**Source:** New**Modified from****K/A Catalog Number:** G2.3.13

Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high radiation areas, aligning filters, etc.

**RO Importance:** 3.4**Tier:** 3**Group/Category:****10CFR Reference:** 55.41(b)(12)**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:** OPOP08-FH-0009**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as the Reactor Operators will track fuel loading and keep up a core map but they do not direct the operations on the Refueling Machine.,
- B: INCORRECT: Plausible as this is a task in OPOP08-FH-0009, but completed by the Reactor Engineers.
- C: CORRECT: Correct. The Reactor Operator monitors NI response during refueling.
- D: INCORRECT: Plausible as the Reactor Operators plot an ICRR during startups but this is a Reactor Engineering function during refueling.

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

The student must recall knowledge of the refueling procedures.



**Exam Bank No.:** 3063

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 73

In accordance with OPOP01-ZA-0018, "Emergency Operating Procedure User's Guide," which ONE of the following statements is true with respect to CAUTIONS and NOTES?

CAUTIONS and NOTES within an EOP:

- A. that are applicable to the ENTIRE procedure will appear on the Conditional Information Page (CIP).
- B. always PRECEDE the step or steps to which they apply.
- C. are to be reviewed by the Unit Supervisor in full BEFORE beginning with step 1 of the procedure.
- D. that are communicated to the crew will require Three Way Communication to assure the intended message was delivered.

**Answer:** B always PRECEDE the step or steps to which they apply.

**Exam Bank No.:** 3063**Source:** Bank**Modified from** 801**K/A Catalog Number:** G2.4.20

Knowledge of the operational implications of EOP warnings, cautions and notes.

**RO Importance:** 3.8**Tier:** 3**Group/Category:****10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 507.01**Objective Number:** 5

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

**Reference:** 0POP01-ZA-0018**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Cautions and notes that apply to the whole procedure may appear before the first step of the EOP. The applicant must understand that although the CIP contains information OR conditional actions that are applicable to the entire EOP (Section 5.0), 0POP01-ZA-0018 is explicit when it says that CAUTIONS or NOTES that might apply to the entire procedure will be noted before the first step of the EOP.
- B: CORRECT: Per 0POP01-ZA-0018, Section 4.3, CAUTIONS and NOTES always precede a EOP step or steps to which they apply.
- C: INCORRECT: Station procedure requires that the Unit Supervisor SHALL read cautions and notes. It also states that cautions/notes that precede the first step of an EOP may apply to the entire procedure. The applicant must not confuse and combine these two requirements into a non-existent one.
- D: INCORRECT: Conduct of Operations, Chapter 3, Section 3.4.2.1 require that three-way communications shall be used for component manipulation. This is also listed in Section 3.2.1 as a general attribute of effective communication. However, the applicant must know that according to 0POP01-ZA-0018, three-way communication for CAUTIONS/NOTES is NOT required.

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

The student must recall procedural requirements.

**Exam Bank No.:** 3064

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 74

Per OPGP03-ZF-0011, STPEGS Fire Brigade, complete the following:

The Fire Brigade Leader \_\_\_\_\_(1)\_\_\_\_\_ be the Shift Manager.

\_\_\_\_\_(2)\_\_\_\_\_ members of the Fire Brigade SHALL have Safe Shutdown Systems Training.

- A. (1) shall NOT  
(2) ALL
- B. (1) shall NOT  
(2) At least 2
- C. (1) may  
(2) ALL
- D. (1) may  
(2) At least 2

**Answer:** B (1) shall NOT (2) At least 2

**Exam Bank No.:** 3064**Source:** New**Modified from****K/A Catalog Number:** G2.4.25

Knowledge of fire protection procedures.

**RO Importance:** 3.3**Tier:** 3**Group/Category:****10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 201.29**Objective Number:** 53714

DESCRIBE the procedural requirements of PGP03-ZF-0018, Fire Protection System Functionality Requirements, concerning minimum equipment required for operability and compensatory actions required for operability and compensatory actions required when equipment is inoperable.

**Reference:** 0PGP03-ZF-0011**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as Part 1 is correct and and it is plausible that knowledge of the Safe Shutdown systems would be required for all members.
- B: CORRECT: Per ZF-0011, the SM can NOT be the FBL, and at least 2 members of the 5 member Fire Brigade must be qualified on Safe Shutdown Systems.
- C: INCORRECT: Plausible as the SM does fulfill the Emergency Director role and other leadership positions and it is plausible that knowledge of the Safe Shutdown systems would be required for all members.
- D: INCORRECT: Plausible as the SM does fulfill the Emergency Director role and other leadership positions. Part 2 is correct.

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

The student must recall procedural requirements.

**Exam Bank No.:** 3065

**Last used on an NRC exam:** 2021

**RO Sequence Number:** 75

Unit 1 is at 100% power.

A loss of all control room annunciators occurs.

In accordance with OPOP04-AN-0001, the crew will....

- A. take the unit offline immediately.
- B. take the unit offline within the next hour.
- C. maintain the current power level unless a power reduction is required per Technical Specifications.
- D. maintain the current power level and suspend LCO actions that require a mode change until annunciators are restored.

**Answer:** C Maintain the current power level unless a power reduction is required per Technical Specifications.

**Exam Bank No.:** 3065**Source:** Bank**Modified from** 2779**K/A Catalog Number:** G2.4.32

Knowledge of operator response to loss of all annunciators.

**RO Importance:** 3.6**Tier:** 3**Group/Category:****10CFR Reference:** 55.41(b)(10)**STP Lesson:** LOT 505.01**Objective Number:** 6

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

**Reference:** OPOP04-AN-0001**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible if the applicant believes it is safer to have the unit offline quickly.
- B: INCORRECT: Plausible if applicant thinks that TS 3.0.3 applies which requires action to be taken within 1 hour to place the unit in a MODE where the LCO doesn't apply.
- C: CORRECT: Per OPOP04-AN-0001, Loss of Control Room Annunciator Alarms, Step 5.0 the only time the plant should change power during this event should be to comply with Technical Specifications. Otherwise they should maintain current plant conditions until the annunciators are restored.
- D: INCORRECT: This particular action is only taken when all 4 AFW pumps are rendered inoperable per Technical Specification 3.7.1.2. The wording is very similar to the actions in the station's procedure. The key difference is that the station procedure instructs operators to comply with TS and reduce power in order to comply. The AFW TS Action requires operators to hold power steady until one pump is restored.

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

The student must recall procedural requirements.

## RO QUESTION 18 - REFERENCE

OPOP05-EO-EC11

LOSS OF EMERGENCY COOLANT RECIRCULATION

REV. 20

PAGE 4 OF 35

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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\_\_\_ 5 MONITOR Containment Spray Requirements (Suction From RWST):

\_\_\_ a. Containment spray pump suction - ALIGNED TO RWST

a. IF containment spray pump suction aligned to sump, THEN GO TO Step 6.

-----

\_\_\_ b. DETERMINE number of containment spray pumps required from table:

RWST Level	Containment Pressure	NUMBER OF RCFCs RUNNING	NUMBER OF CONTAINMENT SPRAY PUMPS REQUIRED
GREATER THAN 75,000 gallons	GREATER THAN 56.5 psig	All Available	2
	BETWEEN 6.5 psig and 56.5 psig	0 OR 1	2
		2 OR 3	1
		4, 5 OR 6	0
	LESS THAN 6.5 psig	As Needed	0
BETWEEN 33,000 and 75,000 gallons	GREATER THAN 6.5 psig	1, 2 OR 3	2
		4, 5 OR 6	0
		LESS THAN 6.5 psig	As Needed
LESS THAN 33,000 gallons	N/A	N/A	0

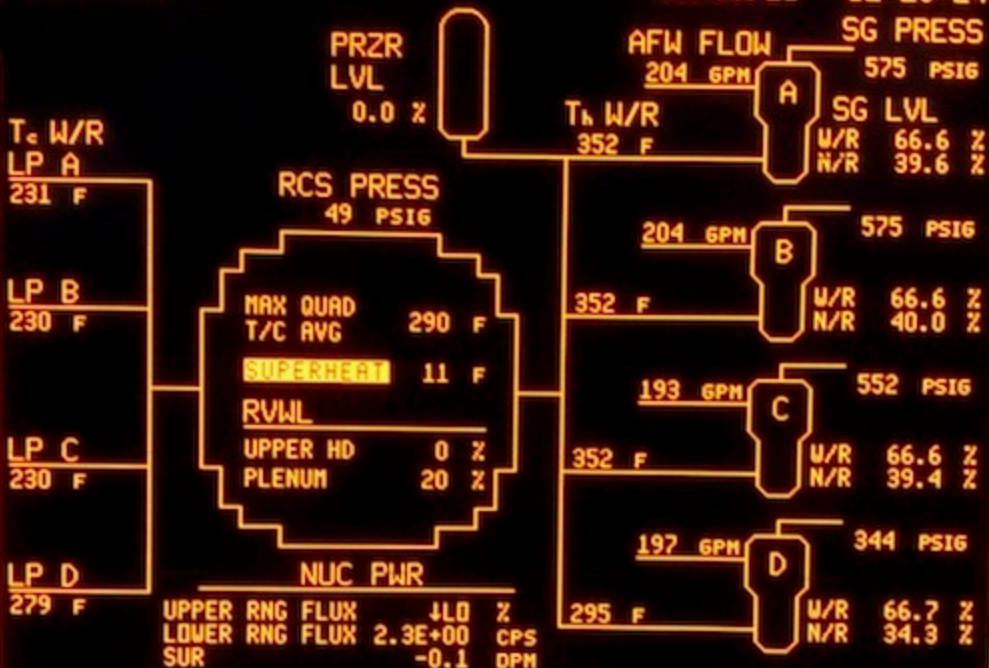
\_\_\_ c. Containment spray pumps running - EQUAL TO NUMBER REQUIRED

c. Manually OPERATE containment spray pumps.

-----

QUAL PAMS

05/30/21 12:20:24



CNTMT

TK LVL 10<sup>3</sup> GAL

SEC RAD

uCi/cc

PRESS	26.2	PSIG	RUST	44	SG	BLUDN	STM LN
EXTD RNG PRESS	26	PSIG	AFWST	472	A	3.3E-04	2.3E-02
WTR LVL W/R RUCT HI	54	IN			B	3.3E-04	1.8E-02
NDRM SUMP LVL	72	IN			C	3.2E-04	2.0E-02
SEC SUMP LVL	12	IN			D	3.5E-04	2.0E-02
H <sub>2</sub> CONC	4LD	%					
HI RNG RAD	2.3E+00	R/HR					

S  H  I   
ALM

APC STATUS

A-OK B-OK C-OK D-OK N-OK

DPU-A DPU-C

OK OK

SOURCE

SECNDRY PRIMARY

DPU-A



**Exam Bank No.:** 3094**Last used on an NRC exam:** 2021**SRO Sequence Number:** 76

Given the following:

- Unit 2 is at 100% power.
- CCP 2B is operating, CCP 2A is available.
- 4M08-F-3, CHG FLOW HI/LO alarm, is LIT.
- The crew determines that CCP 2B has tripped.

The Unit Supervisor directs the Primary RO to start CCP 2A in accordance with 0POP09-AN-04M8.

- CCP 2A will NOT start.

The valve alignments that should be performed are \_\_\_\_\_(1)\_\_\_\_\_.

AND

The Unit Supervisor should direct entry into \_\_\_\_\_(2)\_\_\_\_\_ to mitigate the plant condition.

