

QUESTION # 76

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	1
	Group #	1

K/A # 4.1 007/ 2.4.45 – Reactor Trip, Emergency Procedures / Plan: Ability to prioritize and interpret the significance of each annunciator or alarm.  
Importance 3.6

**Proposed Question:**

The following plant conditions exist:

- Reactor has tripped on overtemperature differential temperature (OTΔT).
- The crew has transitioned to EMG ES-02, REACTOR TRIP RESPONSE from EMG E-0 REACTOR TRIP OR SAFETY INJECTION.
- All post trip plant conditions are normal except as indicated below.

Which of the following VALID annunciator conditions would warrant manual initiation of Safety Injection and transition back to EMG E-0?

(Assume the annunciator remains lit during the performance of the procedure)

- A. 00-088A, PZR PRESS SI RX TRIP
- B. 00-087C, PZR PRESS LO RX TRIP
- C. 00-059C, CTMT RAD HI
- D. 00-032C, PZR LO LEV DEV

**Proposed Answer:** A, 00-088A, PZR PRESS SI RX TRIP

**Explanation:** Answer A is correct because Step 12 of EMG ES-02 requires a manual SI if pressure is less than 1830 psig which is the same setpoint as this alarm window. Answer B is incorrect because this annunciator will come in at 1940 psig and is automatically blocked below P-7 (10%). Answer C is incorrect because the alarm does not indicate the need for an SI, but does indicate the need for a CPIS. Answer D is incorrect because the low level deviation of 5% less than program level. This is plausible since a foldout page requirement is to actuate SI if actual level cannot be maintained greater than 6%.

**Technical References:** EMG ES-02, step 12

**Learning Objective:** LO1732315, Objective 4

**Question Source:** NEW

**Question Cognitive Level:** Comprehension or Analysis A2

**10 CFR Part 55 Content:** 55.43 (5)

QUESTION # 76

**Comments:** SI is required if PZR level cannot be maintain above 6% or pressure cannot be maintained above 1830 psig or small break LOCA occurs which would be indicated by a stuck open Pressurizer safety valve coincident with a loss of subcooling. With the annunciator lit for low pressurizer pressure, an SI should have occurred but could have been blocked by P-11, Low pressure SI block. An SI is required.

QUESTION # 77

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	1
	Group #	1

K/A # 4.1 009 EA 2.23 – Ability to determine or interpret the following as they apply to a small break LOCA: RCP operating parameters and limits.  
Importance 3.3

**Proposed Question:**

The following conditions exist:

- Small break LOCA is in progress.
- Both CCPs are unavailable
- Procedure EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT is in use.
- One SI pump is running. The other SI pump is OOS.
- RCS pressure is at 1350 psig
- RCS Subcooling is 30 °F
- Operator controlled cooldown is not in progress.

The running SI pump trips, what actions should be taken regarding the RCPs?

- A. Leave all RCPs running if an operator controlled plant cooldown is about to commence.
- B. Leave all RCPs running since the only running SI pump tripped and no CCPs are available.
- C. Leave all RCPs running if RCS pressure has stabilized and is starting to increase.
- D. Stop all RCPs if RCS subcooling will decrease below limits.

**Proposed Answer:** B, Leave all RCPs running since the only running SI pump tripped and no CCPs are available.

**Explanation:** Answer A is incorrect because the cooldown must be in progress to explain the decreasing pressure. Answer B is correct per the background document and the foldout page criteria. Answer C is incorrect because the pressure is below 1400 psig and an increasing trend is not relevant, only one piece of the trip criteria. Answer D is incorrect as this criteria is on the foldout page, but is the criteria for SI reinitiation

**Technical References:** BD EMG E-1 page 72 & 73 and EMG E-1 step 1 and foldout page

**Learning Objective:** LO1732320, Objective 3

**Question Source:** NEW

**Question Cognitive Level:** Comprehension or Analysis A2

**10 CFR Part 55 Content:** 55.43 (5)

QUESTION # 77

**Comments:** The SRO is expected to know and implement the items in the foldout page and background document. This action is required (not tripping the RCPs) by the foldout page and the incorrect answers are also explained in the background document.

QUESTION # 78

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	1
	Group #	1

K/A # 4.1 029 EA2.09 – Ability to determine or interpret the following as they apply to a ATWS:  
Occurrence of a main turbine/reactor trip.  
Importance 4.4

**Proposed Question:**

The following plant conditions exist:

- A reactor trip from full power has occurred and the Reactor trip breakers failed to open.
- Manual reactor trip signal was unsuccessful.
- The crew has entered EMG FR-S1, RESPONSE TO NUCLEAR POWER GENERATION / ATWT
- The rod drive MG sets have been de-energized by opening breakers PG HIS-16 and PG HIS-18.

How will the Reactor trip be verified?

- A. Alarm window 00-088F, MANUAL RX TRIP.
- B. Gamma Metrics show flux in Intermediate range.
- C. All rod bottom lights are lit.
- D. An Emergency Boration is in progress.

**Proposed Answer:** C, All rod bottom lights are lit.

**Explanation:** Answer C is the only answer since this is the one item that shows without a doubt the reactor is tripped. Ans A, incorrect since it does not identify the bypass breakers along with the Rx trip breakers and thus rods could still be powered and not tripped Ans B is a good indication, but does not verify the reactor trip since power this should be decreasing, not just in the Intermediate range. Ans D, incorrect since an Emergency Boration will not verify the reactor is tripped, but is an action if de-energizing rods does not work to shutdown the reactor.

