

**WRITTEN QUESTION DATA SHEET**Source of Question: **NEW**

K/A: 000015/000017 RCP Malfunctions (Loss of RC Flow) / 4

AA2.02-Ability to determine and interpret the following as they apply to the Reactor Coolant Pump Malfunctions (Loss of RC Flow): Abnormalities in RCP air vent flow paths and/or oil cooling system

Tier: 1      Group: 1      SRO Imp: 3.0

Applicable 10CFR55 Section: 43.5 - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. *This exam question meets the criteria for an SRO-only question because the candidate must assess the facility conditions given in the stem and use those conditions to select the appropriate procedures to mitigate the resultant conditions and also recall specific action in AOP-36 for tripping PCPs.*

*Palisades Learning Objective: IOTF\_CK05.0 053, Given Abnormal Operating plant conditions, determine if an immediate, manual Reactor Trip is required without error*

References: AOP-36 step 4.3, EOP-8.0 Section 2.0 entry conditions section 2.0 step 1

Question:

Given the following:

- Plant is performing a Plant cooldown for a forced outage in accordance with GOP-9, "Mode 3  $\geq$  525°F to Mode 4 or Mode 5"
- PCS at 400°F and 750 psia
- PCPs P-50A and P-50C are in operation
- Then, CV-0910, CCW Supply to Containment, spuriously closes and cannot be opened

For the above Plant conditions, which one of the following describes (1) the criteria for tripping P-50A and P-50C, and (2) the procedure that directs tripping PCPs for that criteria?

- a. (1) When more than 10 minutes have elapsed.  
(2) AOP-36, "Loss of Component Cooling,"
- b. (1) When lower seal temperature exceeds 165°F.  
(2) AOP-29, "Primary Coolant Pump Abnormal Conditions."
- c. (1) When more than 10 minutes have elapsed.  
(2) AOP-32, "Loss of Containment Integrity."
- d. (1) When lower seal temperature exceeds 165°F.  
(2) ARP-5, "Primary Coolant Pump Steam Generator and Rod Drives Scheme EK-09 (C-12)."

**DISTRACTOR ANALYSIS**

- a. **CORRECT – AOP-36 step 4.3.b.**
- b. Plausible if the student believes that AOP-29 includes a step to trip PCPs at 165°F on lower seal for these conditions.
- c. Plausible if the student believes AOP-32 applies to this event.
- d. Plausible if the student believes ARP-5 includes step to trip PCPs at 165°F on lower seal for these event conditions.

Level of Knowledge: **HIGH**Difficulty: **3**

**WRITTEN QUESTION DATA SHEET**Source of Question: **NEW**

K/A: 000025 Loss of RHR System / 4

AA2.06-Ability to determine and interpret the following as they apply to the Loss of Residual Heat Removal System: Existence of proper RHR overpressure protection

Tier: 1      Group: 1      SRO Imp: 3.4

Applicable 10CFR55 Section: 43.5 - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. *This exam question meets the criteria for an SRO-only question because the candidate must assess the facility conditions given in the stem and use those conditions to select the action needed to ensure overpressure pressure protection is maintained (knowledge of when to implement attachments and appendices, including how to coordinate these items with procedure steps).*

Palisades Learning Objective: *IOTF\_CK03, Given Abnormal Operating plant conditions, select the applicable Abnormal Operating Procedure to mitigate the event*

References: AOP-30 Attachment 7 and Attachment 6: Option 1, step c.5) and related Basis document

**Question:**

Plant is in MODE 5 when a loss of Shutdown Cooling occurs. The Control Room Team has entered AOP-30, "Loss of Shutdown Cooling." Neither LPSI Pump can be started. The following conditions exist:

- PCS temperature is 175°F and rising
- Reactor Vessel Head is fully tensioned and Pressurizer Manway is installed
- LTOP is in service as PCS overpressure protection

The Control Room Supervisor has decided to utilize the Containment Spray Pump alternate PCS/Core heat removal option per AOP-30.

Which one of the following describes the minimum actions, if any, needed to ensure proper overpressure protection during performance of this alternate heat removal option?

- a. Open at least one PORV.
- b. Open both PZR vent valves MV-PC514 and MV-PC515.
- c. Open either PZR vent valve MV-PC514 or MV-PC515.
- d. No actions are required.

**DISTRACTOR ANALYSIS**

- a. **CORRECT**
- b. Plausible if student believes PZR vent valves are adequate (they are not, refer to caution on AOP-30 Attachment 5).
- c. Plausible – see 'b' above and also student believes only one vent valve is.
- d. Plausible- if student does not recall details of AOP-30 Attachment 6 and believes PORV auto actuation will be sufficient.

Level of Knowledge: **HIGH**

Difficulty: **3**

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**WRITTEN QUESTION DATA SHEET**

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Source of Question: **BANK**

K/A: 000027 Pressurizer Pressure Control System Malfunction / 3

G2.2.38-Knowledge of conditions and limitations in the facility license.

Tier: 1      Group: 1      SRO Imp: 4.5

Applicable 10CFR55 Section: 43.2 - Facility operating limitations in the technical specifications and their bases.

*This exam question meets the criteria for an SRO-only question because the candidate must apply specific knowledge from the basis for LCO 3.4.3 to select the appropriate actions for completing a reactor head soak.*Palisades Learning Objective: IOTF\_CK09.0 009, Given Abnormal Operating plant conditions and control room references, **SELECT** the applicable Technical Specification LCO REQUIRED ACTIONS and COMPLETION TIMESReferences: LCO 3.4.3; SOP-1B step 4.4.1.d

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**Question:**

The Plant is performing a cooldown for a forced outage to repair Control Rod Drive seals. Current conditions are:

- PCS is stable at 125°F (average of qualified CETs) and 250 psia
- Primary Coolant Pumps (PCPs) P-50A and P-50C are operating
- Shutdown Cooling is in-service
- The 3-hour reactor vessel head soak started 30 minutes ago

Then, a loss of Pressurizer Pressure Control occurs and the Control Room team stops all PCPs. Pressurizer pressure control is then restored. Which one of the following describes the required sequence pertaining to completion of the reactor vessel head soak and subsequent cooldown?