FCV-205 – Charging Flow Control Valve

FV-0011 – Letdown Orifice Header Isolation Valve

- A. (1) FCV-0205 CLOSED AND  
FV-0011 CLOSED  
(2) 0POP04-CV-0004, Loss of Normal Letdown
- B. (1) FCV-0205 CLOSED AND  
FV-0011 OPEN  
(2) 0POP05-EO-EO00, Reactor Trip or Safety Injection
- C. (1) FCV-0205 CLOSED AND  
FV-0011 OPEN  
(2) 0POP04-CV-0004, Loss of Normal Letdown
- D. (1) FCV-0205 CLOSED AND  
FV-0011 CLOSED  
(2) 0POP05-EO-EO00, Reactor Trip or Safety Injection

**Answer:** A (1) FCV-0205 CLOSED AND FV-0011 CLOSED (2) 0POP04-CV-0004, Loss of Normal Letdown

**Exam Bank No.:** 3094      **Source:** Modified      **Modified From** 391

**K/A Catalog Number:** APE022 AA2.01      Ability to determine and interpret the following as they apply to the Loss of Reactor Coolant Makeup: Charging pump problems.

**SRO Importance:** 3.7      **Tier:** 1      **Group/Category:** 1

**10CFR Reference or SRO Objective:** 55.43(b)(5)

**SRO Justification:**

**STP Lesson:** LOT 201.06      **Objective Number:** T20106

Demonstrate a thorough understanding of the theory and fundamental concepts of design, operation, monitoring, and evaluation of Control Room equipment, controls, and instrumentation contained within the Chemical and Volume Control System.

**Reference:** LOT 201.06, TS 3.4.6.2, OPOP04-AN-04M8, CVCS Big Notes

**Attached Reference**  **Attachment:**

**NRC Reference Req'd**  **Attachment:**

**Distractor Justification**

- A: CORRECT: When neither charging pump will start, FV-0011 and FCV-0205 must both be closed, and the crew will respond via OPOP04-CV-0004.
- B: INCORRECT: Plausible since FCV-0205 is closed and with confusion over FV-0011, and if the student believes that a loss of both charging pumps would require a reactor trip.
- C: INCORRECT: Plausible since FCV-0205 is closed and with confusion over FV-0011. This is the correct procedure to use.
- D: INCORRECT: Plausible as this is the correct valve alignment, and if the student believes that a loss of both charging pumps would require a reactor trip.

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

**Justification:**

The student must assess plant conditions and determine the actions to take and what procedure to use.

**Exam Bank No.:** 3066

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 77

Per OPOP05-EO-FRS1, when CET temperature exceeds a minimum of \_\_\_\_\_ and rising, the crew is required to go to SAMG-SAG-1, Main Control Room Severe Accident Guideline Initial Response (with Emergency Director concurrence).

- A. 567°F
- B. 708°F
- C. 1200°F
- D. 2000°F

**Answer:** C 1200°F

**Exam Bank No.:** 3066**Source:** New**Modified From****K/A Catalog Number:** EPE029 G2.1.23 Ability to perform specific system and intergrated plant procedures during all modes of plant operation.**SRO Importance:** **Tier:** 1 **Group/Category:** 1**10CFR Reference or SRO Objective:** 55.43(b)(5)**SRO Justification:****STP Lesson:** LOT 504.28 **Objective Number:** T50428

Discuss the basis for each step, note and caution for 0POP05-EO-FRS1, Response to Nuclear Power Generation - ATWS.

**Reference:** 0POP05-EO-FRS1, LOT 502.03, Slide 20**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: This is the temperature for initiating RCS bleed and feed in 0POP05-EO-FRH1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, but not for this procedural transition.
- B: INCORRECT: This is the temperature at which the crew is required to notify TSC in preparation for a timely transition to SAMG-SAG-1, but it is not the temperature at which the procedural transition is made.
- C: CORRECT: Per FRS1 Step 18, IF core exit temperatures GREATER THAN 1200°F AND rising, THEN PERFORM the following: NOTIFY the TSC and the Emergency Director. IF the Emergency Director concurs, THEN GO TO SAMG-SAG-1, MAIN CONTROL ROOM SEVERE ACCIDENT GUIDELINE INITIAL RESPONSE, Step 1.
- D: INCORECT: Plausible as this is the upper temperature limit for clad damage in the lesson plan.

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

The student must recall entry conditions for a procedure.

**Exam Bank No.:** 3097

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 78

Per the Steam Generator Tube Rupture Design Basis requirements, complete the following:

A required operator action during the Steam Generator Tube Rupture response is to \_\_\_\_\_(1)\_\_\_\_\_.

The preferred SGTR recovery procedure is \_\_\_\_\_(2)\_\_\_\_\_.

- A. (1) control RCS pressure and charging flow to minimize break flow to the secondary  
(2) backfill
- B. (1) control RCS pressure and charging flow to minimize break flow to the secondary  
(2) steam dumps
- C. (1) lower ruptured SG pressure to minimize break flow to the primary system  
(2) backfill
- D. (1) lower ruptured SG pressure to minimized break flow to the primary system  
(2) steam dumps

**Answer:** A (1) control RCS pressure and charging flow to minimize break flow to the secondary (2) backfill

**Exam Bank No.:** 3097**Source:** New**Modified From****K/A Catalog Number:** EPE038 G2.2.38 Steam Generator Tube Rupture: Knowledge of conditions and limitations in the facility license.**SRO Importance:** 4.5 **Tier:** 1 **Group/Category:** 1**10CFR Reference or SRO Objective:** 55.43(b)(5)**SRO Justification:****STP Lesson:****Objective Number:** 92107

Discuss automatic actions expected to occur on entry conditions for the referenced procedure.

**Reference:** LOT 501.21 Student Handout, page 15. DBD, Steam Generator Tube Rupture, LOT 504.16 Powerpoint Presentation, Slide 12**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: A required operator action during a SGTR is to control RCS pressure and inventory to avoid more RCS break flow to the secondary. Backfill is the preferred method to minimize secondary radiation release.
- B: INCORRECT: Plausible as Part 1 is correct and steam dumps is another recovery method that can be selected, but not the preferred method.
- C: INCORRECT: Plausible as SG pressure can be adjusted procedrually but not the required operator action in the design basis. Part 2 is correct.
- D: INCORRECT: Plausible as SG pressure can be adjusted procedrually but not the required operator action in the design basis and steam dumps is another recovery method that can be selected, but not the preferred method.

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

The student must determine a procedural method for controlling plant conditions and determine which is the best method to recover from a SGTR.

**Exam Bank No.:** 3084

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 79

Unit 2 is experiencing STABLE SG tube leakage of 90 gpd.

Per OPOP04-RC-0004, Steam Generator Tube Leakage, Addendum 6, Recommended Response Times, the MAXIMUM allowed time to be in MODE 3 is \_\_\_\_ (1) \_\_\_\_.

Upon opening the Reactor Trip Breakers, the unit experiences an unisolable Main Steam Line Break outside of Containment.

When transitioning from OPOP05-EO-E000, Reactor Trip or Safety Injection, the SRO will FIRST enter \_\_\_\_ (2) \_\_\_\_.

- A. 1) 3 hours  
2) OPOP05-EO-E020, Faulted Steam Generator Isolation
- B. 1) 24 hours  
2) OPOP05-EO-E020, Faulted Steam Generator Isolation
- C. 1) 3 hours  
2) OPOP05-EO-E030, Steam Generator Tube Rupture
- D. 1) 24 hours  
2) OPOP05-EO-E030, Steam Generator Tube Rupture

**Answer:** B 1) 24 hours 2) OPOP05-EO-E020, Faulted Steam Generator Isolation

**Exam Bank No.:** 3084

**Source:** New

**Modified From**

**K/A Catalog Number:** 040 2.4.2

Knowledge of system setpoints, interlocks and automatic actions associated with EOP entry conditions.

**SRO Importance:** Tier: 1 **Group/Category:** 1

**10CFR Reference or SRO Objective:** 55.43(b)(5)

**SRO Justification:**

**STP Lesson:** LOT 504.13

**Objective Number:** 92145

Given the procedure and step which directs entry to POP05-EO-EO20, STATE the plant conditions which required this entry.

**Reference:** 0POP05-EO-EO00, 0POP05-EO-EO20, 0POP05-EO-EO30

**Attached Reference**  **Attachment:**

**NRC Reference Req'd**  **Attachment:**

**Distractor Justification**

- A: INCORRECT: Part 1 incorrect but plausible because this would be the required time to be in MODE 3 if leak rate were increasing >30gpd/hr. Part 2 correct.
- B: CORRECT: Per Addendum 6 of the SGTL AOP, tube leakage >75 gpd and stable requires the plant to be in MODE 3 within 24 hours.
- C: INCORRECT: Part 1 and Part 2 are incorrect (see explanation above)
- D: INCORRECT: Part 1 is correct, incorrect and part 2 is incorrect (see explanation above).

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

**Justification:**

The student must assess the conditions and determine the proper course of procedural action.



**Exam Bank No.:** 3025**Last used on an NRC exam:** 2021**SRO Sequence Number:** 80

The unit tripped from 100% power due to a Loss of ALL Feedwater Flow.

- The crew completed 0POP05-EO-EO00, Reactor Trip or Safety Injection.
- They are currently performing 0POP05-EO-ES01, Reactor Trip Response, Step 3, to verify adequate feed flow.
- ONLY AFW Pump 12 is available and it is supplying 580 gpm to SG “B.”
- All SG NR levels are off-scale low.

Based on this information, the Unit Supervisor will ...

- A. remain in 0POP05-EO-ES01 and establish AFW flow to greater than or equal to 3 SGs.
- B. remain in 0POP05-EO-ES01 and continue to Step 4, Verify all control rods are fully inserted.
- C. transition to 0POP05-EO-FRH1, Response to Loss of Secondary Heat Sink, and restore one SG NR level to greater than 14%.
- D. transition to 0POP05-EO-FRH1, trip the RCPs and initiate bleed and feed.

**Answer:** A remain in 0POP05-EO-ES01 and establish AFW flow to greater than or equal to 3 SGs.

**Exam Bank No.:** 3025**Source:** Bank**Modified From** 2284**K/A Catalog Number:** 54 AA2.06

Ability to determine and interpret the following as they apply to the Loss of Main Feedwater (MFW): AFW adjustments needed to maintain proper T-ave, and S/G level.

**SRO Importance:**      **Tier:** 1      **Group/Category:** 1**10CFR Reference or SRO Objective:** 55.43(b)(5)**SRO Justification:****STP Lesson:** LOT 504.05      **Objective Number:** 92167

Given a list of plant parameters determine if the plant is being maintained in a stable plant condition consistent with 0POP05-EO-ES01.

**Reference:** LOT 504.05, LOT 202.28, 0POP05-EO-FRH1, 0POP05-EO-ES01, 0POP05-EO-FO03, 0POP02-AF-0001**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: ES01, Step 3 has the operators align feed flow to 3 SGs. The given conditions will not provide a red path for entry into FRH1.
- B: INCORRECT: Plausible because 576 gpm AFW flow exists, but flow must be established to at least 3 SGs.
- C: INCORRECT: Plausible based on EO00, Step 7, RNO will direct the user to FRH1 since the student may think this choice is correct based on Step 27 which asked to Check for Adequate Secondary Heat Sink.
- D: INCORRECT: Plausible based on EO00, Step 7, RNO which will lead you to FRH1 since student may think with one generator receiving flow, a RED path exists since flow is 580 gpm and no indication for NR level exists.

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

The student must decide how to proceed given a set of conditions.

**Exam Bank No.:** 3098

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 81

Unit 2 was at 100% power when a seismic event occurred.

- A LOCA and a Loss of Offsite Power occurred as a result.
  - Containment pressure is 22 psig and rising.
  - AFW Pump 22 is providing a maximum of 510 gpm.
  - NO other AFW pumps are available.
  - ALL SG NR levels are 16% and lowering.
  - OPOP05-EO-EO00, Reactor Trip or Safety Injection, Step 7, VERIFY Total AFW Flow, is in progress.
  - Addendum 5, Verification of SI Equipment Operation, is NOT complete.

Based on these conditions, the Unit Supervisor will...