**Technical References:** EMG FR-S1, step 1 and associated background document.

**Learning Objective:** LO1732339, Objective 2

**Question Source:** NEW

**Question Cognitive Level:** Memory or Fundamental Knowledge K3

**10 CFR Part 55 Content:** 55.43 (5)

Comments: SRO needs to know what indications available to verify reactor trip.

QUESTION # 79

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	1
	Group #	1

K/A # 4.1 038 EA2.16 – Ability to determine or interpret the following as they apply to a SGTR:  
Actions to be taken if S/G goes solid and water enters steam line.  
Importance 3.0

**Proposed Question:**

A large Steam Generator Tube Rupture has occurred on “A” S/G. The crew has transitioned through the EMG network and is in EMG E-3, STEAM GENERATOR TUBE RUPTURE, with the ruptured S/G indicating 99% Narrow Range level. The “A” S/G Atmospheric Relief Valve (ARV) begins opening.

As Control Room Supervisor you would ensure “A” S/G ARV controller is in:

- A. MANUAL and closed.
- B. MANUAL and full open.
- C. AUTO and increase setpoint to 1185 psig.
- D. AUTO and setpoint is at 1125 psig.

**Proposed Answer:** D, AUTO and setpoint at 1125 psig.

**Explanation:** Ans. D is correct. The procedure verifies the ARV is available in Auto to protect the S/G Safeties. A stuck open safety would result in a continuous uncontrolled release. There is some misconceptions exhibited by operators in the desire to terminate the release if an ARV begins opening. In a SGTR, closing the ARV would then cause a challenge to the safeties.

**Technical References:** EMG E-3 step 3, BD EMG E-3 step 3

**Learning Objective:** LO1732325, Objective 5

**Question Source:** NEW

**Question Cognitive Level:** Comprehension or Analysis A3

**10 CFR Part 55 Content:** 55.43 (5)

**Comments:**

QUESTION # 80

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	1
	Group #	1

K/A # 4.2 056 / 2.1.32 – Loss of Offsite Power / Conduct of Operations: Ability to explain system limits and precautions.

Importance 3.8

**Proposed Question:**

A Loss of Coolant Accident (LOCA) with a Loss of off-site power occurred causing a reactor trip and loss of power to all Reactor Coolant Pumps (RCPs). All equipment actuated as expected.

Power has now been restored to a 13.8 KV (PA) bus and the crew is preparing to start a RCP.

Why is it required to RESET Safety Injection prior to starting an RCP?

- A. Allows RCP seal water isolation valves to be opened.
- B. Allows restoration of the RCP auxiliaries that were load shed.
- C. Prevents an overload condition on Startup Transformer, XMR01.
- D. Prevents a degraded voltage condition on the 4.16 KV (NB) bus.

**Proposed Answer:** D., Prevents a degraded voltage condition on the NB bus.

**Explanation:** There is the possibility of receiving a degraded voltage signal on the associated NB when starting an RCP with the PA bus tied to the NB bus. This makes answer D correct. Answer A is incorrect since these valves close on a CISA, not SIS. Answer B is incorrect, since the auxiliaries are unaffected. Answer C is incorrect since the Startup Transformer can handle much more than one RCP start.

**Technical References:** SYS BB-201, step 4.12

**Learning Objective:** LO1732201, Objective 3

**Question Source:** NEW

**Question Cognitive Level:** Comprehension or Analysis A2

**10 CFR Part 55 Content:** 55.43 (2)

**Comments:** SRO needs to know reasons for pre-requisites in the procedures.

QUESTION # 81

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	1
	Group #	1

K/A # 4.2 057 AA2.18 - Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: The indicator, valve, breaker, or damper position which will occur on a loss of power.

Importance 3.1

**Proposed Question:**

The plant is at 100% with the Pressurizer level and pressure selected to the following positions:

- PZR LEV CTRL SEL, BB LS-459D, selected to L459/L460
- PZR PRESS CTRL SEL, BB PS-455F, selected to P455/P456

An event occurs and the control room staff notes the following indications:

- Charging pump suction has swapped to the RWST.
- Letdown flow remains stable for current plant conditions.
- Annunciator 00-076A, SSPS B GENERAL WARNING is in alarm.
- All S/G levels are stable for current plant conditions.

Which power supply failed to cause these conditions?

- A. 125 VDC Bus NK02
- B. 120 VAC Instrument Bus NN02
- C. 120 VAC Instrument Bus NN04
- D. 120 VAC Instrument Bus PN02

**Proposed Answer:** C, 120 VAC Instrument Bus NN04

**Explanation:** Since none of the instruments are selected to NN04, the only indication will be the annunciator and charging pump suction swapping making answer C the only correct answer. Answers A and B are incorrect, but plausible if the candidate is not aware of which 120VAC feeds which indicator as selected on the select switches

**Technical References:** OFN NN-021, Attachment A, page 1

**Learning Objective:** LO1732431, Objective 3

**Question Source:** NEW

**Question Cognitive Level:** Comprehension or Analysis A2

**10 CFR Part 55 Content:** 55.43 (5)

QUESTION # 81

**Comments:** OFN NN-021 gives directions on what to do following a loss of NN01, but the SRO is still required to know what components will be affected.