- a. 1. Restart PCPs P-50A and P-50C  
2. Complete reactor vessel head soak  
3. Cooldown at or below 40°F/hr
  - b. 1. Restart PCPs P-50A and P-50C  
2. Complete reactor vessel head soak  
3. Cooldown at or below 20°F/hr
  - c. 1. Complete reactor vessel head soak  
2. Cooldown at or below 40°F/hr
  - d. 1. Complete reactor vessel head soak  
2. Cooldown at or below 20°F/hr
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**DISTRACTOR ANALYSIS**

- a. Plausible if student believes PCPs are needed for soak and 40 degree CD rate applies.
  - b. Plausible if student believes PCPs are needed for soak.
  - c. Plausible if student believes 40 degree CD rate still applies after soak.
  - d. **CORRECT**
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Level of Knowledge: **HIGH**Difficulty: **3**

**WRITTEN QUESTION DATA SHEET**Source of Question: **BANK**

K/A: 000038 Steam Gen. Tube Rupture / 3

EA2.15-Ability to determine or interpret the following as they apply to a SGTR: Pressure at which to maintain RCS during S/G cooldown

Tier: 1 Group: 1 SRO Imp: 4.4

Applicable 10CFR55 Section: 43.5 - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. *This exam question meets the criteria for an SRO-only question because the candidate must assess the facility conditions given in the stem and use those conditions to select the appropriate actions for lowering PZR pressure during a SGTR.*

Palisades Learning Objective: TBAF\_E01.01 003, Given Plant conditions involving a Steam Generator Tube Rupture, describe the operator actions necessary to minimize Primary to Secondary leakage

References: EOP-5.0 step 17.1

**Question:**

Given the following:

- A Plant cooldown is in progress due to an S/G tube rupture in the 'A' S/G
- A loss of offsite power occurred coincident with the S/G tube leak
- EOP-5.0, "Steam Generator Tube Rupture Recovery," has been implemented
- PZR pressure is 1100 psia and unable to be lowered due to failure of CV-2117, Pressurizer Auxiliary Spray Valve
- 'A' S/G pressure is 700 psia
- The highest Core Exit Thermocouple temperature is 490°F
- Safety Injection throttling criteria are not met

Which one of the following correctly completes the following statement?

The correct method for lowering PZR pressure is to (1) and the lowest allowable PZR pressure value per EOP-5.0 is (2)?

- a. (1) open PORV Isolation Valves per SOP-1B, "Primary Coolant System - Cooldown," and cycle one PORV to lower PZR pressure  
(2) 780 psia
- b. (1) vent the PZR utilizing the Pressurizer Vent valves per EOP Supplement 39, "Alternate Methods of Reducing PCS Pressure"  
(2) 780 psia
- c. (1) open PORV Isolation Valves per SOP-1B, "Primary Coolant System - Cooldown," and cycle one PORV to lower PZR pressure  
(2) 720 psia
- d. (1) vent the PZR utilizing the Pressurizer Vent valves per EOP Supplement 39, "Alternate Methods of Reducing PCS Pressure."  
(2) 720 psia

**DISTRACTOR ANALYSIS**

- a. **CORRECT** - pressure maintained less than 940 psia, > 25° sub-cooled, and within 50 psid of isolated S/G (preferred).
- b. Plausible if the student believes that EOP-5.0 directs this as the method for lowering pressure.
- c. Plausible if the student does not account for the 25°F subcooling requirement of EOP supplement 1.
- d. Plausible for a combination of 'b' and 'c'.

Level of Knowledge: **HIGH**Difficulty: **4**

**WRITTEN QUESTION DATA SHEET**Source of Question: **NEW**

K/A: CE/E05 Excessive Steam Demand / 4

EA2.2-Ability to determine and interpret the following as they apply to the (Excess Steam Demand): Adherence to appropriate procedures and operation within the limitations in the Facility's license and amendments.

Tier: 1 Group: 1 SRO Imp: 4.2

Applicable 10CFR55 Section: 43.2 - Facility operating limitations in the technical specifications and their bases.

*This exam question meets the criteria for an SRO-only question because the candidate must apply specific knowledge from LCO 3.4.3 Condition A NOTE regarding the evaluation of the PCS as well as determine the EOP that will be used after completion of EOP-1.0.*

Palisades Learning Objective: PCS CK21.0, Given plant conditions and Technical Specifications 3.3.7, 3.3.8, 3.4.2, 3.4.3, 3.4.10, 3.4.11, 3.4.13, 3.4.14, 3.4.15, 3.4.16, and 3.4.17 determine the following for the PCS a. Status of associated LCO Condition(s) and applicable Required Actions and Completion Times b. Time period during which any associated Surveillance Requirements must be performed in accordance with Technical Specification 3.3.7, 3.3.8, 3.4.1, 3.4.2, 3.4.3, 3.4.4, 3.4.5, 3.4.6, 3.4.7, 3.4.8, 3.4.10, 3.4.11, 3.4.13, 3.4.14, 3.4.15, 3.4.16, and 3.4.17 BASES for the PCS, LCO Section 1.0, and LCO Section 3.0. (G2.2.40) (SRO ONLY)

References: LCO 3.4.3. LCO 3.4.3 Basis pg B3.4.3-5, EOP-1.0 Attachment 1

**Question:**

The Plant tripped from full power at 0800 on Monday in response to a loss of the 'R' bus with a concurrent steam line break outside Containment. EOP 1.0, "Standard Post Trip Actions," has been completed. The steam line break was isolated when the MSIVs were closed. The Plant has been stabilized at 500°F and 2010 psia with PZR level at 38% and rising. The time is now 0820.

Which one of the following correctly completes the following statements?

The Control Room Supervisor will select \_\_\_(1)\_\_\_ to mitigate the above event. An evaluation to determine if the PCS is acceptable for continued operation per LCO 3.4.3, "PCS Pressure/Temperature Limits," \_\_\_\_\_(2)\_\_\_\_\_

- (1) EOP-6.0, Excess Steam Demand Event"  
(2) is required to be completed by Thursday at 0800.
- (1) EOP-6.0, Excess Steam Demand Event"  
(2) is not required.
- (1) EOP-8.0, "Loss of Offsite Power/Forced Circulation Recovery"  
(2) is required to be completed by Thursday at 0800.
- (1) EOP-8.0, "Loss of Offsite Power/Forced Circulation Recovery"  
(2) is not required.

**DISTRACTOR ANALYSIS**

- Plausible if student believes P/T limits exceeded (does not apply average hourly wording to temperature change in last 20 minutes) and student believes EOP-6.0 applies.
- Plausible if student believes EOP-6.0 applies.
- Plausible if student believes P/T limits exceeded.
- CORRECT** – Average hourly cooldown rate from full power met (less than 100°F in last hour). EOP-8.0 is appropriate per EOP-1.0 Diagnostic flowchart for conditions given in question stem.

Level of Knowledge: **HIGH**Difficulty: **3**

## WRITTEN QUESTION DATA SHEET

Source of Question: **NEW**

K/A: 000058 Loss of DC Power / 6

G2.4.8-Knowledge of how abnormal operating procedures are used in conjunction with EOPs.

Tier: 1 Group: 1 SRO Imp: 4.5

Applicable 10CFR55 Section: 43.5 - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. *This exam question meets the criteria for an SRO-only question because the candidate must assess the facility conditions given in the stem and use those conditions to select the appropriate procedure to respond to a loss of DC power.*

Palisades Learning Objective: IOTF\_CK12.0, Given an Abnormal Operating plant event and control room references, determine the actions of operations and non-operations department personnel necessary to complete the applicable subsequent actions/operator actions in accordance with Abnormal Operating Procedures

References: AOP-18 section 6.0 step 2

Question:

The Plant has just entered MODE 3 for a forced outage to repair a Main Condenser vacuum leak when the following occurs:

- A loss of Left Train 125V DC Bus (more specifically ED-10R and ED-10L) occurs

The Control Room Supervisor directs entry into ...