- A. immediately transition to OPOP05-EO-FRH1, Response to Loss of Secondary Heat Sink.
- B. immediately transition to OPOP05-EO-FRZ1, Response to High Containment Pressure.
- C. remain in OPOP05-EO-EO00 until step 15, CHECK If RCS Is Intact, THEN transition to OPOP05-EO-EO10, Loss of Reactor or Secondary Coolant, THEN immediately transition to OPOP05-EO-FRH1, Response to Loss of Secondary Heat Sink.
- D. remain in OPOP05-EO-EO00 until step 15, CHECK If RCS Is Intact, THEN transition to OPOP05-EO-EO10 Loss of Reactor or Secondary Coolant, THEN immediately transition to OPOP05-EO-FRZ1, Response to High Containment Pressure.

**Answer:** A immediately transition to OPOP05-EO-FRH1, Response to Loss of Secondary Heat Sink

**Exam Bank No.:** 3098**Source:** New**Modified From****K/A Catalog Number:** W/E05 EA2.1

Ability to determine and interpret the following as they apply to the Loss of Secondary Heat Sink: Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

**SRO Importance:** 4.4    **Tier:** 1    **Group/Category:** 1**10CFR Reference or SRO Objective:** 55.43(b)(5)**SRO Justification:****STP Lesson:** LOT 504.33**Objective Number:** 83106

Describe the indications and anticipated readings used to determine that the Secondary Heat Sink is adequate.

**Reference:** LOT504.33, 0POP05-EO-EC00, 0POP05-EO-FO03, 0POP05-EO-FO05, 0POP05-EO-FRH1, 0POP05-EO-FRZ1, 0POP02-AF-0001

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

- A: CORRECT: With adverse containment values applicable, an adequate heat sink does not exist. AFW flow is less than 576 gpm, and SG levels are all below 34% NR. With these conditions, Step 7 is a direct transition to 0POP05-EO-FRH1, even if Addendum 5 has not been completed.
- B: INCORRECT: Plausible as containment pressure is above 9.5 psig, and with a misunderstanding of prioritization of EOP and FR procedures.
- C: INCORRECT: Plausible as this is a normal procedural flow path for monitoring and entering CSF procedures.
- D: INCORRECT: Plausible as this is a normal procedural flow path for monitoring and entering CSF procedures.

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

The student must assess the given conditions and determine a procedural flow path.

**Exam Bank No.:** 3085

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 82

Unit 1 is in a refueling outage. All required equipment is operable.

IF Source Range Instrument N-32 becomes INOPERABLE, then fuel movement \_\_\_\_ (1) \_\_\_\_ continue.

The OPERABILITY of SR Instrument N-31 \_\_\_\_ (2) \_\_\_\_ dependent on EDG 11 operability.

- A. 1) can  
2) is NOT
- B. 1) can NOT  
2) is NOT
- C. 1) can  
2) is
- D. 1) can NOT  
2) is

**Answer:** A 1) can 2) is NOT

**Exam Bank No.:** 3085**Source:** New**Modified From****K/A Catalog Number:** APE032 G2.2.25 Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety.**SRO Importance:** **Tier:** 1 **Group/Category:** 2**10CFR Reference or SRO Objective:** 55.43(b)(2)**SRO Justification:****STP Lesson:** LOT 503.01 **Objective Number:** 2

Given the topic or title of a specification in the Technical Specifications, 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/requirement.

**Reference:** Table 3.8-1, TS Basis Document, TS 3.9.2**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: Per TS 3.9.2, if a SR NI is lost, an Extended Range NI may be substituted on a one for one basis. The audible count rate would need to be switched to the operable SR NI. In refueling, the SR instrument does NOT need to be backed by an operable DG per Table 3.8-1 in TS.
- B: INCORRECT: Plausible as other action statements do required stopping fuel movement. Part 2 is correct.
- C: INCORRECT: Plausible as Part 1 is correct and DG availability is required for other equipment in different modes of operation.
- D: INCORRECT: Plausible as other action statements do required stopping fuel movement and DG availability is required for other equipment in different modes of operation.

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

The student must assess the conditions given and determine the TS implications.

**Exam Bank No.:** 3088

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 83

Unit 1 is at 100%.

- CCP 1A is in service.
- RT-8039, Letdown Failed Fuel Monitor, has an ALERT alarm and is reading 40 uCi/cc and slowly rising.
- Chemistry is analyzing/sampling the RCS.

In accordance with OPOP04-RC-0001, High Reactor Coolant System Activity, which of the following actions is to be completed FIRST?

- A. Perform a Reactor Shutdown to MODE 3.
- B. Start CCP 1B and raise letdown flow to 250 gpm.
- C. Place the Reactor Coolant Purification Pump in service.
- D. Declare an Unusual Event.

**Answer:** D Declare an Unusual Event

**Exam Bank No.:** 3088**Source:** New**Modified From****K/A Catalog Number:** APE076 AA2.03 Ability to determine and interpret the following as they apply to the High Reactor Coolant Activity: RCS Radioactivity level meter**SRO Importance:** **Tier:** 1 **Group/Category:** 2**10CFR Reference or SRO Objective:** 55.43(b)(5)**SRO Justification:****STP Lesson:** LOT 505.01 **Objective Number:** 7

Ability to determine and interpret the following as they apply to the High Reactor Coolant Activity: RCS radioactivity level meter.

**Reference:** OPOP04-RC-0001, 0ERP01-ZV-IN01**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as RT-8039 counts are rising but a shutdown is only required with readings greater than 300 uCi/ml.
- B: INCORRECT: Plausible as letdown demins would assist, but 230 gpm is the limit for letdown flow and a second CCP can NOT be started in MODE 1.
- C: INCORRECT: Plausible as the initial actions are to reduce activity but the RCPP is only used in MODE 5.
- D: CORRECT: Per RC-0001, the NOTE preceding Step 1.0 indicates that RT-8039 reading greater than 30 uCi/ml is an Unusual Event. This will be done first.

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

The student must assess the given condition and determine the first required procedural action.



**Exam Bank No.:** 3089

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 84

The crew is performing 0POP05-EO-FRZ3, Response to High Containment Radiation Level.

While placing the Containment Carbon Units in service, the operators will ensure that \_\_\_\_\_(1)\_\_\_\_\_ in order to \_\_\_\_\_(2)\_\_\_\_\_.

- A. (1) ONLY one fan is placed in service  
(2) prevent failure of the carbon filters
- B. (1) ONLY one fan is placed in service  
(2) minimize depletion of the carbon filters
- C. (1) Containment air temperature is less than 200°F  
(2) minimize depletion of the carbon filters
- D. (1) Containment air temperature is less than 200°F  
(2) prevent failure of the carbon filters

**Answer:** D (1) Containment air temperature is less than 200°F (2) prevent failure of the carbon filters

**Exam Bank No.:** 3089**Source:** New**Modified From****K/A Catalog Number:** W/E16 G2.4.18 Knowledge of the specific bases for EOPs**SRO Importance:** **Tier:** 1 **Group/Category:** 2**10CFR Reference or SRO Objective:** 55.43(b)(1)**SRO Justification:****STP Lesson:** LOT 504.42 **Objective Number:** 3

State/identify the indications and anticipated readings used to determine when the containment atmospheric filtration system should be placed in service.

**Reference:** 0POP05-EO-FRZ3 and EOPT for FRZ3**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible with confusion over the procedural requirements.
- B: INCORRECT: Plausible as the applicant may incorrectly think that placing one fan in service is a limitation. However, the note states that the limit is one fan per train. Additionally, the Technical Guidelines document state that the system will only facilitate operation of one fan per train. There is no mention about the effect on the carbon filter.
- C: INCORRECT: Plausible as the first part is correct. However, the applicant may incorrectly believes this help conserve carbon inventory. The temperature limit it to prevent degradation/failure of the filters.
- D: CORRECT: Per 0POP05-EO-FRZ3, Step 2, the operators are required to check containment air temperature is less than 200°F. STPEGS EOP Technical Guidelines for 0POP05-EO-FRZ3 states that the reason for this limit is to prevent degradation and/or failure of the carbon filters.

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

The student must recall procedural information.

**Exam Bank No.:** 3067

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 85

The crew is performing 0POP05-EO-EC01, Loss of All AC Power Recovery Without SI Required, Step 23: DETERMINE Cooldown Method, with the following conditions:

- Train “A” ESF 4.16 KV Bus is powered from its associated ESF DG.
- Train “B” ESF 4.16 KV Bus is de-energized.
- Train “C” ESF 4.16 KV Bus is powered from the Emergency Transformer.
- IA is lost to containment and cannot be restored.
- RCP Seal Return line is isolated and cannot be restored.

Which of the following actions should the US direct NEXT?

- A. Remain in 0POP05-EO-EC01, Loss of All AC Power Recovery Without SI Required, and try to restore power to 13.8KV and 4.16 KV AC busses.
- B. Transition to 0POP05-EO-ES02, Natural Circulation Cooldown, Step 1 and borate to Cold Shutdown boron concentration.
- C. Transition to 0POP05-EO-ES05, Natural Circulation Cooldown Without Letdown, Step 1 and try to restore letdown capability.
- D. Transition to 0POP03-ZG-0007, Plant Cooldown, upon starting an RCP.

**Answer:** C Transition to 0POP05-EO-ES05, Natural Circulation Cooldown Without Letdown. Step 1 and try to restore letdown capability.

**Exam Bank No.:** 3067**Source:** Bank**Modified From** 2576**K/A Catalog Number:** W/E09 EA2.1

Ability to determine and interpret the following as they apply to the (Natural Circulation Operations); Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

**SRO Importance:**      **Tier:** 1      **Group/Category:** 2**10CFR Reference or SRO Objective:** 55.43(b)(5)**SRO Justification:****STP Lesson:** LOT 504.47      **Objective Number:** 1

State/identify the conditions under which 0POP-EO-ES05 is entered.

**Reference:** 0POP05-EO-EC01, LOT 504.23**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as some EOPs have conditions that would prevent operators from exiting the procedure, this isn't the case. Applicant might be tempted to wait until power is restored to all ESF busses and maintain plant in a stable condition per Step 22. However, the restoration of at least one ESF bus (in this case two ESF busses) will allow the operator to continue to the next actions in the EOP (choosing cooldown method).
- B: INCORRECT: Plausible as the RNO column for step 23 gives the operators two methods on cooling down the plant via natural circulation. The applicant must know that letdown will be unavailable since Instrument Air is lost.
- C: CORRECT: The initial conditions establish that RCPs are not available since the seal return line is isolated. As a result, the procedure directs the operator to the RNO column which determines if natural circulation is to be carried out with letdown established or not. Since Instrument Air is lost this has the effect of making letdown unavailable. The operator would be forced to use 0POP05-EO-ES05, Natural Circulation Cooldown Without Letdown,
- D: INCORRECT: Plausible if applicant does not realize that RCPs are not available.

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

The student must assess the conditions given and determine the correct procedure transition.

**Exam Bank No.:** 3068

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 86

The crew is performing 0PSP06-RC-0001, Pressurizer Heater Capacity Verification. Complete the following concerning this procedure.

The ability of Pressurizer Heater Groups 1A and 1B to automatically actuate on low pressurizer pressure \_\_\_\_ (1) \_\_\_\_ required for operability during the performance of this test.

If, during this test, Pressurizer Heater Group 1A is declared INOPERABLE, then Pressurizer Heater Group 1D \_\_\_\_ (1) \_\_\_\_ be used as a substitute to satisfy Technical Specifications until Pressurizer Heater Group 1A is restored to an OPERABLE status.

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

**Answer:** D (1) is NOT (2) can NOT

**Exam Bank No.:** 3068**Source:** New**Modified From****K/A Catalog Number:** 010 G2.2.12 Knowledge of surveillance procedures.**SRO Importance:** **Tier:** 2 **Group/Category:** 1**10CFR Reference or SRO Objective:** 55.43(b)(2)**SRO Justification:****STP Lesson:** LOT 503.01 **Objective Number:** 2

Given the topic or title of a specification included in the Technical Specifications, or 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/requirement.