QUESTION # 82

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	1
	Group #	1

K/A # 4.5 E04 (LOCA Outside Containment)/ 2.4.10 – Emergency Procedures/Plan: Knowledge of annunciator response procedures.  
Importance 3.1

**Proposed Question:**

Given the following plant conditions:

- A Safety Injection has occurred.
- EMG E-0, REACTOR TRIP OR SAFETY INJECTION is in progress.
- CTMT Radiation Alarms are clear.
- PRT Alarms are clear.
- CTMT Sump Alarms are clear.
- SD RE-10, Aux Bldg Radiation Monitor is in alarm.
- Annunciator 00-096A, RHR RM SUMP A/B LEV HI is in alarm.
- RCS Pressure is 1800 psig and slowly decreasing.
- Subcooling is 85 degrees.
- PZR Level is 25% and slowly decreasing.

Based on the above indications, what mitigation path will be used?

- A. EMG C-12, LOCA OUTSIDE CONTAINMENT
- B. EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT
- C. EMG ES-03, SI TERMINATION
- D. Continue in EMG E-0, and refer to OFN BB-007, RCS LEAKAGE HIGH

**Proposed Answer:** A, EMG C-12, LOCA OUTSIDE CONTAINMENT

**Explanation:** Answer A is correct since this is an indication of a leak outside containment. Ans. B is incorrect, this procedure a possible transition but would be entered if the leak were inside containment. Ans C is incorrect, but plausible, since RCS conditions are met for transition, however other indications are available that a LOCA is still in progress. Ans. D is incorrect, but plausible since an OFN can be used with an EMG procedure, but in this case the indications are clear that a break has occurred outside containment.

**Technical References:** EMG E-0, Step 25

**Learning Objective:** LO1732333, Objective 2

**Question Source:** Bank #Q20324

**Question Cognitive Level:** Comprehension or Analysis A3

QUESTION # 82

**10 CFR Part 55 Content:** 55.43 (5)

**Comments:** The SRO must be able to use control room alarms to assist in diagnosing the event. This question also examines the SRO knowledge of mitigation flow paths in the Emergency procedures.

QUESTION # 83

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	1
	Group #	2

K/A # 4.2 024 AA2.05 - Ability to determine and interpret the following as they apply to the Emergency Boration: Amount of boron to add to achieve required SDM Importance 3.9

**Proposed Question:**

The following plant conditions exist:

- Unit is in Mode 6.
- Emergency boration has been started due to a low boron concentration in the Refueling Pool.
- Boration flow has been verified.

Which of the following conditions must be met in order to terminate Emergency Boration?

- A. Start up rate must be decreasing.
- B. Shutdown margin must be verified to be greater than 1.3%?K/K.
- C. Keff must be verified to be less than 0.99.
- D. RCS boron concentration must be greater than 2300 ppm.

**Proposed Answer:** D, RCS boron concentration must be greater than 2300 ppm.

**Explanation:** Answer A is incorrect as Startup rate can be zero OR decreasing to stop boration flow. Answer B is correct for all conditions except mode 6. Answer C is incorrect as Keff must be less than 0.95 to stop flow. Answer D is correct per procedure.

**Technical References:** OFN BG-009 entry conditions and step 10

**Learning Objective:** LO1732419, Objectives 2 & 5

**Question Source:** NEW

**Question Cognitive Level:** Comprehension or Analysis A2

**10 CFR Part 55 Content:** 55.43 (5)

**Comments:** The SRO must remember that the criteria change due to changing plant conditions and the correct criteria applied for the existing conditions.

QUESTION # 84

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	1
	Group #	2

K/A # 4.2 028 AA2.12 - Ability to determine and interpret the following as they apply to the Pressurizer Level Control Malfunctions: Cause for PZR level deviation alarm: controller malfunction or other instrumentation malfunction  
Importance 3.5

**Proposed Question:**

The unit is stable at 100% power when you receive alarm 00-032C, PZR LO LVL DEV. The following indications exist:

- LI-459A 58%
- LI-460A 59%
- LI-461A 51%

Based on these above indications, what is the cause for this alarm?

- A. The non-controlling PZR level channel is failing LOW.
- B. The controlling PZR level channel is failing LOW.
- C. Charging Flow Control Valve, BG FCV-121 is failing OPEN.
- D. Charging Flow Control Valve, BG FCV-121 is failing CLOSED.

**Proposed Answer:** B, The controlling PZR level channel is failing LOW.

**Explanation:** Alarm 00-032C is driven from the controlling channel deviating by more than 5% from program. Answer A is incorrect since it is the non-controlling channel. Answer B is correct. Answer C & D could cause the deviation alarm, but all three channels would read the same.

**Technical References:** ALR 00-032C, OFN SB-008

**Learning Objective:** LO1732418, Objective 3

**Question Source:** NEW

**Question Cognitive Level:** Comprehension or Analysis A3

**10 CFR Part 55 Content:** 55.43 (5)

**Comments:** Operators must be able to differentiate between a system failure and a controller failure based on control room indications.

QUESTION # 85

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	1
	Group #	2

K/A # 4.2 051 / 2.1.32 - Loss of Condenser Vacuum / Conduct of Operations: Ability to explain and apply all system limits and precautions.  
Importance 3.8

**Proposed Question:**

The plant is operating at 80% power when a failure of the condenser boot seal causes a loss of vacuum and subsequent turbine trip.