- a. AOP-18, "Loss of Left Train DC Power" only.
- b. AOP-18, "Loss of Left Train DC Power" and EOP-9.0, "Functional Recovery Procedure."
- c. AOP-18, "Loss of Left Train DC Power," AOP-13, "Loss of Preferred AC Bus EY-20," and AOP-15, "Loss of Preferred AC Bus EY-40."
- d. EOP-9.0, "Functional Recovery Procedure" only.

## DISTRACTOR ANALYSIS

- a. Plausible if the student believes that AOP-18 does not require use of EOP-9.0 in lower mode.
- b. **CORRECT**
- c. Plausible if the student believes that AOP-13 and AOP-15 actions are required (AOP actions are built into AOP-13).
- d. Plausible if the student believes that only EOP-9.0 applies.

Level of Knowledge: **LOW**Difficulty: **2**

Question deleted based on post examination feedback -- three possibly correct answers (a, b, and d).

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**WRITTEN QUESTION DATA SHEET**

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Source of Question: **NEW**

K/A: 000024 Emergency Boration / 1

G2.1.32-Ability to explain and apply system limits and precautions.

Tier: 1      Group: 2      SRO Imp: 4.0

Applicable 10CFR55 Section: 43.2 - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. *This exam question meets the criteria for an SRO-only question because the candidate must apply specific knowledge from LCO 3.2.1 BASES regarding the 10 CFR 100 limits.*

Palisades Learning Objective: NI\_CK20.0, From memory, describe the following for the Nuclear Instrumentation System in accordance with Technical Specification 2.1.1, 2.2.1, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.3.7, 3.3.8, 3.3.9, and 3.9.2

References: LCO 3.1.1 Bases page B3.1.1-3

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**Question:**

Which one of the following correctly completes the following statement regarding the most limiting analyses that establish the value for Shutdown Margin in LCO 3.1.1, "Shutdown Margin?"

For the \_\_\_\_\_ (1) \_\_\_\_\_, if the LCO is violated, then there is a potential to exceed \_\_\_\_\_ (2) \_\_\_\_\_.

- a. (1) boron dilution accident  
(2) 10 CFR 100, "Reactor Site Criteria," and the DNBR limits
  - b. (1) Main Steam Line Break (MSLB) accident  
(2) 10 CFR 100, "Reactor Site Criteria," and the DNBR limits
  - c. (1) boron dilution accident  
(2) the 10 CFR 100, "Reactor Site Criteria," limits only
  - d. (1) Main Steam Line Break (MSLB) accident  
(2) the DNBR limits only
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**DISTRACTOR ANALYSIS**

- a. Plausible if the student believes 10CFR100 and DNBR limits are affected by dilution accident.
  - b. **CORRECT**
  - c. Plausible if the student believes 10CFR100 limits only are affected by dilution event
  - d. Plausible if the student believes DNBR limits only are affected by MSLB accident
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Level of Knowledge: **LOW**Difficulty: **4**

**WRITTEN QUESTION DATA SHEET**Source of Question: **BANK**

K/A: 000067 Plant Fire On-site / 9 8

AA2.08-Ability to determine and interpret the following as they apply to the Plant Fire on Site: Limits of affected area

Tier: 1      Group: 2      SRO Imp: 3.6

Applicable 10CFR55 Section: 43.5 - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. *This exam question meets the criteria for an SRO-only question because the candidate must assess the facility conditions given in the stem and use those conditions to select the appropriate procedure to mitigate the consequences of an onsite fire.*

Palisades Learning Objective: TBAB\_E01.06 005, Given post reactor trip conditions, determine the proper follow-up EOP

References: AOP-40 Step 8 Note, Manual Operator Action Times list, and Attachment 13; EOP-1.0 Attachment 1

**Question:**

With the Plant at full power, a reactor trip occurs due to a loss of off-site power. During EOP-1.0, "Standard Post Trip Actions," a fire develops in the Auxiliary Building 590' Corridor (Fire Area 13) affecting various safe shutdown equipment and resulting in no AFW Pumps in operation. The Control Room team then refers to AOP-40, "Fire Which Threatens Safety Related Equipment."

Which one of the following describes (1) a potential manual operator action that may be required in the next 60 minutes and (2) the Emergency Operating Procedure the Control Room team will implement after EOP-1.0?

- a. (1) Fail ASDVs closed after four ASDVs spuriously open.  
(2) EOP-9.0, "Functional Recovery Procedure."
- b. (1) Fail ASDVs closed after four ASDVs spuriously open..  
(2) EOP-8.0, "Loss of Offsite Power/Forced Circulation Recovery."
- c. (1) Isolate PCS Sample lines after spurious operation.  
(2) EOP-9.0, "Functional Recovery Procedure."
- d. (1) Isolate PCS Sample lines after spurious operation.  
(2) EOP-8.0, "Loss of Offsite Power/Forced Circulation Recovery."

**DISTRACTOR ANALYSIS**

- a. Plausible if the student believes all four ASDVs spuriously open for Fire Area 13.
- b. Plausible if the student believes all four ASDVs spuriously open for Fire Area 13 and EOP-8.0 applies due to loss of offsite power.
- c. **CORRECT** - EOP-9.0 is entered when no AFW is available per AOP-40 Attachment 13.
- d. Plausible if the student believes EOP-8.0 applies due to loss of offsite power.

Level of Knowledge: **LOW**Difficulty: **3**



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**WRITTEN QUESTION DATA SHEET**

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Source of Question: **NEW**

K/A: 000076 High Reactor Coolant Activity / 9

AA2.06-Ability to determine and interpret the following as they apply to the High Reactor Coolant Activity:  
Response of PZR LCS to changes in the letdown flow rate

Tier: 1      Group: 2      SRO Imp: 2.5

Applicable 10CFR55 Section: 43.5 - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. *This exam question meets the criteria for an SRO-only question because the candidate must recall actions in the body of the high reactor coolant activity procedure.*

Palisades Learning Objective: IOTF\_CK12.0, Given an Abnormal Operating plant event and control room references, determine the actions of operations and non-operations department personnel necessary to complete the applicable subsequent actions/operator actions in accordance with Abnormal Operating Procedures

References: AOP-33 step 2.2 and 2.3

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Question:

With the Plant at stable full power operation, a fuel cladding failure occurs due to loose parts in the reactor coolant system. The Control Room team enters AOP-33, "Fuel Cladding Failure." Then, the following annunciator status is noted:

- EK-1363, "CONTAINMENT HI RADIATION" alarms
- EK-1126, "CIS INITIATED" is clear

Which one of the following correctly completes the following statement for the above Plant conditions? (Assume all systems respond as designed and no equipment is out of service.)

The Control Room Team will....

- isolate Letdown and operate the Charging System to maintain desired PZR level using SOP-2A, "Charging and Volume Control Systems."
- isolate Letdown and operate the Charging System to maintain desired PZR level using AOP-22, "Pressurizer Level Control Malfunctions."
- establish double Charging and Letdown using SOP-2A, "Charging and Volume Control Systems."
- isolate Letdown and operate the Charging System to maintain desired PZR level using SOP-1A, "Primary Coolant System."