**Reference:** 0PSP06-RC-0001, Technical Specifications**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as this feature does help to maintain pressurizer pressure above DNB limits and with confusion over which Pressurizer Backup Heater Groups are safety related and required by TS.
- B: INCORRECT: Plausible as this feature does help to maintain pressurizer pressure above DNB limits. Part 2 is correct.
- C: INCORRECT: Plausible as Part 1 is correct and with confusion over which Pressurizer Backup Heater Groups are safety related and required by TS.
- D: CORRECT: The low pressurizer pressure automatic start feature is NOT tested during this surveillance and Pressurizer Backup Heater Group D is non-class and cannot be used a substitute for Pressurizer Backup Heater Groups A and B which are required by TS.

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

The student must recall surveillance requirements.

**Exam Bank No.:** 3069

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 87

Unit 1 is at 100% power. The following equipment is out of service for maintenance:

- Auxiliary Feedwater Pump 11
- Standby DG 11
- LHSI Pump 1A
- CCW Pump 1A

A Large Break LOCA occurs. At the same time...

- DP-1204 loses power.
- 4160V Bus E1C feeder breaker trips

Standby DG 13 was started during the OPOP05-EO-EO00, Reactor Trip or Safety Injection, immediate actions from memory.

BEFORE the performance of OPOP05-EO-EO00, Reactor Trip or Safety Injection, Addendum 5 (Verification of SI Equipment Operation), the Unit Supervisor should direct the crew to start...

- A. ECW Pump 1C.
- B. CCW Pump 1C.
- C. Containment Spray 1C.
- D. TDAFWP 14.

**Answer:** A ECW Pump 1C

**Exam Bank No.:** 3069**Source:** New**Modified From****K/A Catalog Number:** 013 A2.04

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

**SRO Importance:** **Tier:** 2 **Group/Category:** 1**10CFR Reference or SRO Objective:** 55.43(b)(2)**SRO Justification:****STP Lesson:** LOT 503.01 **Objective Number:** 3

DETERMINE the applicable Technical Specification and/or Technical Requirements Manual (TRM) Limiting Conditions for Operation (LCOs) and the required action (s) to be taken.

**Reference:** 0POP02-AE-0004, 0POP04-VA-0001, Technical Specifications**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: There is an "A" train outage in progress. The loss of DP-1204 will prevent the "C" train equipment from sequencing on. As part of the immediate actions from memory and 0POP01-ZA-0018, the operator is allowed to start the associated ECW pump to protect ESF DG 13 from running with no cooling water.
- B: INCORRECT: Plausible if the student believes that 2 CCW pumps are required immediately. The appropriate place to start CCW Pump 1C would be in Addendum 5.
- C: INCORRECT: Plausible if the student believes all 3 CS pumps are required for a Large Break LOCA. 2 would already be running, which meets procedural requirements.
- D: INCORRECT: Plausible if the student forgets that TDAFWP is not part of the sequence.

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

The student must determine a course of action determined by the conditions presented in the question.



**Exam Bank No.:** 3070

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 88

The crew is discharging WMT 1E per OPOP02-WL-0100, Liquid Waste Release.

- The RM-11 alarms.
- The RO reports that RT-8038, LWPS Monitor #1, indicated DARK BLUE.

Complete the following:

With NO operator action, the WMT 1E discharge will \_\_\_\_\_(1)\_\_\_\_\_.

The Shift Manager can recommence this discharge if \_\_\_\_\_(2)\_\_\_\_\_.

- A. (1) continue  
(2) continuous surveys of the discharge line are performed during the discharge
- B. (1) continue  
(2) 2 independent samples of the tank are analyzed prior to the discharge
- C. (1) be automatically secured  
(2) continuous surveys of the discharge line are performed during the discharge
- D. (1) be automatically secured  
(2) 2 independent samples of the tank are analyzed prior to the discharge

**Answer:** D 1) be atomatically secured 2) 2 independent samples of the tank are analyzed prior to the discharge

**Exam Bank No.:** 3070**Source:** New**Modified From****K/A Catalog Number:** 073 A2.02

Ability to (a) predict the impacts of the following malfunctions or operations on the PRM system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Detector failure.

**SRO Importance:**      **Tier:** 2      **Group/Category:** 1**10CFR Reference or SRO Objective:** 55.43(b)(1)**SRO Justification:****STP Lesson:** LOT 202.41      **Objective Number:** 18

STATE which Radiation Monitors are covered by Tech Specs, the Technical Requirements Manual (TRM), or the Offsite Dose Calculation Manual (ODCM) AND DESCRIBE general requirements of the specification to include components or admin requirements, time frames and the bases.

**Reference:** 0PSP07-WL-LDP1/2, 0POP02-WL-0100, ODCM**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as flow continues but is diverted back to the original tank and the discharge line is verified to have a proper valve lineup by the ODCM but no surveys are taken and the discharge line is verified to have a proper valve lineup by the ODCM but no surveys are taken.
- B: INCORRECT: Plausible as flow continues but is diverted back to the original tank and Part 2 is correct.
- C: INCORRECT: Plausible as Part 1 is correct and the discharge line is verified to have a proper valve lineup by the ODCM but no surveys are taken.
- D: CORRECT: With RT-8038 inoperable due to an OPERATE FAILURE, the discharge would be automatically secured. The ODCM requires 2 independent samples analyzed prior to discharge.

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

The student must recall interlocks and procedural requirements.

**Exam Bank No.:** 3081**Last used on an NRC exam:** 2021**SRO Sequence Number:** 89

Unit 1 is at 100% power.

- 8M03-D-3, IAS HDR PRESS LO, is alarming.
- The crew has entered 0POP04-IA-0001, Loss of Instrument Air.

The crew is required to manually trip the reactor when Instrument Air header pressure drops less than \_\_\_\_ (1) \_\_\_\_\_. The crew will then \_\_\_\_ (2) \_\_\_\_\_.

- A. 1) 67 psig  
2) transition out of 0POP04-IA-0001 and into 0POP05-EO-EO00, Reactor Trip or Safety Injection
- B. 1) 60 psig  
2) transition out of 0POP04-IA-0001 and into 0POP05-EO-EO00, Reactor Trip or Safety Injection
- C. 1) 60 psig  
2) perform 0POP05-EO-EO00, Reactor Trip or Safety Injection, and continue with 0POP04-IA-0001 when possible
- D. 1) 67 psig  
2) perform 0POP05-EO-EO00, Reactor Trip or Safety Injection, and continue with 0POP04-IA-0001 when possible

**Answer:** C (1) 60 psig (2) perform 0POP05-EO-EO00, Reactor Trip or Safety Injection, and continue with 0POP04-IA-0001 when possible.

**Exam Bank No.:** 3081      **Source:** New      **Modified From**

**K/A Catalog Number:** 078 G2.4.2      Knowledge of system setpoints, interlocks, and automatic actions associated with EOP entries.

**SRO Importance:** 4.6    **Tier:** 2    **Group/Category:** 1

**10CFR Reference or SRO Objective:** 55.43(b)(5)

**SRO Justification:**

**STP Lesson:** LOT 504.05      **Objective Number:** 2

Given a list of conditions, state/identify which ones would require a reactor trip or safety injection.

**Reference:** 0POP04-IA-0001, Conduct of Operations, 0POP04-AN-08M3

**Attached Reference**  **Attachment:**

**NRC Reference Req'd**  **Attachment:**

**Distractor Justification**

- A: INCORRECT: Plausible as 67 psig is also mentioned in 0POP04-IA-0001 as where FRVs start to drift closed and POP05s have the highest priority to be performed.
- B: INCORRECT: Plausible as this is the correct pressure for conducting a reactor trip and POP05s have the highest priority to be performed.
- C: CORRECT: Initially the alarm means that IA Pressure has fallen below 90 psig which directs operators to 0POP04-IA-0001, The CIP requires a reactor trip below 60 psig IA pressure. The CIP also states that the actions of 0POP04-IA-0001 are to continue as resources permit.
- D: INCORRECT: Plausible as 67 psig is also mentioned in 0POP04-IA-0001 as where FRVs start to drift closed. This is the correct usage of the procedures together.

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

**Justification:**

The student must assess conditions and determine a course of action.

**Exam Bank No.:** 3071

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 90

Unit 1 is at 100%.

- Operators have been unable to start Reactor Containment Fan Coolers (RCFC) 11A and 12B.
- RCFC Fans 12A, 11B, 11C, 12C are running.

RCFC Inlet Air Temperatures read as follows:

PARAMETER	LOCATION	INSTR	00-02	12-14	LIMIT	TECHNICAL SPECIFICATION	MODE	NOTE
RCFC INLET TEMPS	11A	TI-9664	100		°F (2)	N/A	N/A	(1) RECORD ALL INSTRUMENTS. (2) IF RCFC INLET TEMP IS COLDER THAN RCFC OUTLET TEMP BY MORE THAN 5°F ON AN IDLE RCFC FAN OR AN RCFC INLET TEMP IS LESS THAN 50°F ON AN IDLE RCFC, THEN VERIFY OPERABILITY BY VISUAL INSPECTION OF THE BACKDRAFT DAMPER. (Reference 6.18.7)
	12A	TI-9673	114					
	11B	TI-9661	111					
	12B	TI-9667	100					
	11C	TI-9670	112					
	12C	TI-9676	113					
RCB AVG AIR TEMP	N/A	CALC (1)			≤ 110°F	3.6.1.5	1,2,3,4	(1) AVG THE FOUR HIGHEST OPERATING INLET TEMPS. ON RUNNING RCFCs. IF THE HIGHEST IS ≤ 110°F, THEN RECORD SAT.

In this condition:

LCO 3.6.2.3, Containment Cooling Systems, is NOT satisfied: Restore at least one RCFC fan to OPERABLE status within \_\_\_\_ (1) \_\_\_\_.

AND

LCO 3.6.1.5, Air Temperature, \_\_\_\_ (2) \_\_\_\_ satisfied

- A. 1) 1 hour  
2) is NOT
- B. 1) 1 hour  
2) IS
- C. 1) 7 days  
2) is NOT
- D. 1) 7 days  
2) IS

**Answer:** C 1) 7 days 2) is NOT

**Exam Bank No.:** 3071**Source:** New**Modified From****K/A Catalog Number:** 103 G2.2.42

Ability to recognize system parameters that are entry-level conditions for Technical Specifications.

**SRO Importance:** **Tier:** 2 **Group/Category:** 1**10CFR Reference or SRO Objective:** 55.43(b)(2)**SRO Justification:****STP Lesson:** LOT 202.33**Objective Number:** 27

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:** Technical Specification 3.6.2.3, 0PSP03-ZQ-0028**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible if the student believes 2 fans requires the 1 hour action statement and Part 2 is correct.
- B: INCORRECT: Plausible if the student believes 2 fans requires the 1 hour action statement and if the student uses all 6 RCFCs to calculate average temperature.
- C: CORRECT: The RCFC fans are considered in three groups (A, B, C) with 2 fans in each group. LCO 3.6.2.3 requires that 2 groups each have 2 fans operable and the 3rd group have 1 fan operable. With any one fan inoperable (11A), no action statement would need to be entered. However, an additional fan inoperable in a separate group (12B) would require an entry into Action A) restore one group to operable status in 7 days. Action B) is not required to be entered since C group can be considered operable along with either B group or A group. Containment temperature is required to be 110F or less per LCO 3.6.1.5. This is determined by the arithmetic average of at least 4 RCFC inlet temperatures. Per 0PSP03-ZQ-0028, "Operators Logs" the average used are from the running RCFC fans. In this case it would be the temperatures from 12A, 11B, 11C, and 12C. The average in this case works out to be  $(114+111+112+113)/4=112.5$  which means the TS is NOT met.
- D: INCORRECT: Plausible as Part 1 is correct and if the student uses all 6 RCFCs to calculate average temperature.

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

The student must perform a calculation, assess information, and apply Technical Specifications.