What is the basis for the reactor trip and which signal directly causes the reactor to trip?

- A. Anticipation of an excessive RCS cooldown because of a main generator output breaker open signal.
- B. Anticipation of an excessive RCS cooldown because of a 2 out of 4 Turbine Stop Valves closed signal.
- C. Anticipation of a loss of RCS heat removal because of a 2 out of 3 EHC fluid oil pressure low signal.
- D. Anticipation of a loss of RCS heat removal because of a main condenser vacuum low signal.

**Proposed Answer:** C, Anticipation of a loss of RCS heat removal because of a 2 out of 3 EHC fluid oil pressure low signal.

**Explanation:** Answers A, B and D are incorrect because none of these directly trips the reactor. The bases, as seen in Tech Specs, identifies that the trip is in anticipation of loss of heat sink vs. an excessive cooldown as one might expect. Therefore the only correct answer is C per Tech spec. 3.3.1 and its bases.

**Technical References:** Tech Spec 3.3.1 and associated bases

**Learning Objective:** LO1732204, Objective 1

**Question Source:** NEW

**Question Cognitive Level:** Comprehension or Analysis A3

**10 CFR Part 55 Content:** 55.43 (2)

**Comments:** Power level given at > 50% power to ensure that P-9 does not prevent Reactor trip. Bases and actual trip knowledge

QUESTION # 86

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	1
	Group #	2

K/A # 4.2 076 / 2.4.9 – High Reactor Coolant Activity / Emergency Procedures / Plan:  
Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.

Importance 3.9

**Proposed Question:**

A rapid plant shutdown was required due to the indication of a loose part in the Reactor Coolant system.

The plant is currently in Mode 3 with RCS temperature at 525 °F and the operators are cooling down to enable Steam Generator opening to find the loose part.

Chemistry has taken a sample and informed you that RCS Activity is currently reading 30 µCi/gm greater than the 100/ E-Bar value calculated earlier.

Which of the following describes the applicable Emergency Plan Classification required for the current plant conditions?

- A. Alert
- B. Notification of Unusual Event
- C. Not applicable, due to the plant in Mode 3
- D. Not applicable, due to reactor power less than 20%

**Proposed Answer:** B, Notification of Unusual Event.

**Explanation:** High activity greater than a Tech Spec limit requires a NOUE classification regardless of Mode or power level. Answers C & D may seem plausible since the graph in Tech specs only reads down to 20% power and the Tech spec is not applicable < than 500 degrees F. Answer A is incorrect, since the Alert level would require another significant event in order to get to this level which is not indicated in the stem.

**Technical References:** Tech Spec 3.4.16 and EAL-5 of APF 06-002-01

**Learning Objective:** LR1007001, Objective 1

**Question Source:** NEW

**Question Cognitive Level:** Comprehension or Analysis A3

**10 CFR Part 55 Content:** 55.43 (5)

QUESTION # 86

**Comments:** Candidate needs to know when an Emergency Classification is required to performed.

QUESTION # 87

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	1
	Group #	2

K/A # 4.5 W/E15 2.3.4 – Containment Flooding / Radiation Control: Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.

Importance 3.1

**Proposed Question:**

The following conditions exist:

A Large Break LOCA has occurred inside containment. An operator has been sent into the Aux Building Penetration room to close a valve on a system that is causing flooding in containment and manually isolate a valve that will prevent a massive offsite dose to the general population.

The operator injures himself such that his life is in jeopardy. Another operator has volunteered to extricate the individual from the area. This volunteer operator has a current year to date exposure of 3 REM.

How much dose can the Emergency Manager permit the volunteer operator to receive?

- A. 7 REM
- B. 10 REM
- C. 22 REM
- D. 25 REM

**Proposed Answer:** D, 25 REM

**Explanation:** A volunteer is allowed to receive a single dose of 25 REM for lifesaving, which is answer D. Answer A is for saving equipment minus 3 REM. Answer B is for saving valuable equipment. Answer C is the max dose given minus the 3 REM. Answer D is correct even though a higher dose may be authorized it is still the highest dose given.

**Technical References:** AP 06-002, step 6.3.15 and attachment E

**Learning Objective:** GE1135628, Objective 2

**Question Source:** NEW

**Question Cognitive Level:** Memory or Fundamental Knowledge K3

**10 CFR Part 55 Content:** 55.43 (4)

**Comments:** Knowledge of Emergency Limits and how they are implemented.

QUESTION # 88

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	2
	Group #	1

K/A # 3.4 003 A2.03 – 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 associated with RCP motors, including faulty motors and current, and winding and bearing temperature problems.  
Importance 3.1

**Proposed Question:**

Unit load is currently 650 Mwe.

“A” Reactor Coolant Pump (RCP) has the following conditions:

- Motor Upper Radial Bearing 190°F
- Motor Upper Thrust Bearing 191°F
- Motor Lower Radial Bearing 196°F
- Motor Lower Thrust Bearing 192°F
- Motor Stator Winding Temperature 210°F
- Number 1 Seal and Bearing Water Temperature 200°F

The crew enters OFN BB-005, RCP MALFUNCTIONS.

What is the proper action for these conditions?