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**DISTRACTOR ANALYSIS**

- CORRECT, AOP-33 specifies this action when EK-1363 is in alarm.**
  - Plausible if the student believes AOP-22 applies to this event
  - Plausible if the student believes double charging and letdown is required during a fuel cladding failure without a Containment Isolation signal present.
  - Plausible if the student believes SOP-1A applies to this action.
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Level of Knowledge: **LOW**Difficulty: **3**

**WRITTEN QUESTION DATA SHEET**Source of Question: **BANK**

K/A: CE/A13 Natural Circ. / 4

**AA2.1-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.**

Tier: 1      Group: 2      SRO Imp: **3.7**

Applicable 10CFR55 Section: 43.5 - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. This exam question meets the criteria for an SRO-only question because the candidate must assess the facility conditions given in the stem and use those conditions to select the appropriate action and procedure.

Palisades Learning Objective: TBCORE\_CK01.0 014, Given plant conditions involving Emergency Operating Procedure, describe the mitigating strategy of the in use Emergency Operating Procedure in accordance with the Emergency Operating Procedure Bases Document

References: EOP-8.0, step 11

Question:

Given the following:

- On Monday at 0800 a Plant trip occurs due to a loss of all offsite power
- The Control Room team implements EOP-8.0, "Loss of Offsite Power/Forced Circulation Recovery," after completion of EOP-1.0, "Standard Post Trip Actions"
- The Main Steam Isolation Valves (MSIVs) are closed
- HIC-0780A, Steam Dump Controller, is malfunctioning which is preventing the Atmospheric Steam Dump Valves (ADV) from opening
  - The Reactor Operator reports that  $T_{AVE}$  is 541°F and rising

Which one of the following describes the first action required by EOP-8.0 to address the rising  $T_{AVE}$ ?

- a. Place P-8B, Steam Driven AFW Pump, in service per SOP-12 "Feedwater System."
- b. Open an MSIV Bypass Valve and utilize the Turbine Bypass Valve (TBV) per SOP-7, "Main Steam System."
- c. Initiate once-through PCS cooling and transition to EOP-9.0, "Functional Recovery Procedure."
- d. Open MSIV Bypass Valves and place the Main Air Ejectors in service per SOP-13, "Air Ejector and Gland Seal System."

**DISTRACTOR ANALYSIS**

- a. **CORRECT**
- b. Plausible but condenser vacuum will not be available due to loss of offsite power.
- c. Plausible but with AFW available this is not an option.
- d. Plausible because placing the Hogger Air Ejector is an acceptable action for this condition, but not the Main Air Ejectors

Level of Knowledge: **LOW**

Difficulty: 2

**WRITTEN QUESTION DATA SHEET**Source of Question: **2010 NRC SRO EXAM**

K/A: 006 Emergency Core Cooling

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.

Tier: 2      Group: 1      SRO Imp: 4.6

Applicable 10CFR55 Section: 43.5 - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. *This exam question meets the criteria for an SRO-only question because the candidate must assess the facility conditions given in the stem and use those conditions to select the appropriate section of EOP-9.0 safety function success path criteria that must be used to mitigate the consequences of the event.*

Palisades Learning Objective: TBAH\_E01.01 009, Given plant conditions and Control Room references, determine the in-use Success Paths and their status in accordance with EOP-9.0, Placekeeper and the Resource Assessment Trees

References: EOP-9.0 attachment A; EOP-9.0 basis page 4

**Question:**

After a Plant trip from full power, the following conditions exist:

- EOP-1.0, "Standard Post-Trip Actions," are complete
- The Control Room team is implementing EOP-9.0, "Functional Recovery Procedure"
- All full length Control Rods are fully inserted
- PCS pressure is 1400 psia and lowering slowly

Which one of the following describes the minimum in-use Success Path acceptance criteria that must be met per EOP-9.0 for the above conditions?

- a. RC-1, "CRD Insertion."
- b. RC-2, "Boration using CVCS."
- c. RC-3, "Boration using SIS."
- d. RC-2 and RC-3.

**DISTRACTOR ANALYSIS**

- a. Plausible because all full length control rods are inserted for this event but if SIS is actuated, RC-1 success path acceptance criteria cannot be used.
- b. Plausible because emergency boration is in progress because SIS is actuated (<1605 psia) but the higher numbered success path criteria must be used. The student could also select this because PCS pressure is above the shutoff head setpoint of the HPSI pumps.
- c. **CORRECT** - Since SIAS is present, RC-3 is the required in use success path.
- d. Plausible because RC-2 and RC-3 are both in-use but the higher numbered success path criteria must be used.

Level of Knowledge: **HIGH**Difficulty: **3**

**WRITTEN QUESTION DATA SHEET**

Source of Question: BANK

K/A: 012 Reactor Protection

**A2.01-Ability to (a) predict the impacts of the following malfunctions or operations on the RPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Faulty bistable operation**

Tier: 2 Group: 1 SRO Imp: 3.6

Applicable 10CFR55 Section: 43.2 - Facility operating limitations in the technical specifications and their bases.

*This exam question meets the criteria for an SRO-only question because the candidate must apply specific knowledge from LCO Bases 3.3.1 to determine the LCO 3.3.1 action required.*

Palisades Learning Objective: RPS\_CK21 Given plant conditions and Technical Specification 3.3.1 and 3.3.2 determine the following for the Reactor Protective System in accordance with Technical Specification 3.3.1 and 3.3.2 BASES for the Reactor Protective System, LCO Section 1.0, and LCO Section 3.0. (G2.2.40) (SRO ONLY) a. Status of associated LCO Condition(s) and applicable Required Actions and Completion Times

References: LCO 3.3.1 (PROVIDE), QI-3

**Question:**

Given the following:

- At 0900 on May 11th with the plant at full power an I&C Technician commenced QI-3, "Reactor Protection Matrix Logic Tests" surveillance
- At 0930 the I&C Technician reports that during testing of the 'BD' matrix relays the Red Trip Unit Light for Channel 'D' Loss of Load Trip failed to illuminate
- The surveillance is immediately secured

Based on the above plant conditions, (1) what, if any, are the required Technical Specification (TS) action(s) to be completed, and (2) what TS action(s) would be required if the unit were to be shutdown and cooled down to < 300°F?

- a. (1) Place the affected Loss of Load trip unit in trip by 0930 on May 18th.  
(2) Restore trip unit and associated instrument channel to OPERABLE status prior to increasing THERMAL POWER to at or above 17%.
- b. (1) Declare the Loss of Load trip inoperable and place in bypass.  
(2) No additional action is required.
- c. (1) No action is required.  
(2) Restore trip unit and associated instrument channel to OPERABLE status prior to increasing THERMAL POWER to at or above 17%.
- d. (1) Place the affected Loss of Load trip unit in trip by 0930 on May 18th.  
(2) No additional action is required.

**DISTRACTOR ANALYSIS**

- a. Plausible since the trip must be restored prior to increasing power to >17%; however not required to trip affected unit.
- b. Plausible if student determines placing the unit in bypass is required. However the trip unit must be made operable prior to increasing power to >17% following entry into Mode 3.
- c. **CORRECT**
- d. Plausible: However the trip unit must be operable prior to increasing power to >17% following entry into Mode 3

Level of Knowledge: HIGH

Difficulty: 3

**WRITTEN QUESTION DATA SHEET**Source of Question: **NEW**

K/A: 022 Containment Cooling

G2.2.39-Knowledge of less than or equal to one hour Technical Specification action statements for systems.