**Exam Bank No.:** 3026**Last used on an NRC exam:** 2021**SRO Sequence Number:** 91

The unit is at 100% power. Fuel movement is in progress in the Spent Fuel Pool.

- Spent Fuel Pool water level is 61'6" and lowering.
- The crew is performing OPOP04-FC-0001, Loss of Spent Fuel Pool Level or Cooling.

Per 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, Spent Fuel Pool 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.:** 3026**Source:** Bank**Modified From** 2703**K/A Catalog Number:** 033 A2.03

Ability to (a) predict the impacts of the following malfunctions or operations 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:**      **Tier:** 2      **Group/Category:** 2**10CFR Reference or SRO Objective:** 55.43(b)(2)**SRO Justification:****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:** LOT 201.42, 0POP02-FC-0001, 0POP04-FC-0001**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as this is the correct TS LCO action time, but the SFP pump must be secured also.
- 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 as fuel movement must be secured and there are 8 hour action times in TS.
- D: INCORRECT: Plausible as these are the correct actions to take and there are 8 hour action times in TS.

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

The student must assess a situation and apply Technical Specifications.



**Exam Bank No.:** 3027

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 92

The unit is at 100%,

- 7M03-E-7, MAIN COND VACUUM LO, alarms.
- The crew enters OPOP04-CR-0001, Loss of Condenser Vacuum.

Complete the following:

7M03-E-7 in alarm means that the SETPOINT of \_\_\_\_\_(1)\_\_\_\_\_ has been exceeded.

IF the Main Turbine enters the “Restrictive Zone” of Addendum 3, Main Turbine Exhaust Pressure Limitations, the crew will \_\_\_\_\_(2)\_\_\_\_\_.

- A. (1) 24 Inches Hg  
(2) IMMEDIATELY trip the Reactor
- B. (1) 21 Inches Hg  
(2) IMMEDIATELY trip the Reactor
- C. (1) 24 Inches Hg  
(2) Restore Main Turbine Exhaust Pressure to a value outside of the Restrictive Zone within 5 minutes, MAX, otherwise trip the Reactor
- D. (1) 21 Inches Hg  
(2) Restore Main Turbine Exhaust Pressure to a value outside of the Restrictive Zone within 5 minutes, MAX, otherwise trip the Reactor

**Answer:** C 24 Inches HG. Restore Main Turbine Exhaust Pressure to a valve outside of the Restrictive Zone within 5 minutes, MAX, otherwise trip the Reactor.

**Exam Bank No.:** 3027**Source:** Modified**Modified From** 2775**K/A Catalog Number:** 055 G2.2.44

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

**SRO Importance:** **Tier:** 2 **Group/Category:** 2**10CFR Reference or SRO Objective:** 55.43(b)(5)**SRO Justification:****STP Lesson:** LOT 202.25**Objective Number:** 34017

STATE the setpoint for the main condenser vacuum alarm and causes of loss of vacuum and 33957 - GIVEN a plant or system condition, PREDICT the operation of the Condenser Air Removal System.

**Reference:** LOT 202.25, 0POP04-CR-0001, 0POP05-EO-EO00**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as Part 1 is correct, but there is not a requirement to IMMEDIATELY trip the reator.
- B: INCORRECT: Plausible as Part 1 is 21" which is the reactor trip value and Part 2 would be the action at 21" but not the required value here.
- C: CORRECT: Per 7M03-E-7, 24" is the correct sestpoint for >80% power, and the action is to restore vacuum to a vlaue outside of the Restrictive Zone within 5 minutes, MAX, otherwise trip the reactor.
- D: INCORRECT: Plausible as the Part 2 action is correct, but Part 1 is incorrect and is the reactor trip value of 21".

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

The student must assess conditions and determine a course of action.

**Exam Bank No.:** 3100**Last used on an NRC exam:** 2021**SRO Sequence Number:** 93

Unit 1 is at 100% power.

- A fuel assembly defect develops and the crew enters OPOP04-RC-0001, High RCS Activity.
- RT-8039, Letdown Failed Fuel Monitor, has rising indications and a YELLOW ALERT alarm in.

The impact of this plant condition is to have higher activity in the \_\_\_\_ (1) \_\_\_\_ flow input to the Gaseous Waste Processing System.

As a result, the Unit Supervisor will direct the crew to lower GWPS flow rate. The GWPS flowrate \_\_\_\_ (2) \_\_\_\_ allowed to be raised based on Dose Equivalent Iodine results received from Chemistry.

- A. (1) VCT  
(2) is NOT
- B. (1) VCT  
(2) is
- C. (1) RHUT  
(2) is NOT
- D. (1) RHUT  
(2) is

**Answer:** B (1) VCT  
(2) is

**Exam Bank No.:** 3100**Source:** New**Modified From****K/A Catalog Number:** 071 A2.02

Ability to (a) predict the impacts of the following malfunctions or operations on the Waste Gas Disposal System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Use of waste gas release monitors, radiation, gas flow rate, and totalizer.

**SRO Importance:** 3.6 **Tier:** 2 **Group/Category:** 2**10CFR Reference or SRO Objective:** 55.43(b)(4)**SRO Justification:****STP Lesson:** LOT 505.01**Objective Number:** 92109

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

**Reference:** 0POP04-RC-0001**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as this is the correct tank and if the student believes it would be conservative to maintain the lower value of gas flow from the VCT.
- B: CORRECT: 0POP04-RC-0001 addresses high RCS activity. The majority waste gas stream to GWPS is from the VCT and this is the source that is the subject of this procedure. The specific mitigative strategy in RC-0001 lowers WG flow to 0.7 SCFM. Flow may be raised when DEI results are available.
- C: INCORRECT: Plausible as the RHUT would receive letdown flow if a divert signal from the VCT high level was received and if the student believes it would be conservative to maintain the lower value of gas flow from the VCT.
- D: INCORRECT: Plausible as the RHUT would receive letdown flow if a divert signal from the VCT high level was received. Flow may be raised.

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

The student must assess the conditions and determine what is occurring and the strategy to mitigate the occurrence.

**Exam Bank No.:** 3090

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 94

Unit 1 is operating at 100% power.

Chemistry has reported the following primary sample results:

- Chloride concentration is 1000 ppb
- Fluoride concentration is 160 ppb

Complete the following:

Per TRM 3.4.7, \_\_\_\_\_(1)\_\_\_\_\_.

Per OPGP03-ZO-0012, Plant Systems Chemistry Control, the Shift Manager will direct the crew to \_\_\_\_\_(2)\_\_\_\_\_.

(References provided)

- A. (1) Both Chloride and Fluoride exceed Action Level 2 but are less than Action Level 3;  
(2) Restore chemistry to less than Action Level 2 in 24 hrs or commence shutdown
- B. (1) Both Chloride and Fluoride exceed Action Level 3  
(2) Commence an immediate and orderly shutdown and cooldown to <250F
- C. (1) Both Chloride and Fluoride exceed Action Level 3;  
(2) Restore chemistry to less than Action Level 2 in 24 hrs or commence shutdown
- D. (1) Both Chloride and Fluoride exceed Action Level 2 but are less than Action Level 3  
(2) Commence an immediate and orderly shutdown and cooldown to <250F

**Answer:** A (1) Both Chloride and Fluoride exceed Action Level 2 but are less than Action 3; (2) Restore chemistry to less than Action Level 2 in 24 hrs or commence shutdown.

**Exam Bank No.:** 3090**Source:** Modified**Modified From** 1809**K/A Catalog Number:** 2.1.34

Knowledge of primary and secondary plant chemistry limits.

**SRO Importance:** **Tier:** 3 **Group/Category:****10CFR Reference or SRO Objective:** 55.43(b)(2)**SRO Justification:****STP Lesson:** LOT 803.09**Objective Number:** 2

Describe the effects that out of specification chemistry parameters can have upon plant operation.

**Reference:** TRM, 0PGP03-ZO-0012, 0PCP01-ZA-0038**Attached Reference**  **Attachment:** TRM 3.4.7, 0PGP03-ZO-0012**NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: STP's Technical Requirements Manual (TRM) 3.4.7 Table 3.4-2 show that both chloride and fluoride exceed Action Level 2 but is still less than Action Level 3. Procedure 0PGP03-ZG-0012, Steps 5.8.2.3 and 5.8.2.4 requires that actions are taken to restore within Action 2 in 24 hours. If this unsuccessful then the operators are to commence shutdown.
- B: INCORRECT: Neither of the valves exceed Action Level 3. Plausible if the applicant mistakenly concludes that both values are over Action Level 3 limits, then the actions per the station procedures are appropriate.
- C: INCORRECT: Neither of the values exceed Action Level 3. Plausible as the second part of the answer is correct regarding actions to be taken by the operators.
- D: INCORRECT: Plausible as the first part of the answer is correct since both chloride and fluoride exceed Action Level 2 but are less than Action Level 3. However, action to be taken by the operators is incorrect.

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

The student must assess the given information and apply TS and decide on procedural actions.

**Exam Bank No.:** 3095

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 95

Unit 1 is responding to a Loss of All AC Power.

- The Unit Supervisor is directing the actions of 0POP05-EO-EC00, Loss of All AC Power.

Per Conduct of Operations, during the response the Unit Supervisor

\_\_\_\_(1)\_\_\_\_\_ assist the crew by placing control board circuit breaker in Pull-to-Lock when required, and

\_\_\_\_(2)\_\_\_\_\_ assist the crew by silencing alarms if necessary

- A. (1) should  
(2) can
- B. (1) should  
(2) can NOT
- C. (1) should NOT  
(2) can
- D. (1) should NOT  
(2) can NOT

**Answer:** C (1) should NOT (2) can

**Exam Bank No.:** 3095**Source:** New**Modified From****K/A Catalog Number:** G2.1.39

Knowledge of conservative decision making practices

**SRO Importance:** 4.3 **Tier:** 3 **Group/Category:****10CFR Reference or SRO Objective:** 55.43(b)(6)**SRO Justification:****STP Lesson:** LOT 507.01**Objective Number:** 33188

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

**Reference:** Conduct of Operations, Chapter 2, Step 12.1.2-3, Step 6.2, 2nd bullet**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as in different circumstances, the Unit Supervisor can manipulate equipment. The Unit Supervisor may always silence alarms.
- B: INCORRECT: Plausible as in different circumstances, the Unit Supervisor can manipulate equipment and with confusion about alarm protocol..
- C: CORRECT: The Unit Supervisor in a command and control position can not manipulate components unless it is a special circumstance and approved by the Shift Manager. In this instance, he cannot. However, he can silence alarms from the panels.
- D: INCORRECT: Plausible as Part 1 is correct and with confusion over alarm protocol.

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

The student must recall Conduct of Operations information.



**Exam Bank No.:** 3072

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 96

In accordance with OPGP03-ZA-0101, Shutdown Risk Assessment, who gives FINAL APPROVAL of the SRA Report?

- A. Shutdown Risk Assessment Leader
- B. Atypical Condition Evaluator
- C. Plant General Manager
- D. General Supervisor, Outage Management

**Answer:** C Plant General Manager

**Exam Bank No.:** 3072

**Source:** Bank

**Modified From** 2362

**K/A Catalog Number:** G2.2.18

Knowledge of the process for managing maintenance activities during shutdown operations, such as risk assessments, work prioritization, etc.

**SRO Importance:**      **Tier:** 3      **Group/Category:**

**10CFR Reference or SRO Objective:** 55.43(b)(3)

**SRO Justification:**

**STP Lesson:** LOT 507.02      **Objective Number:** 10

DESCRIBE the requirements of the procedure for Shutdown Risk Assessment, OPGP03-ZA-0101 to include Purpose and Scope, Definitions, Evolutions, and Reporting Requirements covered by the procedure. (SRO ONLY).