- A. Commence plant shutdown using OFN MA-038, RAPID PLANT SHUTDOWN, when less than 48% trip the “A” RCP.
- B. Trip reactor, enter EMG E-0, REACTOR TRIP OR SAFETY INJECTION, then trip “A” RCP while concurrently using OFN BB-005.
- C. Commence plant shutdown using OFN MA-038, RAPID PLANT SHUTDOWN, trip “A” RCP, and then continue the shutdown.
- D. Trip “A” RCP in accordance with OFN BB-005, then trip the reactor and enter EMG E-0, REACTOR TRIP OR SAFETY INJECTION.

**Proposed Answer:** B, Trip reactor, enter EMG E-0, REACTOR TRIP OR SAFETY INJECTION, then trip “A” RCP while concurrently using OFN BB-005.

**Explanation:** Ans. A and C incorrect, since a reactor trip, not a controlled shutdown, is required for this condition. Ans D incorrect, because the Reactor must be tripped prior to tripping an RCP. B is correct since any motor bearing temperature > 195°F is RCP trip criteria, but the Reactor must be tripped first.

**Technical References:** OFN BB-005, RCP MALFUNCTIONS

**Learning Objective:** LO1732415, Objective 2

QUESTION # 88

**Question Source:** Bank #22749 (modified)

**Question Cognitive Level:** Comprehension or Analysis A3

**10 CFR Part 55 Content:** 55.43 (5)

**Comments:** SROs need to know RCP trip criteria when they see it.

QUESTION #89

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	2
	Group #	1

K/A # 3.2 004 A2.09 – Ability to (a) predict the impacts of the following malfunctions or operations on the CVCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: High primary and/or secondary activity.

Importance 3.9

**Proposed Question:**

A rapid (5%/min.) power reduction from 100% to 60% was performed due to grid instabilities.

Power has been stable at 60% for seven hours.

Calculated 100/E-bar value is 250  $\mu\text{Ci/gm}$ .

Chemistry reports indications of higher higher RCS activity.

The results from the RCS chemistry samples, taken four hours after power was stabilized at 60%, are as follows:

- Dose equivalent I-131 (DEI) 97  $\mu\text{Ci/gm}$
- Gross coolant activity 45  $\mu\text{Ci/gm}$
- Mixed Bed Demineralizer - Cesium Decontamination Factor 15
- Mixed Bed Demineralizer - Iodine Decontamination Factor 18

Using OFN BB-006, HIGH REACTOR COOLANT ACTIVITY, what are the required actions?  
(Figure 3.4.16 of Tech Specs is provided)

- A. The DEI limit has been exceeded, shutdown the plant in accordance with Tech Specs.
- B. The 100/E-Bar gross activity Tech Spec. limit has been exceeded, shutdown the plant in accordance with Tech Specs.
- C. The 100/E-Bar gross activity limit has been exceeded, maximize cleanup flow as directed by Chemistry personnel.
- D. Mixed Bed Demineralizer Decontamination Factors are out of specification, shift Mixed Bed Demineralizers.

**Proposed Answer:** C., The 100/E-Bar gross activity limit has been exceeded, maximize cleanup flow as directed by Chemistry personnel.

**Explanation:** Ans. A is incorrect since DEI has not been not exceeded. Ans B is incorrect, since the 45  $\mu\text{Ci/gm}$  is less than the given 100/E-bar given. Answer C is correct since activity is greater than 10% of the 100/E-bar value given. Ans. D is incorrect since the Decontamination factors are well above the values required to shift beds.

**Technical References:** OFN BB-006, Tech Spec. 3.4.16 and Figure 3.4.16-1(provided)

**Learning Objective:** LO1733203, Objective 3

QUESTION #89

**Question Source:** Bank #Q24390 (modified)

**Question Cognitive Level:** Comprehension or Analysis A3

**10 CFR Part 55 Content:** 55.43 (5)

**Comments:** Predict the upcoming actions contained within abnormal operating procedures given a large decrease in power and expected high RCS activity.

QUESTION #90

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	2
	Group #	1

K/A # 3.2 013 A2.06 – 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: Inadvertant ESFAS actuation.  
Importance 4.5

**Proposed Question:**

I&C technicians are performing surveillance testing on the Main Steam line pressure transmitters and have inadvertently de-energized 2 of 3 transmitters on Main Steam line “C”. The reactor tripped and the crew has entered EMG E-0, REACTOR TRIP OR SAFETY INJECTION. The first four steps of EMG E-0 have been completed and the following conditions are observed:

- RCS pressure is 2000 psig and trending up
- S/G pressures are 1000 psig and trending up
- Containment pressure is normal
- RCS subcooling is 70°F and increasing slowly
- Pressurizer level is 35% and trending up

What mitigation path should be followed?

- A. Shut the BIT inlet valves and transition to EMG ES-02, REACTOR TRIP RESPONSE, since Safety Injection is not required.
- B. Leave BIT inlet valves open and continue in EMG E-0 since a Safety Injection is required.
- C. Shut the BIT inlet valves and continue in EMG E-0 since a Safety Injection is not required.
- D. Shut the BIT inlet valves and transition to EMG ES-03, SI TERMINATION, since Safety Injection is not required.