Tier: 2      Group: 1      SRO Imp: 4.5

Applicable 10CFR55 Section: 43.2 - Facility operating limitations in the technical specifications and their bases.

*This exam question meets the criteria for an SRO-only question because the candidate must apply specific knowledge of LCO 3.0.3 and 3.6.6 and recall the corresponding bases correctly.*

Palisades Learning Objective: APTS\_E01.14, From memory, and given the following conditions:- An LCO/ORM Specification is not met - The associated Actions are not met or associated Actions are not provided describe the required actions in accordance with Technical Specification LCO-3.0.3 or ORM Section 3.0.3.

References: LCO 3.0.3, LCO 3.6.6 Basis bottom of pg B 3.6.6-9

**Question:**

The Plant is in MODE 2 with the MSIV Bypass Valves open when Engineering reports that a common equipment operability issue dealing with the Containment Spray Valves, CV-3001 and CV-3002, has rendered both valves inoperable.

Which one of the following describes (1) Technical Specification required actions and (2) the Technical Specification basis for this action?

- a. (1) Immediately initiate action to place the plant in MODE 3 in 6 hrs.  
(2) At least one of the above Containment Spray Valves is necessary to mitigate a MSLB where offsite power is available.
- b. (1) Within one-hour initiate action to place the plant in MODE 3 in 7 hrs.  
(2) At least one of the above Containment Spray Valves is necessary to mitigate a MSLB where offsite power is available.
- c. (1) Immediately initiate action to place the plant in MODE 3 in 6 hrs.  
(2) At least one of the above Containment Spray Valves is necessary to mitigate a LOCA where offsite power is available.
- d. (1) Within one-hour initiate action to place the plant in MODE 3 in 7 hrs.  
(2) At least one of the above Containment Spray Valves is necessary to mitigate a LOCA where offsite power is available.

**DISTRACTOR ANALYSIS**

- a. Plausible if the student believes only 6 hrs are allowed to reach MODE 3.
- b. **CORRECT**- LCO 3.0.3 allows 1 hr to take action and 6 hrs to reach MODE 3.
- c. Plausible if the student believes that mitigation of a LOCA is TS Bases for this condition and only 6 hrs are allowed to reach MODE 3.
- d. Plausible if the student believes that mitigation of a LOCA is TS Bases for this condition.

Level of Knowledge: **HIGH**Difficulty: **4**

**WRITTEN QUESTION DATA SHEET**Source of Question: **BANK**

K/A: 063 DC Electrical Distribution

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

Tier: 2 Group: 1 SRO Imp: 3.2

Applicable 10CFR55 Section: 43.2 - Facility operating limitations in the technical specifications and their bases.

*This exam question meets the criteria for an SRO-only question because the candidate must apply knowledge that describes loss of DC bus and assess system conditions to determine LCO 3.8.9 completion requirements. This question also cannot be answered solely with system knowledge.*

Palisades Learning Objective: EPS\_CK21.0 006, Given plant conditions and Technical Specifications 3.8.4, 3.8.5, 3.8.6, 3.8.7, 3.8.8, 3.8.9, and 3.8.10 determine the following for the 125V DC and AC Power system in accordance with Technical Specification 3.8.4, 3.8.5, 3.8.6, 3.8.7, 3.8.8, 3.8.9, and 3.8.10 BASES for the 125V DC and AC Power system, LCO Section 1.0, and LCO Section 3.0.

References: LCO 3.8.9 (PROVIDE), AOP-17 Attachment 10, AOP-15, LCO 3.8.9 and basis, Tech Spec 1.3  
Completion Times (pg 1.3.2)

Question:

Given the following conditions:

- The Plant is at full power
- At 0100 a loss of Preferred AC Bus EY-40 occurred due to a fault on Inverter # 4
- At 0130 a ground fault occurred on DC bus ED-20L resulting the opening of breaker 72-20, 125V DC Tie Bkr ED-20R & ED-20L, and loss of DC bus ED-20L
- At 0155 EY-40 is placed on the bypass regulator and maintenance commenced on Inverter # 4

Based on the given plant conditions, the loss of ED-20L will result in \_\_\_\_\_ (1) \_\_\_\_\_ AND with respect to LCO 3.8.9, "Distribution Systems - Operating," the latest time ED-20L must be restored to OPERABLE status is \_\_\_\_\_ (2) \_\_\_\_\_.

- a. (1) the loss of PCP DC Oil Lift Pumps P-81A and P-81C power supply  
(2) 0930
- b. (1) the loss of PCP DC Oil Lift Pumps P-81B and P-81D power supply  
(2) 0930
- c. (1) the loss of PCP DC Oil Lift Pumps P-81B and P-81D power supply  
(2) 1700
- d. (1) the loss of PCP DC Oil Lift Pumps P-81A and P-81C power supply  
(2) 1700

**DISTRACTOR ANALYSIS**

- a. Plausible if student believes P-81A and C are lost when ED-20L is lost; LCO completion time is correct.
- b. **CORRECT**
- c. Plausible-if student incorrectly uses 16 hours (from 0100) limitation instead of 8 hour (from 0130) with completion time extension per TS 1.3.
- d. Plausible for combination of 'a' and 'c' above.

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**WRITTEN QUESTION DATA SHEET**

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Level of Knowledge: HIGH

Difficulty: 3

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**WRITTEN QUESTION DATA SHEET**

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Source of Question: **NEW**

K/A: 073 Process Radiation Monitoring

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

Tier: 2      Group: 1      SRO Imp: 3.2

Applicable 10CFR55 Section: 43.5 - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. *This exam question meets the criteria for an SRO-only question because the candidate must assess the facility conditions given in the stem and use those conditions to select the appropriate alarm/indication that will occur and associated required action for a process radiation monitor failure. This question also cannot be answered solely with system knowledge.*

Palisades Learning Objective: RMS\_T03.00 Given plant conditions, implement the requirements of the Offsite Dose Calculation Manual (ODCM) without error

References: ARP-8, window 71; ODCM Appendix A Table A-1, SOP-38 Attachment 1

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**Question:**

The Plant has just entered MODE 4 during a shutdown for a refueling outage when the detector for RIA-2320, Steam Generator Blowdown Vent monitor fails low.

Which one of the following describes (1) the impact of this malfunction and (2) the action, if any, that must be taken to continue effluent releases?

- a. (1) EK-1371, "RADIATION MONITOR SYSTEM CKT FAILURE" alarms.  
(2) Establish continuous S/G Blowdown Ventilation sampling using auxiliary sampling equipment.
- b. (1) WARN and FAIL lights on RIA-2320 illuminate.  
(2) Establish continuous S/G Blowdown Ventilation sampling using auxiliary sampling equipment.
- c. (1) WARN and FAIL lights on RIA-2320 illuminate.  
(2) Obtain S/G Blowdown Ventilation grab samples at least once per 12 hours and analyze sample for gross activity within 24 hours.
- d. (1) EK-1371, "RADIATION MONITOR SYSTEM CKT FAILURE" alarms.  
(2) Obtain S/G Blowdown Ventilation grab samples at least once per 12 hours and analyze sample for gross activity within 24 hours.