**Reference:** OPGP03-ZA-0101

**Attached Reference**  **Attachment:**

**NRC Reference Req'd**  **Attachment:**

**Distractor Justification**

- A: INCORRECT: Plausible since the Shutdown Risk Assessment Leader is part of the process of reviewing a SRAG Report but does not give final approval.
- B: INCORRECT: Plausible since the Atypical Condition Evaluator is part of the process of reviewing a SRAG Report but does not give final approval.
- C: CORRECT: The Plant General Manager is responsible for final approval of the SRA Report per OPGP03-ZA-0101, "Shutdown Risk Assessment" Section 3.1.
- D: INCORRECT: Plausible since the General Supervisor is part of the process of reviewing a SRAG Report but does not give final approval.

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

**Justification:**

The student must recall procedural requirements.

**Exam Bank No.:** 3073

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 97

Per OPOP01-ZO-0011, Operability, Functionality, and Reportability Guidance:

While an Operability Determination (OD) is being performed, the SSC that is the subject of the OD is considered \_\_\_\_\_(1)\_\_\_\_\_.

An Operability Determination must be performed when a deficient condition meets \_\_\_\_ (2) \_\_\_\_ of the Three Required Entry Criteria.

Criterion 1: The deficient condition must affect a TS SSC installed in an operating unit.

Criterion 2: The deficient condition must have a functional impact on the SSC. This includes the ability to perform required functions under postulated, off normal design conditions.

Criterion 3: The functional impact of the deficient condition must be substantive (non-trivial)

- A. (1) inoperable  
(2) ONE only
- B. (1) inoperable  
(2) ALL THREE
- C. (1) operable  
(2) ONE only
- D. (1) operable  
(2) ALL THREE

**Answer:** D (1) operable (2) ALL THREE

**Exam Bank No.:** 3073**Source:** New**Modified From****K/A Catalog Number:** G2.2.37

Ability to determine operability and/or availability of safety related equipment.

**SRO Importance:**      **Tier:** 3      **Group/Category:****10CFR Reference or SRO Objective:** 55.43(b)(1)**SRO Justification:****STP Lesson:****Objective Number:** 50143

DESCRIBE the information required to be entered into the Operability Assessment System per OPOP01-ZO-0011, Operability and Functionality Guidance.

**Reference:** OPOP01-ZO-0011**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: INCORRECT: Plausible as the equipment would have an unusual condition but would not require declaring the equipment inoperable and if the student believes that any one of these criteria would be sufficient to enter the OD Process.
- B: INCORRECT: Plausible as the equipment would have an unusual condition but would not require declaring the equipment inoperable. Part 2 is correct.
- C: INCORRECT: Plausible as Part 1 is correct and if the student believes that any one of these criteria would be sufficient to enter the OD Process.
- D: CORRECT: Per OPGP03-ZO-0011, if an OD is directed, the equipment is considered operable during the time the OD is being conducted. To perform an OD, the equipment must meet all 3 of the given criteria.

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

The student must recall procedural requirements.

**Exam Bank No.:** 3074

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 98

Preparations are being made for a batch radioactive liquid release.

Per 0PSP07-WL-LDP1, Liquid Effluent Permit:

- The \_\_\_(1)\_\_\_ is the final approval required for the liquid effluent discharge.
- The Waste Monitor Tank to be released must be in \_\_\_(2)\_\_\_ recirculation.

- A. 1) Chemical Technician Supervisor  
2) Short Path
- B. 1) Chemical Technician Supervisor  
2) Long Path
- C. 1) Shift Manager  
2) Long Path
- D. 1) Shift Manager  
2) Short Path

**Answer:** C 1) Shift Manager 2)Long Path

**Exam Bank No.:** 3074      **Source:** Bank      **Modified From**

**K/A Catalog Number:** G2.3.6      Ability to approve release permits.

**SRO Importance:** 3.6      **Tier:** 3      **Group/Category:**

**10CFR Reference or SRO Objective:** 55.43(b)(4)

**SRO Justification:**

**STP Lesson:** LOT 507.01      **Objective Number:** 5

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

**Reference:**

**Attached Reference**  **Attachment:**

**NRC Reference Req'd**  **Attachment:**

**Distractor Justification**

- A: INCORRECT: Plausible since the Chem Tech Supervisor does review the package prior to performing a released. However, their approval is before the Shift Manager (who is the final approval). The applicant may also incorrectly think the tank needs to be in short path for the discharge, but this is only the case when a sample is taken from the tank for analysis at the beginning of the procedure.
- B: INCORRECT: Plausible since the second half of the answer is correct however the final approval is incorrect for reasons stated in Choice A.
- C: CORRECT: Procedure 0PSP07-WL-LDP1, "Liquid Effluent Permit" Step 5.26 requires that the package be forwarded to the Shift Manager for signature in order to conduct the discharge. The step prior requires that the Chemical Technician Supervisor conducts an independent review. Step 5.16 requires that the WMT to be released is in Long Path Recirculation. Additionally, step 5.12 requires that any WMT to be released that is in Short Path must be placed in Long Path Recirculation.
- D: INCORRECT: Plausible as the final approval is correct, but recirculation path is incorrect for the reasons stated in Choice A.

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

**Justification:**

The student must recall procedural requirements.

**Exam Bank No.:** 3028

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 99

Assuming all plant systems function as designed, which ONE of the following Critical Safety Functions would degrade to a Red Path condition during a postulated Uncontrolled Depressurization of ALL Steam Generators?

- A. Integrity (P)
- B. Subcriticality (S)
- C. Core Cooling (C)
- D. Inventory (I)

**Answer:** A Integrity (P)

**Exam Bank No.:** 3028**Source:** Bank**Modified From** LOT 12 Q31**K/A Catalog Number:** G2.4.21

Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.

**SRO Importance:**      **Tier:** 3      **Group/Category:** 4**10CFR Reference or SRO Objective:** 55.43(b)(5)**SRO Justification:****STP Lesson:** LOT 502.03**Objective Number:** 50357

Use the Critical Safety Function Status Trees to EVALUATE the state of each Critical Safety Function.

**Reference:** lot 502.03, 0POP01-ZA-0018, 0POP05-EO-FO06, 0POP05-EO-FO02**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: An uncontrolled depressurization of all SGs would cause a rapid cooldown in excess of 100F/1 hour warranting a RED path entry on Integrity.
- B: INCORRECT: Plausible because when a cooldown is occurring, positive reactivity is being added but not the concern here.
- C: INCORRECT: Plausible if the effect on core cooling of a rapid cooldown is misunderstood.
- D: INCORRECT: Plausible as inventory loss would occur on a rapid cooldown but not the priority here.

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

The student must determine a course of action from a specific plant event.



**Exam Bank No.:** 3091

**Last used on an NRC exam:** 2021

**SRO Sequence Number:** 100

UNIT 2 Steam Generator 2A has experienced a Steam Generator Tube Rupture AND has a Steam Generator PORV stuck open. UNIT 2 Shift Manager is the Emergency Director.

Which of the following statements is correct per 0ERP01-ZV-SH01, Shift Manager?

The UNIT 1 Shift Manager...

- A. will activate ENRS (Emergency Notification Response System) under direction IF the ENS Communicator is unavailable.
- B. will approve Protective Action Recommendations.
- C. may authorize use of KI.
- D. may approve exposures in excess of 10CRF20 limits.

**Answer:** A Will activate ENRS (Emergency Notification Response System) under direction IF the ENS Communicator is unavailable.

**Exam Bank No.:** 3091**Source:** New**Modified From****K/A Catalog Number:** G2.4.40

Knowledge of SRO responsibilities in emergency plan implementation.

**SRO Importance:**      **Tier:** 3      **Group/Category:****10CFR Reference or SRO Objective:** 55.43(b)(3)**SRO Justification:****STP Lesson:** LOT 803.14**Objective Number:** 4

Discuss the duties and responsibilities of the Shift Manager as delineated in 0ERP01-ZV-SH01, Shift Manager.

**Reference:** 0ERP01-ZV-SH01**Attached Reference**  **Attachment:****NRC Reference Req'd**  **Attachment:****Distractor Justification**

- A: CORRECT: In the case of a declared emergency, the shift manager of the affected unit will be responsible for responding to it. The shift manager of the unaffected units has responsibilities as well. In this case, Unit 1 is unaffected and is responsible for activating ENRS communicator if unavailable. All the other listed would fall under Unit 2 Shift Manager's responsibility.
- B: INCORRECT: This action is non-delegable and shall be done by the Emergency Director. Plausible as applicant may incorrectly conclude that the Emergency Director is Unit 1 Shift Manager since the release would affect the entire site per 0ERP01-ZF-SH01, Section 2.3. However, that does not apply in this case therefore Unit 2 Shift Manager is the Emergency Director.
- C: INCORRECT: Plausible as student may incorrectly think this is the correct answer for reasons stated in Choice B.
- D: INCORRECT: Plausible as student may incorrectly think this is the correct answer for reasons stated in Choice B.

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

The student must evaluate conditions and implement the Emergency Plan as the ED.

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.7 CHEMISTRY

LIMITING CONDITION FOR OPERATION

---

3.4.7 The Reactor Coolant System chemistry shall be maintained within the limits specified in Table 3.4-2.

APPLICABILITY: At all times.

ACTION:

MODES 1, 2, 3, and 4:

- a. With any one or more chemistry parameter in excess of its Action Level 2 Limit but within its Action Level 3 Limit, restore the parameter to within its Action Level 2 Limit within 24 hours or perform the actions required by OPGP03-ZO-0012, "Plant Systems Chemistry Control"; and
- b. With any one or more chemistry parameter in excess of its Action Level 3 Limit, perform the actions required by OPGP03-ZO-0012.

At All Other Times:

With the concentration of either chloride or fluoride in the Reactor Coolant System in excess of its Action Level 2 Limit for more than 24 hours or in excess of its Action Level 3 Limit, reduce the pressurizer pressure to less than or equal to 500 psig, if applicable, and perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the Reactor Coolant System; determine that the Reactor Coolant System remains acceptable for continued operation prior to increasing the pressurizer pressure above 500 psig or prior to proceeding to MODE 4.

SURVEILLANCE REQUIREMENTS

---

4.4.7 The Reactor Coolant System chemistry shall be determined to be within the limits by analysis of those parameters at the frequencies specified in Table 4.4-3.

3/4.4 REACTOR COOLANT SYSTEM

TABLE 3.4-2  
CHEMISTRY LIMITS

<u>PARAMETER</u>	<u>ACTION LEVEL 2 LIMIT</u>	<u>ACTION LEVEL 3 LIMIT</u>
Dissolved Oxygen*	< 0.10 ppm	≤ 1.00 ppm
Chloride	< 0.15 ppm	≤ 1.50 ppm
Fluoride	≤ 0.15 ppm	≤ 1.50 ppm

\*Limit not applicable with  $T_{avg}$  less than or equal to 250°F.

3/4.4 REACTOR COOLANT SYSTEM

TABLE 4.4-3  
CHEMISTRY LIMITS SURVEILLANCE REQUIREMENTS

<u>PARAMETER</u>	<u>SAMPLE AND ANALYSIS FREQUENCY</u>
Dissolved Oxygen*	At least once per 7 days
Chloride	At least once per 7 days
Fluoride	At least once per 7 days

\*Not required with  $T_{avg}$  less than or equal to 250°F.

STI 34669480	<b>OPGP03-ZO-0012</b>		<b>Rev. 22</b>	Page 1 of 17
<b>Plant Systems Chemistry Control</b>				
Quality	Non Safety-Related	Usage: <b>Available</b>	Effective Date: 5/30/2018	
C. Wire	I. Duncanson	N/A	Chemistry	
PREPARER	TECHNICAL	USER	COGNIZANT DEPT.	

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**Plant Systems Chemistry Control****1.0 Purpose and Scope**

- 1.1 This procedure establishes a program for plant systems chemistry control at the South Texas Project Electric Generating Station (STPEGS) in accordance with Technical Specification 6.8.3.c.
- 1.2 This procedure meets the intent of (Nuclear Energy Institute) NEI 97-06, *Steam Generator Program Guidelines* and NEI 03-08, *Guideline for the Management of Materials Issues*, for control of primary and secondary systems chemistry.
- 1.3 This procedure defines responsibilities for systems chemistry control.
- 1.4 This procedure establishes action level requirements associated with out of specification chemistry parameters.