**Proposed Answer:** C, Shut the BIT inlet valves and continue in EMG E-0 since a Safety Injection is not required.

**Explanation:** The candidate must realize that not only did a reactor trip occur, but that a safety injection was actuated inadvertently. The BIT valves should be closed following this inadvertent SI to prevent overfilling the PZR via the CCPs. SI must be terminated quickly and is addressed at step 5 of EMG E-0. Answer C is then correct. Answer B is incorrect since the BIT inlet should be closed. Answer A and D are incorrect since EMG E-0 will address the problem.

**Technical References:** EMG E-0, step1-5 and BD-EMG E-0, page 28

**Learning Objective:** LO1732313, Objective 3

**Question Source:** NEW

**Question Cognitive Level:** Comprehension or Analysis A2

QUESTION #90

**10 CFR Part 55 Content:** 55.43 (5)

**Comments:** Need to analyze plant conditions and use appropriate procedures to mitigate.

QUESTION # 91

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	2
	Group #	1

K/A # 073 / 2.3.9 – Process Radiation Monitoring System / Radiation Control: Knowledge of the requirements for reviewing and approving release permits.  
Importance 3.1

**Proposed Question:**

Who is responsible for approving a radioactive release if all conditions for the release are satisfactory?

- A. On shift Chemistry Technician
- B. Chemistry Supervisor
- C. Control Room Supervisor
- D. Shift Manager

**Proposed Answer:** D, Shift Manager

**Explanation:** Answer A is incorrect as this individual prepares the release. Answer B is incorrect as this individual approves a release if the checklist items are not all met. Answer C is incorrect as this individual is responsible for performing the release and ensuring all data is correctly entered. Answer D is correct.

**Technical References:** AP 07B-001, "Radioactive Releases", Section 5.6

**Learning Objective:** LO1733204, Objective 10

**Question Source:** NEW

**Question Cognitive Level:** Memory or Fundamental Knowledge K2

**10 CFR Part 55 Content:** CFR 55.43 (4)

**Comments:**

QUESTION #92

Question Worksheet

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	2
	Group #	2

K/A # 3.5 028 / 2.3.9 – Recombiner and Purge Control / Radiation Control: Knowledge of the process for performing a containment purge.

Importance 3.5

**Proposed Question:**

It is required to operate the CTMT Mini Purge System to reduce pressure to a normal value.

Which of the following combinations of radiation monitors must be in operation and source checks completed prior to startup of this system.

- A. GT RT-22, CTMT purge exhaust high radiation AND GT RT-33, CTMT purge exhaust high radiation.
- B. GT RT-32, CTMT building high radiation AND GT RT-33, CTMT purge exhaust high radiation.
- C. GT RT-21A, Unit vent effluent radiation AND GT RT-22, CTMT purge exhaust high radiation.
- D. GT RT-32, CTMT building high radiation AND GT RT-21A Unit vent effluent radiation.

**Proposed Answer:** B, GT RT-32, CTMT building high radiation AND GT RT-33, CTMT purge exhaust high radiation.

**Explanation:** Prior to starting the process of performing a containment mini-purge system, two rad monitors must be in service per the prerequisites in the procedure. The two that are needed are one purge exhaust and one building/atmosphere monitor. Therefore B is the only correct answer. A is plausible since listed are two exhaust monitors that monitor purge. C is a common misconception of the operators that the unit vent effluent monitor is required. D shows a building/atmosphere and an exhaust unit and shows misconception of the Unit vent effluent monitor causing actuation.

**Technical References:** SYS GT-120

**Learning Objective:** SY1302800, Objective 7; SY1407300, Objective 2

**Question Source:** Bank – Wolf Creek NRC 12/01

**Question Cognitive Level:** Memory or Fundamental Knowledge K2

**10 CFR Part 55 Content:** 55.43 (4)

**Comments:** Process for initiating a containment mini-purge.

QUESTION # 93

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	RO
	Tier #	2
	Group #	2

K/A # 3.4 055 / 2.2.25 – Condenser Air Removal / Equipment Control: Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.  
Importance 2.5

**Proposed Question:**

Which of the following conditions must be met in order for the Condenser Air Discharge Radiation Monitor, GE RE-92, to be operable?

It must be able to:

- A. detect S/G leakrates of 30 gpd at existing RCS activity levels.
- B. alarm if the S/G leakrate increases by 5 gpd.
- C. detect a S/G leakrate of 1 gpm within 15 minutes of the leak initiation.
- D. isolate S/G blowdown upon receipt of a high radiation alarm.

**Proposed Answer:** A., detect S/G leakrates of 30 gpd at existing RCS activity levels.

**Explanation:** Answer A is the correct answer per TRM. Answer B is incorrect as the leakrate detection is tied to 30 gpd, not 5 gpd. Answer C is incorrect as no time limit is mentioned for detection. Answer D is incorrect and is a true statement, but the isolation of blowdown function is not required for operability

**Technical References:** TRM 3.3.18 bases

**Learning Objective:** SY1505500, Objective 5

**Question Source:** NEW

**Question Cognitive Level:** Memory or Fundamental Knowledge K3

**10 CFR Part 55 Content:** 55.43 (2)

**Comments:** Operability of secondary rad monitors is needed to identify S/G primary to secondary leaks. These leaks are known to escalate rapidly if quick action is not taken. Taking action is based on knowing that a leak exists.