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**DISTRACTOR ANALYSIS**

- a. Plausible if the student believes that Action 6 of ODCM applies to RIA-2320 is not required in MODE 4.
- b. Plausible if the student believes WARN light on RIA will illuminate and that RIA is not required in MODE 4.
- c. Plausible if the student believes WARN light on RIA will illuminate.
- d. **CORRECT**

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**Level of Knowledge: HIGH****Difficulty: 3**

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**WRITTEN QUESTION DATA SHEET**Source of Question: **NEW**

K/A: 035 Steam Generator

A2.04-Ability to (a) predict the impacts of the following malfunctions or operations on the GS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Steam flow/feed mismatch

Tier: 2      Group: 2      SRO Imp: 3.8

Applicable 10CFR55 Section: 43.5 - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. *This exam question meets the criteria for an SRO-only question because the candidate must assess the facility conditions given in the stem and use those conditions to select the appropriate procedure to mitigate the consequences of a main feedwater transient. This question also cannot be answered solely with system knowledge.*

Palisades Learning Objective: SGWL\_CK12.0, From memory, explain how the following effects impact operation of the Steam Generator Water Level Control system: - shrink and swell

References: AOP-2 step 5

Question:

Given the following:

- Plant is at 25% power
- S/G Level control is in AUTOMATIC
- Then, an Atmospheric Steam Dump Valve on the 'B' S/G fails open

Which one of the following correctly completes the following statement?

The 'B' S/G level will initially \_\_\_\_ (1) \_\_\_\_ and the Control Room team will utilize \_\_\_\_ (2) \_\_\_\_ to mitigate the event.

- a. (1) rise due to lowering pressure in the 'B' S/G  
(2) AOP-3, "Main Feedwater Transients"
- b. (1) lower due to rising steam flow from the 'B' S/G  
(2) AOP-3, "Main Feedwater Transients"
- c. (1) rise due to lowering pressure in the 'B' S/G  
(2) AOP-2, "Excessive Load"
- d. (1) lower due to rising steam flow from the 'B' S/G  
(2) AOP-2, "Excessive Load"

**DISTRACTOR ANALYSIS**

- a. Plausible if the student believes feed demand signal will rise (does not recall swell of S/G level due to steam pressure drop and cause demand signal to lower) and also believes AOP-3 will mitigate this event.
- b. Plausible if the student believes AOP-3 will mitigate this event.
- c. **CORRECT- initial opening of ADV will cause 'B' S/G pressure to lower and 'B' S/G level to "swell." AOP-2 contains a section for ADV(s) inadvertently opening.**
- d. Plausible if the student believes feed demand signal will not change.

Level of Knowledge: **LOW**Difficulty: **3**

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**WRITTEN QUESTION DATA SHEET**

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Source of Question: **NEW**

K/A: 041 Steam Dump/Turbine Bypass Control

G2.4.30-Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.

Tier: 2      Group: 2      SRO Imp: 4.1

Applicable 10CFR55 Section: 43.5 - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. *This exam question meets the criteria for an SRO-only question because the candidate must assess the facility conditions given in the stem and use those conditions to select the appropriate notifications and documentation requirements for use of ADVs during a plant cooldown.*

Palisades Learning Objective: APOR\_E01.02, From memory and given plant conditions involving a non-emergency event, a. determine if the event requires notifications. b. describe the steps required to perform the notifications c. identify the individuals or agencies that require notification in accordance with EN-LI-102, AP-4.00, 10CFR50.72, 10CFR72.75, and 10CFR73.71.

References: Admin 4.00 section 5.4.4.f

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Question:

Given the following:

- The Plant is in the process of shutdown for a forced outage
- Atmospheric Steam Valves are planned to be used for the cooldown in accordance with GOP-9, "Mode 3 > 525°F to Mode 4 or Mode 5"

Which one of the following describes (1) any notifications required and (2) any required documentation requirements?

- a. (1) Public Affairs, Van Buren Sheriff, and NRC resident.  
(2) Use NRC Form 361, "Event Notification Worksheet."
  - b. (1) Public Affairs and Van Buren Sheriff only.  
(2) Use NRC Form 361, "Event Notification Worksheet."
  - c. (1) Public Affairs, and Van Buren Sheriff only.  
(2) Record in Operations Narrative Log only.
  - d. (1) Public Affairs, Van Buren Sheriff, and NRC resident.  
(2) Record in Operations Narrative Log only.
- 
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**DISTRACTOR ANALYSIS**

- a. Plausible if the student believes that the NRC resident is required to be notified.
  - b. **CORRECT**
  - c. Plausible if the student believes narrative log entry only is required.
  - d. Plausible for combination of 'a' and 'c' above.
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Level of Knowledge: **LOW**Difficulty: **3**

**WRITTEN QUESTION DATA SHEET**Source of Question: **NEW**

K/A: 033 Spent Fuel Pool Cooling

G2.4.4-Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.

Tier: 2      Group: 2      SRO Imp: 4.7

Applicable 10CFR55 Section: 43.5 - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. *This exam question meets the criteria for an SRO-only question because the candidate must assess the facility conditions given in the stem and use those conditions to select the appropriate procedure and action necessary to mitigate the consequences of the lowering SFP level. This question also cannot be answered solely with system knowledge.*

Palisades Learning Objective: IOTF\_CK03.0

References: AOP-26 Step Attachment 1, RFL-V-10 (or AOP-25 Attachment 4), ARP-8 Window 9

Question:

Given the following with the Plant at full power:

- New fuel bundles are being placed in the Spent Fuel Pool (SFP) in preparation for a refueling outage
- EK-1309, "SPENT FUEL POOL HI/LO LEVEL," annunciates on Panel C-13
- An Auxiliary Operator reports that Nitrogen pressure to the SFP South Tilt Pit Gate is reading abnormally low and water is leaking at a modest rate into the SFP South Tilt Pit

The Control Room team will ....

- a. implement Refueling Procedure RFL-V-10, "Installation of Spent Fuel Pool Divider Gate" and raise Nitrogen pressure to on the SFP South Tilt Pit Gate seals to 20 psig.
- b. implement AOP-26, "Loss of Spent Fuel Pool Cooling" and perform actions to refill the SFP as needed.
- c. implement SOP-27, "Fuel Pool System," Attachment 2, "Addition of Water to the Spent Fuel Pool" only and perform actions to refill the SFP as needed.
- d. implement AOP-26, "Loss of Spent Fuel Pool Cooling" and trip the operating Spent Fuel Cooling Pump.

**DISTRACTOR ANALYSIS**

- a. Plausible if the student believes that procedure action which is incorrect since seal pressure must be 25-30 psig.
- b. **CORRECT - Even though actual cooling has not been lost, this is the correct procedure if the fuel pool is not cross connected to the reactor cavity or there hasn't been an actual fuel handling accident.**
- c. Plausible if the student believes that since SOP-27 may be used to add water to the SFP in normal situations that it can be used in this situation, however it does not contain other potential mitigating actions that are necessary and ARP-8 directs entry into AOP-26
- d. Plausible if student believes this AOP-26 action is required for these conditions which do not yet exist (i.e. imminent loss of suction to SFP Cooling Pumps).