**2.0 Discussion**

- 2.1 The objective of the maintenance of appropriate water chemistry conditions in the plant is to minimize corrosion of system components and, in the long term, permit added plant availability.
- 2.2 The Plant Systems Chemistry Control Program at STPEGS shall be based on the limits, action levels, and sampling frequencies contained in the Electric Power Research Institute (EPRI) guidelines for primary water chemistry and secondary water chemistry.
- 2.3 Revisions to the EPRI guidelines should be incorporated into procedures within the timeframe established in the Implementation Letter issued upon publication of the revised EPRI Guidelines.
- 2.4 Parameters are of two types:
  - 2.4.1 Control Parameters: those parameters that have a demonstrated relationship to component/system degradation. They are used to initiate corrective actions, power reduction, or plant shutdown. Corrective actions shall be taken if the recommended values or ranges of these parameters are exceeded.
  - 2.4.2 Diagnostic Parameters: those parameters employed to monitor program effectiveness, identify programmatic problems, or assist in problem diagnosis.
- 2.5 Action level requirements described in Section 5 of this procedure apply to Control Parameters designated by 0PCP01-ZA-0038, Plant Chemistry Specifications. Action Level requirements do not apply to Diagnostic Parameters or to Control Parameters with no Action Level values listed in 0PCP01-ZA-0038.
- 2.6 Guidance for corrective actions necessary to return chemistry parameters to within specification are contained in 0PCP01-ZA-0038, Plant Chemistry Specifications.

**Plant Systems Chemistry Control**

- 2.7 The programmatic requirements of Technical Specification 6.8.3.c, NEI 97-06, and NEI 03-08 are met by the following procedures:
- 2.7.1 Control Parameters and Sampling Frequency, T.S. 6.8.3.c.1:
- 0PCP01-ZA-0014, Chemistry Scheduling and Data Management
  - 0PCP01-ZA-0038, Plant Chemistry Specifications
  - 0PGP03-ZE-0004, Plant Surveillance Program
- 2.7.2 Measurement of Parameters, T.S. 6.8.3.c.2:
- The following laboratory QC procedures:
    - 0PCP01-ZQ-0006, Quality Assurance for Chemistry Analytical Programs
    - 0PCP01-ZQ-0007, Instrument Quality Control Protocol for Radioanalysis Instruments
  - The chemical analysis procedures and work instructions
  - The instrument operating procedures and work instructions
- 2.7.3 Identification of Sampling Points, T.S. 6.8.3.c.3:
- The chemistry sampling procedures
- 2.7.4 Recording and Management of Data, T.S. 6.8.3.c.4:
- Conduct of Chemistry Chapter 5 – Chemistry Data Evaluation
  - 0PCP01-ZA-0011, Chemistry Logs and Reports
- 2.7.5 Corrective Actions for Off-Normal Parameters, T.S. 6.8.3.c.5:
- 0PCP01-ZA-0038, Plant Chemistry Specifications
- 2.7.6 Authority for Interpretation of Data and Initiation of Corrective Actions, T.S. 6.8.3.c.6:
- Conduct of Chemistry Chapter 5 – Chemistry Data Evaluation
  - 0PGP03-ZO-0012, Plant Systems Chemistry Control



**Plant Systems Chemistry Control****3.0 Notes and Precautions**

- 3.1 Chemistry personnel are expected to maintain a continuous awareness of plant chemistry and to identify to Operations any adverse conditions along with recommended corrective actions. Operations is expected to consider the impact of plant manipulations on plant chemistry and take appropriate actions upon notification of degraded chemistry conditions.
- 3.2 Plant systems shall be operated with the intent to maintain chemistry parameters within specifications listed in 0PCP01-ZA-0038, Plant Chemistry Specifications, or as defined by the Chemistry Manager for parameters not listed in the procedure.
- 3.3 Technicians or Operators noting parameters exceeding specification values shall notify Chemistry Supervision and/or the Shift Manager as appropriate. Prompt communication of degraded plant chemistry is critical so that corrective action initiation is not unnecessarily delayed.
- 3.4 Out-of-specification chemistry parameters associated with Technical Specification (T.S.) or Technical Requirements Manual (TRM) limits shall be reported to the Shift Manager immediately. The Shift Manager shall make system operability and Limiting Condition of Operation (LCO) Action determinations.
- 3.5 Out-of-specification sample results or online instrumentation readings should be, when practical, confirmed by a backup sample and analysis. An out-of-specification result may be substantiated by corroborating evidence from other analyses, other online instrument readings, observed system trends or expected system response to plant transients.

**Plant Systems Chemistry Control****4.0 Responsibilities****4.1 Chemistry**

- 4.1.1 Participates in establishing plant-specific responses to abnormal chemistry conditions at all Action Levels.
- 4.1.2 Recommends the limits for control and diagnostic parameters.
- 4.1.3 Responsible for monitoring the chemistry conditions of plant systems and process fluids. Recommends action, as necessary, to maintain parameters within the limits set forth in 0PCP01-ZA-0038, Plant Chemistry Specifications.
- 4.1.4 Responsible for the collection and analysis of routine samples.
- 4.1.5 Responsible for the collection and analysis of special samples at the request of other divisions.
- 4.1.6 Responsible for the recording and distribution of analysis results.
- 4.1.7 Responsible for the interpretation of analysis results and the recommendation of corrective actions.
- 4.1.8 Develops operating procedures/guidelines that ensure plant chemistry conditions minimize corrosion of plant components, radiation exposure, and radioactive waste.
- 4.1.9 Monitors key chemical parameters at appropriate intervals to identify any adverse trends or conditions.

**4.2 Operations**

- 4.2.1 Participates in establishing plant-specific responses to abnormal chemistry conditions at all Action Levels.
- 4.2.2 Maintains power operations consistent with chemistry control parameter requirements.
- 4.2.3 Operates plant systems and configures plant components so that chemistry is optimized.
- 4.2.4 Operates chemical feed systems and demineralizers to optimize chemistry.
- 4.2.5 Supports water management as required for varying plant conditions.
- 4.2.6 Initiates action as necessary to maintain system chemistry parameters within the applicable specifications.
- 4.2.7 Notifies Chemistry of plant conditions that may accelerate system and component corrosion. Examples include filling or draining components, non-routine blowdown operations and stagnant conditions without appropriate layup treatment.

**Plant Systems Chemistry Control**

## 4.3 Plant Manager

- 4.3.1 Sets final priorities in assignment of tasks to resolve system chemistry control concerns.

## 4.4 Maintenance

- 4.4.1 Supervises the maintenance of plant equipment as necessary to assure the timely and effective correction of equipment problems affecting plant chemistry conditions.
- 4.4.2 Plan maintenance activities to minimize the period of time that system components are in unfavorable layup conditions.

## 4.5 Systems Engineering

- 4.5.1 Participates in establishing plant-specific responses to abnormal chemistry conditions at all Action Levels.
- 4.5.2 Performs or assists with required technical evaluations of chemistry off-normal conditions.
- 4.5.3 Monitors performance of plant equipment such as pumps, valves, heat exchangers, diesel engines, oil fired boilers, etc., and relates operating concerns to plant chemistry conditions where appropriate.
- 4.5.4 Notifies Chemistry of planned system configurations that may require layup or corrosion control measures. This includes extended plant, system, train or component outages during which components may be susceptible to accelerated corrosion. (IEN 85-56)

## 4.6 Outage Support

- 4.6.1 Notifies Chemistry of planned system configurations that may require layup or corrosion control measures. This includes extended plant, system, train or component outages during which components may be susceptible to accelerated corrosion. (IEN 85-56)

**Plant Systems Chemistry Control**5.0 Procedure

## 5.1 Use of the Plant Chemistry Specifications

- 5.1.1 Procedure 0PCP01-ZA-0038, Plant Chemistry Specifications, lists normal and limit values for individual chemical parameters and designates the parameter as either Control or Diagnostic.
- 5.1.2 Action Levels have been defined for remedial actions to be taken when Control Parameters having Action Levels exceed limits listed in 0PCP01-ZA-0038, Plant Chemistry Specifications.
- 5.1.3 The Action Levels in this procedure are appropriate for protecting system materials, ensuring fuel performance, and controlling radiation field buildup.
- 5.1.4 Action Levels shall not supersede Technical Specification or Technical Requirements Manual actions, but should be used in conjunction with those requirements.
- 5.1.5 The lack of progressive action criteria for many parameters is not intended to imply that remaining outside the normal range is satisfactory. In these cases, other chemical parameters specifically associated with known corrosion conditions are utilized for control.

NOTE

Action Levels are entered in two ways: 1) Upon determination of exceeding a parameter's Action Level value OR; 2) By exceeding the time limit in the lower Action Level.

- 5.1.6 Upon determination of having exceeded an Action Level specification, Action Level steps shall be followed unless a waiver per Section 5.2 is approved for the parameter.

**Plant Systems Chemistry Control**

- 5.2 Chemistry Specification and Action Level Waivers
- 5.2.1 Chemistry parameter specifications and Action Level limits listed in 0PCP01-ZA-0038 MAY be waived if the following criteria have been met:
- 5.2.1.1 A Condition Report is initiated to document the waiver.
- 5.2.1.2 A technical evaluation of the waiver is performed which includes, as appropriate, a 10CFR50.59 screening.
- 5.2.1.3 The waiver is assigned a duration or an interval at which it will be reevaluated.
- 5.2.1.4 Concurrence for the waiver is obtained from the Chemistry Manager.
- 5.2.1.5 For waivers of Control Parameter specifications or Action Levels, concurrence of the Plant Manager is also obtained.
- 5.2.1.6 IF the parameter or Action Level is a *Mandatory* or *Shall* element, as defined by the EPRI PWR Water Chemistry Guidelines, THEN the waiver complies with the current guidance provided in 0PGP03-ZO-0044, Steam Generator Management Program.
- 5.2.2 A waiver may include a new limit at which the parameter would again be considered as out of specification.
- 5.2.3 Parameters with their specifications waived are not required to be identified on reports and log sheets as out of specification. However, an annotation shall be made on the appropriate log sheet or report that a waiver is in effect.

**Plant Systems Chemistry Control**

## 5.3 Significant Chemistry Transient Warranting Reactor Trip

Discussion: A significant chemistry transient (such as a one gallon per minute condenser tube leak while in full CP Bypass) can result in Action Level 3 within minutes of the event initiation. Secondary Plant Systems Action Level 3 is defined as the level beyond which rapid corrosion of a secondary side component will occur over the short term. A reactor shutdown without trip can be performed in approximately 4 hours. In some cases this time frame would result in contamination levels significantly exceeding Action Level 3 thresholds. In these cases reactor trip would be beneficial in minimizing such impurity concentrations, possibly negating the need for cooldown. (Reference 6.22)

5.3.1 The reactor should be tripped if any of the following conditions are met:

- 5.3.1.1 CP fully bypassed (does not include partial bypass) AND Condensate Pump Discharge cation conductivity verified greater than 1.0  $\mu\text{S}/\text{cm}$
- 5.3.1.2 Steam generator sodium, chloride or sulfate greater than 1000 ppb with a corresponding increase in steam generator cation conductivity.
- 5.3.1.3 Steam generator cation conductivity greater than 15  $\mu\text{S}/\text{cm}$  with a corresponding increase in steam generator sodium.