QUESTION # 94

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	3
	Group #	1

K/A # 2.1.12 - Conduct of Operations: Ability to apply technical specifications for a system.  
Importance 4.0

**Proposed Question:**

Given the following:

- The plant is at 100% power.
- NIS Power Range Channel N-43 experienced a failed power supply and has been removed from service for corrective maintenance.
- NIS Power Range Channel N-44 power indication has started oscillating between 80% and 100%. The STA confirms the same oscillation at the N-44 panel.

Which one of the following actions is required?

- A. Trip the reactor and enter EMG E-0, REACTOR TRIP OR SAFETY INJECTION.
- B. Bypass N-43 for up to 4 hours while troubleshooting N-44. If the channel cannot be repaired within 4 hours, Enter T.S. 3.0.3 and be in HOT STANDBY within 7 hours.
- C. Bypass N-44 for up to 4 hours while repairing N-43. If the channel cannot be repaired within 4 hours, Enter T.S. 3.0.3 and be in HOT STANDBY within 7 hours.
- D. Enter T.S. 3.0.3. Repair EITHER channel or be in HOT STANDBY within 7 hours.

**Proposed Answer:** D. Enter T.S. 3.0.3. Repair EITHER channel or be in HOT STANDBY within 7 hours.

**Explanation:** A. Incorrect – No trip signal is present. B & C Incorrect – The note in T.S. 3.3.1 allows bypassing a failed channel for routine surveillance testing, not troubleshooting or repairs. D. Correct – There are no Actions for two channels inoperable and would require entry into T.S. 3.0.3.

**Technical References:** T.S. 3.3.1, Reactor Trip System Instrumentation, and Bases.  
T.S. 3.0.3 and Bases

**Learning Objective:** SY1301501, Objective 13

**Question Source:** INPO Bank - Salem 11/04/02

**Question Cognitive Level:** Comprehensive or Analysis A3

**10 CFR Part 55 Content:** 55.43 (2)

**Comments:** This question tests the SRO's ability to recognize plant conditions that are outside the actions allowed in Technical Specifications requiring, entry into T.S. 3.0.3.

QUESTION # 95

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	3
	Group #	1

K/A # 2.1.14 – Conduct of Operations: Knowledge of system status criteria which require the notification of plant personnel.

Importance 3.3

**Proposed Question:**

Under which of the following conditions would a Plant Announcement **NOT** be made?

- A. Declaration of a Notification of Unusual Event (NUE) due to a Chemical Spill located outside the Protected Area but upwind.
- B. Declaration of a Site Area Emergency (SAE) during inclement winter weather.
- C. Declaration of a Site Area Emergency (SAE) during a declared Security Emergency.
- D. Declaration of a Notification of Unusual Event (NUE) due to a Tech Spec required plant shutdown.

**Proposed Answer:** C, Declaration of a Site Area Emergency (SAE) during a declared Security Emergency.

**Explanation:** All declared emergencies are announced to the plant in order to activate resources for the Control Room. The exception is during a Security Emergency where intruders have entered the protected area. Announcing the declaration could cause confusion for emergency responders to attempt to get to their assigned positions. Answer B is testing a misconception about severe weather. During inclement weather it may be better NOT to make a Protective Action Recommendation (PAR) to evacuate, the emergency still has to be declared and announced to activate the TSC on site.

**Technical References:** OFN SK-039

**Learning Objective:** LO1732447, Objective 7

**Question Source:** NEW

**Question Cognitive Level:** Memory or Fundamental Knowledge K3

**10 CFR Part 55 Content:** 55.43 (5)

**Comments:** None

QUESTION # 96

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	3
	Group #	2

K/A # 2.2.18 - Equipment Control: Knowledge of the process for managing maintenance activities during shutdown operations.

Importance 3.6

**Proposed Question:**

The unit is currently at Mid-loop conditions with S/G Nozzle Dam installation in progress at the start of a refueling outage. Engineering has requested permission to start a Local Leak Rate Test (LLRT) on containment penetration P-32, Containment Sump Discharge.

The LLRT:

- A. may not be performed until the unit has exited Mid-loop conditions.
- B. may not be performed until the nozzle dams are installed.
- C. may be performed if an individual is assigned to isolate the penetration within 30 minutes.
- D. may be performed without additional monitoring since it is not a safety related system.

**Proposed Answer:** C, may be performed if an individual is assigned to isolate the penetration within 30 minutes.

**Explanation:** Containment Closure must be attainable within 30 minutes whenever the unit is in mid-loop conditions for all penetrations making Answer C correct.. Answers A and B are incorrect since the work is allowed. Answer D is incorrect since it makes no difference whether the penetration is safety related or not.

**Technical References:** GEN 00-008, step 4.4.3.; STS GP-006, step 6.2

**Learning Objective:** LO1732108, Objective 3

**Question Source:** NEW

**Question Cognitive Level:** Memory or Fundamental Knowledge K3

**10 CFR Part 55 Content:** 55.43 (5)

**Comments:** Wolf Creek has made commitments due to previous problems in maintaining containment closure during refuelings.

QUESTION # 97

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	3
	Group #	2

K/A # 2.2.33 – Equipment Control: Knowledge of control rod programming.  
Importance 2.9

**Proposed Question:**

Which ONE of the following describes why the bank overlap unit withdraws control rod banks sequentially?