Level of Knowledge: **HIGH**Difficulty: **3**

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**WRITTEN QUESTION DATA SHEET**

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Source of Question: **NEW**

K/A: G2.1.23-Ability to perform specific system and integrated plant procedures during all modes of plant operation.

Tier: 3      Group:      SRO Imp: 4.4

Applicable 10CFR55 Section: 43.5 - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. . *This exam question meets the criteria for an SRO-only question because the candidate must assess the facility conditions given in the stem and use those conditions to select the appropriate procedure and actions required*

Palisades Learning Objective: TBCORE\_CK01.0, Given plant conditions involving Emergency Operating Procedure, describe the mitigating strategy of the in use Emergency Operating Procedure in accordance with the Emergency Operating Procedure Bases Document.

References: EOP-9.0 Success Path CA Continuing Actions Step 2

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**Question:**

Following a LOCA with limited fuel damage, the Shift Technical Advisor reports containment hydrogen concentration has reached 3%. Based on this; the CRS enters EOP-9.0, "Functional Recovery Procedure." All equipment is operating as designed.

To address the hydrogen conditions, the CRS will ...

- a. maximize Containment Cooling using Success Path CA-2: Containment Air Coolers (Accident Mode).
- b. maximize Containment Cooling using Success Path CA-3: Containment Spray.
- c. implement EOP-9.0 Attachment G-1, "Alternate Indications/Actions For Inoperable Instrumentation Located Inside Containment."
- d. request TSC evaluate event specific Containment purge evolutions.

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**DISTRACTOR ANALYSIS**

- a. Student believes action is appropriate for this condition.
- b. Student believes action is appropriate for this condition.
- c. Student believes this attachment applies to this condition.
- d. **CORRECT**

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**Level of Knowledge:      LOW****Difficulty:      4**

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**WRITTEN QUESTION DATA SHEET**Source of Question: **BANK**

K/A: G2.1.42-Knowledge of new and spent fuel movement procedures.

Tier: **3** Group: SRO Imp: **3.4**

Applicable 10CFR55 Section: **43.7 - Fuel Handling Facilities and Procedures.** *This exam question meets the criteria for an SRO-only question because the candidate must apply knowledge from the Refueling Operations and Fuel Handling procedure to determine that the ventilation alignment meets the requirements for conducting fuel moves in the SFP.*

Palisades Learning Objective: IOTD\_E01.02 001, Given fuel handling procedures and fuel movement conditions, identify the operating limitations designed to prevent damage to equipment or the fuel assemblies in accordance with SOP-28 and GOP-11 and/or Refueling Procedures

References: **GOP-11 section 5.7.1**

Question:

Given the following plant conditions:

- The Plant was shutdown 15 days ago for a refueling outage
- Movement of irradiated fuel assemblies removed from the core during the outage is planned in the Spent Fuel Pool
- HS-1894, Fuel Handling Area Exhaust Damper Control Switch, is in the REFUEL position

Which one of the following Fuel Handling Area Ventilation System alignments will MEET the required conditions for performing the above fuel moves?

	V-7 Supply <u>Fan</u>	V-8A Exhaust <u>Fan</u>	V-8B Exhaust <u>Fan</u>
a.	ON	ON	ON
b.	OFF	ON	ON
c.	OFF	ON	OFF
d.	ON	OFF	ON

**DISTRACTOR ANALYSIS**

- a. Plausible if the student believes that since this moves the most amount of air through the Charcoal filter, that this is the correct lineup but with fuel decayed less than 30 days it is not allowed.
- b. Plausible if the student believes that this lineup will result in the lowest pressure in the Fuel Handling Building.
- c. **CORRECT** - With fuel decayed less than 30 days, only 1 V-8 can be ON and V-7 must be OFF.
- d. Plausible if the student correctly believes that only one fan should be off, but also believes that fresh air needs to be supplied to the Fuel Handling Building.

Level of Knowledge: **HIGH**Difficulty: **2**

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**WRITTEN QUESTION DATA SHEET**

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Source of Question: **NEW**

K/A: G2.2.19-Knowledge of maintenance work order requirements.

Tier: 3      Group:      SRO Imp:      3.4

Applicable 10CFR55 Section: None - This is an exception to the 10CFR55.43(b) applicability. *This exam question meets the criteria for an SRO-only question because it is an SRO-only duty perform direct crew operations during emergency events. (task PL-341 251 05 03)*

Palisades Learning Objective: APWC\_E08.01 From memory and given a directive to plan a Work Request, describe the items that should be reviewed to determine a WR's acceptability in accordance with EN-WM-100.

References: SEP Supp 1 (EI-1 Wall chart for HOT Conditions), EN-WM-100 section 3.0

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Question:

Given the following plant conditions:

- The Plant is at full power
- A Site Area Emergency (SAE) has been declared due to high radioactivity levels on RIA-2327, Stack High Range Monitor, caused by an ongoing waste gas system leak
- The on-duty Shift Manager is the Emergency Director

In accordance with EN-WM-100, "Work Request (WR) Generation, Screening and Classification," which one of the following correctly describes a method that could be implemented to expeditiously repair the leak and stop the release?

Maintenance can be directed to begin work without an approved work package after the.....

- a. Shift Manager declares the repair Emergent Work.
  - b. Shift Manager declares the repair Emergency Maintenance.
  - c. Plant Manager declares the repair Emergent Work.
  - d. Plant Manager declares the repair Emergency Maintenance.
- 
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**DISTRACTOR ANALYSIS**

- a. Plausible if the student believes emergent work will allow this to occur.
  - b. **CORRECT**
  - c. Plausible if the student believes that Plant Manager approval is required for this to occur
  - d. Combination of a and c above.
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Level of Knowledge: **LOW**Difficulty: **2**

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**WRITTEN QUESTION DATA SHEET**

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Source of Question: **2010 NRC-SRO EXAM**

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

Tier: 3      Group:      SRO Imp:      3.7

Applicable 10CFR55 Section: 43.4 - Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions. *This exam question meets the criteria for an SRO-only question because the candidate must have knowledge of the radiological hazards associated with a rescue of a plant employee during an emergency. This exam questions also meets the requirements of an SRO-only question because performing the duties of the Emergency Plant Manager is an SRO job that cannot be delegated to an RO.*

Palisades Learning Objective: N00153\_E18.0

References: EI-2.1, 5.11

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Question:

Given the following conditions:

- A General Emergency was declared due to a LOCA with extremely high off-site radioactive release rates
- EOP-1.0, "Standard Post Trip Actions," are completed
- EOP-4.0, "Loss of Coolant Accident Recovery" is being implemented
- The Shift Manager is the acting Emergency Director
- An Nuclear Plant Operator (NPO) has sustained life-threatening injuries in a high dose area while attempting to isolate the uncontrolled release
- The estimated exposure for the rescue is 20 Rem

In accordance with EI-2.1, "Emergency Plant Manager," which one of the following describes the minimum authorization requirements to attempt a rescue of the injured NPO?