## Plant Systems Chemistry Control

## 5.4 Secondary Plant Systems Action Level 1

5.4.1 Objective: To promptly identify and correct the cause of an out-of-normal value without power reduction.

5.4.2 Implementation: Action Level 1 is instituted when an out-of-normal value is detected.

## 5.4.3 Actions Required:

5.4.3.1 Initiate a Condition Report in accordance with the current station Condition Reporting Program.

5.4.3.2 Implement corrective actions as soon as possible to return parameter to below Action Level 1.

5.4.3.3 IF a parameter is NOT within normal value range (i.e.: < Action Level 1) within:

- 21 days following confirmation of excursion,

OR,

- 20 days following confirmation of excursion, if the Action Level 1 condition was entered as a result of increasing power above 50% while sodium, chloride or sulfate was above the Action Level 1 value and remained above that value for greater than 24 hours after increasing above the 50% power level,

THEN GO TO Action Level 2 for those parameters having Action Level 2 values.

5.4.3.4 For those parameters not having an Action Level 2 value, a technical justification shall be performed for operating in an Action Level 1 condition for an extended period of time.

## Plant Systems Chemistry Control

## 5.5 Secondary Plant Systems Action Level 2

- 5.5.1 Objective: To minimize corrosion by operating at reduced power while corrective actions are taken.
- 5.5.2 Implementation: Action Level 2 is entered when the value of a parameter has reached the threshold beyond which data or engineering judgment indicates that substantial damage could be done to a significant secondary system component in the short term.
- 5.5.3 Actions Required:
- 5.5.3.1 Initiate a Condition Report in accordance with the current station Condition Reporting Program.
- 5.5.3.2 Take action to prepare the plant for a safe, orderly reduction in power to 50% or less and achieve 50% power or less within 24 hours of entering Action Level 2.
- 5.5.3.3 Power reduction may be terminated when the parameter value is no longer in the Action Level 2 condition. Escalation to full power may be resumed once the parameter value is no longer in the Action Level 1 condition.
- 5.5.3.4 IF the parameter remains in the Action Level 1 or Action Level 2 condition for more than 300 hours after entering the Action Level 2 condition, THEN GO TO Action Level 3 for those parameters having Action Level 3 values.
- a. IF Action Level 2 is entered as a result of being in Action Level 1 more than the allotted time listed in Step 5.4.3.3 AND the parameter value has **NOT** entered the Action Level 2 condition, THEN operation at 50% power or less may continue. Escalation to full power can be resumed once the parameter is no longer in the Action Level 1 condition.
- 5.5.3.5 After an Action Level 2 excursion, excluding dissolved oxygen, consideration should be given to further power reduction or taking the plant to hot shutdown to promote removal of the specific contaminant from the steam generators.
- 5.5.3.6 Following an Action Level 2 event, a technical review shall be performed to assess the abnormal water chemistry condition and the possible corrective measures over the short and long terms.



**Plant Systems Chemistry Control**

## 5.6 Secondary Plant Systems Action Level 3

- 5.6.1 Objective: To correct a condition that is expected to result in rapid corrosion of a secondary side component during continued operation. Plant shutdown will minimize impurity ingress and limit exposure of steam generator, turbine, and other secondary materials to corrosive solutions.
- 5.6.2 Implementation: Action Level 3 is instituted when conditions exist that will result in rapid steam generator corrosion and continued operation is not advisable.

NOTE

If Action Level 3 entered due to loss of feedwater hydrazine, then proceed to Step 5.6.4.

## 5.6.3 Actions Required (excluding loss of feedwater hydrazine):

- 5.6.3.1 Initiate a Condition Report in accordance with the current station Condition Reporting Program.

NOTE

Resin intrusion to the secondary system is one specific example that may necessitate cooldown, draining, and flushing of the affected components. (SER 17-89)

- 5.6.3.2 Regardless of the duration of the excursion into Action Level 3, the plant shall be taken to less than 5% power as quickly as safe plant operation permits. The judgment on maintaining the steam generators in a hot condition or progressing to cold shutdown should be based on the corrosion concern imposed by the specific impurity and the most rapid means to effect cleanup.
- 5.6.3.3 Clean up shall continue until normal chemistry values are restored.
- 5.6.3.4 Following an Action Level 3 event, a technical review shall be performed to assess the abnormal water chemistry condition and the possible corrective measures over the short and long terms.

## Plant Systems Chemistry Control

NOTE

## Definitions:

LOSS OF HYDRAZINE FEED: The ratio of hydrazine to feedwater oxygen decreasing to a value of  $< 2$ .

HYDRAZINE FEED RESTORED: The ratio of hydrazine to oxygen in the feedwater increasing to a value of  $\geq 2$ .

## 5.6.4 Actions Required for Loss of Feedwater Hydrazine:

- 5.6.4.1 Initiate a Condition Report in accordance with the current station Condition Reporting Program.
- 5.6.4.2 IF feedwater hydrazine is lost and is not restored within 8 hours, THEN commence a controlled and orderly plant shutdown to cold shutdown ( $RCS \leq 200$  °F) as quickly as safe plant operation permits.

NOTE

During shutdown when plant conditions permit, switching Steam Generator feed source to Auxiliary Feedwater Storage Tank (AFWST) with confirmed hydrazine to oxygen ratio  $\geq 2$  meets 'hydrazine feed restored'.

- 5.6.4.3 IF hydrazine feed is restored at any time, THEN the shutdown may be terminated.
- 5.6.4.4 The plant may return to full power consistent with applicable tables in 0PCP01-ZA-0038.
- 5.6.4.5 A technical review shall be performed to assess the abnormal water chemistry condition and the possible corrective measures over the short and long terms.

**Plant Systems Chemistry Control**

## 5.7 Primary Plant Systems Action Level 1

- 5.7.1 The Action Level 1 value of a parameter represents the range, outside of which data or engineering judgment indicates that long-term system reliability may be affected. Action Level 1 values generally represent limits for normal plant operation.
- 5.7.2 Actions to be taken if a parameter exceeds the Action Level 1 value:
- 5.7.2.1 Initiate a Condition Report in accordance with the current station Condition Reporting Program.
- 5.7.2.2 Efforts should be made to bring the parameter within the appropriate limit within seven (7) days.
- 5.7.2.3 If the parameter has not been restored to the appropriate range within seven (7) days, an engineering evaluation shall be performed and a program of more formal corrective actions instituted. This program may require equipment additions or modification over the long term.

## 5.8 Primary Plant Systems Action Level 2

- 5.8.1 The Action Level 2 value of a parameter represents the value, outside of which data or engineering judgment indicates significant damage could be done to the system in the short term, thereby warranting a prompt correction of the abnormal condition.
- 5.8.2 Actions to be taken if a parameter exceeds Action Level 2 value:
- 5.8.2.1 Initiate a Condition Report in accordance with the current station Condition Reporting Program.
- 5.8.2.2 Efforts should be made to bring the parameter within the appropriate Action Level 2 limit condition within 24 hours.
- 5.8.2.3 If the parameter has not been restored to within the Action Level 2 limit condition within 24 hours of entry into Action Level 2, an orderly unit shutdown should be initiated and the plant should be brought to a cold shutdown condition within the time defined by the associated TRM action, OR if no TRM action applies, as quickly as safe plant operation permits. If chemistry is improved to within the requirements of Action Level 2 prior to plant shutdown, full power operation may be resumed.
- 5.8.2.4 Following an Action Level 2 event, a technical review of the incident shall be performed and appropriate corrective measures taken before the unit is restarted.

**Plant Systems Chemistry Control**

- 5.8.2.5 IF the reactor is subcritical and RCS temperature is > 250 °F AND chloride, sulfate, or fluoride exceeds 150 ppb for 24 hours OR dissolved oxygen exceeds 100 ppb for 24 hours, THEN RCS temperature shall be reduced to < 250 °F as quickly as safe plant operation permits.  
IF the parameter is restored to below 150 ppb for chloride, sulfate, or fluoride; or below 100 ppb for dissolved oxygen, THEN heatup may resume.

**5.9 Primary Plant Systems Action Level 3**

- 5.9.1 The Action Level 3 value of a parameter represents the limit beyond which data or engineering judgment indicates that it is inadvisable to continue to operate the plant.
- 5.9.2 Actions to be taken if a parameter exceeds the Action Level 3 value:
- 5.9.2.1 Initiate a Condition Report in accordance with the current station Condition Reporting Program.
- 5.9.2.2 An orderly unit shutdown should be initiated IMMEDIATELY, with reduction of coolant temperature to < 250 °F as quickly as safe plant operation permits.
- 5.9.2.3 Following an Action Level 3 event, a technical review of the incident shall be performed and appropriate corrective measures taken before the unit is restarted.

**Plant Systems Chemistry Control**

## 5.10 Closed Cooling Water Systems Action Level 1

5.10.1 Action Level 1 denotes a condition where a chemistry parameter is outside its control value limit but no discernible increases in corrosion rates or decreases in system efficiency are expected provided the parameter is returned to within the control value limit within the allowed time.

5.10.2 Actions to be taken if a parameter exceeds the Action Level 1 value:

5.10.2.1 Initiate a Condition Report in accordance with the current station Corrective Action Program.

5.10.2.2 Increase monitoring frequency, if appropriate, as recommended by Chemistry.

NOTE

The 90 day time limit is based on a single control parameter exceeding its control value limit. With more than one control parameter exceeding its control value limit, a negative synergistic effect may result and more aggressive corrective action may be warranted.

5.10.2.3 Return the parameter to within the control value limit within 90 days or proceed to Action Level 2.

## 5.11 Closed Cooling Water Systems Action Level 2

5.11.1 Action Level 2 denotes a condition where a chemistry parameter is outside its control value limit such that the possibility of short term degradation of system materials is a concern.

5.11.2 Actions to be taken if a parameter exceeds the Action Level 2 value:

5.11.2.1 Initiate a Condition Report in accordance with the current station Corrective Action Program.

5.11.2.2 Increase monitoring frequency, if appropriate, as recommended by Chemistry.

5.11.2.3 Return the parameter to within the control value limit within 30 days.

5.11.2.4 IF the parameter cannot be returned to within the control value limit within 30 days, AND system operation is to continue, THEN a risk assessment (Engineering Evaluation) SHALL be performed to determine if continued operation will affect the long term reliability of the system.

**Plant Systems Chemistry Control****6.0** References

- 6.1 South Texas Project Technical Specifications
- 6.2 South Texas Project Technical Requirements Manual
- 6.3 NEI 97-06, Steam Generator Program Guidelines
- 6.4 NEI 03-08, Guideline for the Management of Materials Issues
- 6.5 EPRI 3002000505, PWR Primary Water Chemistry Guidelines
- 6.6 EPRI 1016555, PWR Secondary Water Chemistry Guidelines
- 6.7 EPRI 1007820, Closed Cooling Water Chemistry Guidelines
- 6.8 Westinghouse Guidelines for Secondary Water Chemistry #750-01-00012 AWN
- 6.9 0PCP01-ZA-0011, Chemistry Logs and Reports
- 6.10 0PCP01-ZA-0014, Chemistry Scheduling and Data Management
- 6.11 0PCP01-ZA-0038, Plant Chemistry Specifications
- 6.12 0PCP01-ZQ-0006, Quality Assurance for Chemistry Analytical Programs
- 6.13 0PCP01-ZQ-0007, Instrument Quality Control Protocol for Radioanalysis Instruments
- 6.14 0PGP03-ZE-0004, Plant Surveillance Program
- 6.15 0PGP03-ZO-0044, Steam Generator Management Program
- 6.16 0PGP03-ZX-0002, Condition Reporting Process
- 6.17 0PGP05-ZA-0002, 10CFR50.59 Evaluations
- 6.18 Conduct of Chemistry Chapter 5, Chemistry Data Evaluation
- 6.19 SER 17-89, Resin Intrusion into the Steam Generators
- 6.20 IEN 85-056, Inadequate Environment Control for Components and Systems in Extended Storage or Layup
- 6.21 SGMP-IG-13-01, Interim Guidance Regarding PWR Secondary Water Chemistry Guidelines, Revision 7
- 6.22 CR 12-22679-4, Chemistry Guidance for Tripping the Reactor in the Event of a Significant Condenser Tube Leak with Condensate Polishers Bypassed.

**7.0** Support Documents

- 7.1 None