- A. Provides input for control rod insertion limit alarms and control bank deviation alarms.
- B. Provides for reduced oscillation in the size and location of peak power production and an input for control bank deviation alarms.
- C. Provides for uniform rod worth and provides adequate Shutdown Margin.
- D. Provides for uniform rod worth and maintains acceptable peak power production during rod motion.

**Proposed Answer:** D, Provides for uniform rod worth and reduced oscillation in the size and location of peak power production.

**Explanation:** Answers A and B are incorrect due to the fact the pulse to analog converter provides inputs to the Rod Insertion Limits and bank deviation alarms. Answer C is incorrect as Rod Insertion Limits ensure adequate Shutdown Margin

**Technical References:** T.S. Bases 3.1.6 LCO

**Learning Objective:** SY1300100, Objective 2

**Question Source:** INPO Bank - Summer 9/17/02

**Question Cognitive Level:** Memory or Fundamental Knowledge K3

**10 CFR Part 55 Content:** 55.43 (6)

**Comments:** Rod Control Programming

QUESTION # 98

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	3
	Group #	1

K/A # 2.3.1 – Knowledge of 10 CFR: 20 and related facility radiation control requirements.  
Importance 3.0

**Proposed Question:**

You have been on loan to Callaway plant moving fuel in their refueling outage. You are called back to Wolf Creek because of an emergent situation. Callaway will send your dose record for the visit within a week. You are scheduled to perform a task with a projected total dose of 700 mr.

Can you perform this task?

- A. No, because your radworker quals are no longer valid.
- B. No, because the total dose you can receive is 500 mr.
- C. Yes, because it is allowed for emergent work.
- D. Yes, because the projected dose is less than 2000 mr.

**Proposed Answer:** B, No, because the total dose you can receive is 500 mr.

**Explanation:** Answer A is incorrect because your quals are still valid. Answer C and D are not correct because the 10 CFR limit is 500 mr for radworker that don't have full documentation.

**Technical References:** AP 25A-001

**Learning Objective:** LO1733204, Objective 4

**Question Source:** NEW

**Question Cognitive Level:** Memory or Fundamental Knowledge K3

**10 CFR Part 55 Content:** 55.43 (4)

**Comments:** Need to know your allowed dose after returning from another plant.

QUESTION # 99

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	SRO
	Tier #	3
	Group #	3

K/A # 2.3.8 - Radiation Control: Knowledge of the process for performing a planned gaseous radioactive release.

Importance 3.2

**Proposed Question:**

The unit is in Mode 4 and you are about to start a Containment purge prior to personnel entry into containment.

Which of the following requirements apply to this purge release?

- A. The release must be initiated within 12 hours of the sample time.
- B. The release must be initiated within 48 hours of the sample time.
- C. The release permit expires 48 hours after the release is started.
- D. The release permit expires 7 days after the release is started.

**Proposed Answer:** A, The release must be initiated within 12 hours of the sample time.

**Explanation:** Answer A is correct. Answer B is incorrect unless an ILRT has just been completed which is not the given case. Answer C is correct if the unit is in Mode 1, 2 or 3. Answer D is not correct as all release limits are tied to sample time, not release start time. However, the 7-day time limit applies to Mode 4 releases.

**Technical References:** AP 07B-001 step 6.2.4

**Learning Objective:** LO1733204, Objective 10

**Question Source:** NEW

**Question Cognitive Level:** Memory or Fundamental Knowledge K3

**10 CFR Part 55 Content:** 55.43 (4)

**Comments:** SRO personnel are responsible for authorizing the start and end of releases from gaseous sources and must know the limits associated with such releases.

QUESTION # 100

**Question Worksheet**

<b>Examination Outline Cross-reference:</b>	Level	RO
	Tier #	3
	Group #	4

K/A # 2.4.30 - Emergency Procedures / Plan: Knowledge of which events related to system operations/status should be reported to outside agencies.

Importance 3.6

**Proposed Question:**

Given the following conditions:

- Wolf Creek is at 100% power.
- Air in-leakage to the condenser has resulted in steadily degrading condenser vacuum.
- A load reduction is directed in order to maintain vacuum.
- With the unit at approximately 85% power, a manual reactor trip is ordered due to the inability to maintain vacuum.
- All systems function as designed.

Based solely on the information given, which of the following describes the notification requirements for this event?

- A. No notifications to any outside agencies are required for these conditions.
- B. The NRC must be notified within 4 hours due to manual actuation of the Reactor Protection System.
- C. System Operations – Topeka must be notified within 1 hour in order to ensure grid stability.
- D. The State / County must be notified within 15 minutes of the trip due to reaching an Emergency Plan classification for an Unusual Event.

**Proposed Answer:** B., The NRC must be notified within 4 hours due to manual actuation of the Reactor Protection System.

**Explanation:** Per AP 26A-001, REPORTABLE EVENTS – EVALUATION AND DOCUMENTATION Attachment “A”, a four hour notification is required making answer B correct. Answer A is incorrect since notification is required. Answer C is a good idea, but not required. Answer D is incorrect since these conditions will not constitute a Notification of Unusual Event.

**Technical References:** AP 26A-001, Attachment A

**Learning Objective:** LO1733214, Objective 2

**Question Source:** INPO Bank – Point Beach 09/29/03

**Question Cognitive Level:** Comprehension or Analysis A2

**10 CFR Part 55 Content:** 55.43 (5)

QUESTION # 100

**Comments:** SROs are required to know proper offsite notifications for given conditions.