- a. Any on-shift SRO may authorize the rescue.
  - b. The Shift Manager may authorize the rescue.
  - c. Site Vice President permission is required to authorize the rescue.
  - d. The Radiation Protection Manager and Shift Manager are required to authorize the rescue.
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**DISTRACTOR ANALYSIS**

- a. Plausible if the student misinterprets dose limit restrictions for life saving services during an emergency and believes that any SRO can authorize exceeding these dose limits.
  - b. **CORRECT** - Since the Shift Manager is the Emergency Plant Manager, then he/she can authorize this exposure.
  - c. Plausible if the student believes the SVP is required to authorize exceeding these dose limits.
  - d. Plausible if the student believes that both SM and RP manager permission is required authorize exceeding these dose limits.
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Level of Knowledge:      **LOW**Difficulty:      **3**

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**WRITTEN QUESTION DATA SHEET**

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Source of Question: **BANK**

K/A: G2.3.6-Ability to approve release permits.

Tier: **3** Group: SRO Imp: **3.8**

Applicable 10CFR55 Section: **43.4 - Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various containment conditions. This exam questions meets the criteria for an SRO-only question because the candidate must analyze the conditions in the waste gas tanks and apply knowledge of the chemistry requirements to determine the controls that apply. Also, authorizing Waste discharge permits is an SRO-only duty. (task PL-341 012 03 03)**

Palisades Learning Objective: **RMS\_E02.01 002/**, From memory, describe the information expected to be completed on Form CH 6.23-3 (WGDT Release Authorization) prior to authorizing the WGDT release to be initiated in accordance with Form CH 6.23-3

References: **CH 6.23**

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**Question:**

A waste gas release is being planned for Waste Gas Decay Tanks, T-101C and T-68A. Samples have been completed and analyzed per CH 6.22, "Sampling Waste Gas Decay Tank," and CH 6.23, "Evaluation and Release of Waste Gas Decay Tank."

The following information is contained on the batch release forms for T-101C and T-68A:  
NOTE: Today's date/time is 9/08/2014@1800

T-101C

Sample date/time - 9/05/2014@1400  
Isolation pressure – 93 psig  
Current pressure – 89 psig

T-68A

Sample date/time - 9/07/2014@1500  
Isolation Pressure – 92 psig  
Current Pressure – 99 psig

Which one of the following describes (1) the Waste Gas Decay Tank(s), if any, whose batch release form should be approved for release and (2) the reason for this answer?

- a. (1) None.  
(2) Pressure at the start of release exceeds procedure restrictions for both tanks.
  - b. (1) T-68A only.  
(2) Time since the sample analysis exceeds procedure restrictions for T-101C.
  - c. (1) T-101C only.  
(2) Pressure at the start of the release exceeds procedure restrictions for T-68A.
  - d. (1) Both T-68A and T-101C.  
(2) All procedural restrictions for sample times and pressures are met for both tanks.
- 

**DISTRACTOR ANALYSIS**

- a. Plausible if the student believes that a batch must be disapproved if tank pressure has changed by 4 psig from isolation.
  - b. Plausible if the student believes that the tank must be released within 72 hours (or less) of tank isolation.
  - c. **CORRECT**
  - d. Plausible if the student believes that there are no requirements for tank pressure or sample time.
- 

Level of Knowledge: **LOW**Difficulty: **2**



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**WRITTEN QUESTION DATA SHEET**

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Source of Question: **NEW**

K/A: G2.4.5-Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions.

Tier: 3      Group:      SRO Imp:      4.3

Applicable 10CFR55 Section: 43.5 - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. . *This exam question meets the criteria for an SRO-only question because the candidate must assess the facility conditions given in the stem and use those conditions to select the appropriate procedure and actions required to mitigate a loss of PCS inventory on SDC.*

Palisades Learning Objective: IOTF\_CK12.0, Given an Abnormal Operating plant event and control room references, determine the actions of operations and non-operations department personnel necessary to complete the applicable subsequent actions/operator actions in accordance with Abnormal Operating Procedures

References:      AOP-23 section 1.0, AOP-30 section 1.0, EOP-9.0 section 2.0

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Question:

The Control Room team has just exited EOP-8.0, "Loss of Offsite Power/Forced Circulation Recovery" after conducting a natural circulation cooldown to MODE 4. Shutdown Cooling has been placed in service per GOP-9," Mode 3  $\geq$  525°F to Mode 4 or Mode 5." Then, a loss of PCS inventory is detected:

- Personnel in Containment report that RV-0401, Shutdown Cooling Relief Valve has inadvertently lifted and is stuck open

Which of the following would the Control Room Supervisor select to mitigate these conditions?

- a. AOP-23, "Primary Coolant System Leak" only.
- b. AOP-23, "Primary Coolant System Leak" and transition to EOP-9.0, "Functional Recovery Procedure."
- c. AOP-30, "Loss of Shutdown Cooling" only.
- d. EOP-9.0, "Functional Recovery Procedure" only.

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**DISTRACTOR ANALYSIS**

- a. Plausible if the student does not recall that AOP-23 directs use of AOP-30 when SDC is in service.
  - b. Plausible if the student believes AOP-23 and transition to .EOP-9.0 is appropriate when SDC is initially in-service.
  - c. **CORRECT**
  - d. Plausible if the student believes EOP-9.0 can be used when SDC is initially in-service.
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Level of Knowledge:      **LOW**Difficulty:      **3**

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**WRITTEN QUESTION DATA SHEET**

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Source of Question: **NEW**

K/A: G2.4.47-Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.

Tier: 3 Group: SRO Imp: 4.2

Applicable 10CFR55 Section: 43.5 - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. This exam question meets the criteria for an SRO-only question because the candidate must assess the facility conditions given in the stem and use those conditions to select the appropriate actions required to mitigate a steam generator tube leak.

Palisades Learning Objective: IOTF\_CK16.0, Given an Abnormal Operating event and control room references, evaluate plant response to the event and determine if a plant shutdown should be commenced

References: AOP-24 Attachment 2 pg 7

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Question:

The Plant is at full power with the following conditions:

- Chemistry reports a small S/G tube leak of 0.06 gpm has been detected
- The Control Room team enters AOP-24, "Steam Generator Tube Leak"
- Sustained rate of rise of the leak is 0.03 gpm/hour

Which one of the following completes the following statement for the above Plant conditions?

Reduce reactor power (1) within 1 hour and place the Plant in MODE 3 within the next (2).

- (1) to less than 75% power  
(2) 6 hours
  - (1) to less than 75% power  
(2) 2 hours
  - (1) to less than 50% power  
(2) 6 hours
  - (1) to less than 50% power  
(2) 2 hours
- 
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**DISTRACTOR ANALYSIS**

- Plausible if the student believes 75% power is initial power reduction target and 6 hours is allowed for Mode 3.
  - Plausible if the student believes 75% is initial power reduction target.
  - Plausible if student believes 6 hours is allowed for Mode 3.
  - CORRECT**
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Level of Knowledge: **HIGH**Difficulty: **3**