**RO Question #1**

Given the following plant conditions:

- Plant is operating at 100% power
- Annunciator F-19, PRZR PORV OUTLET HI TEMP 145°F, actuated
- PORV-431C indicates open and cannot be closed
- MOV-515, PORV-431C BLOCK VLV, cannot be closed
- RCS pressure is 2035 psig and lowering
- PRT pressure is 5 psig and rising

Based on current plant conditions, the indicated reading on TI-438, PZR PORV Outlet Temperature, will be _(1)_ and will _____(2)_____ if RCS and PRT trends continue, prior to the PRT rupture disc rupturing.

A. (1) 228°F
   (2) rise as PRT pressure rises

B. (1) 228°F
   (2) lower as RCS pressure lowers

C. (1) 162°F
   (2) lower as RCS pressure lowers

D. (1) 162°F
   (2) rise as PRT pressure rises

**RO Question #2**

Given the following plant conditions:

- The unit is at 100% power
- A small RCS leak develops inside Containment
- The Operators take the necessary actions to stabilize Pressurizer level by raising charging flow
- Subsequent actions are then performed to determine the leak source

After Letdown is isolated, the following indications are observed:

- FI-134, Letdown Line Flow, indicates zero gpm
- PI-944, CNMT Narrow RNG Pressure, is 0.5 psig and lowering
- RCS pressure is 2235 psig and rising
- Pressurizer level is 65% and rising
- Charging flow is 40 gpm
- Containment radiation levels are lowering

Which ONE of the following describes:
(1) the reason for isolating Letdown,
**AND**
(2) a signal that would prevent re-opening AOV-427, Isolation AOV to Regenerative HX?

A. (1) to identify if the leak is downstream of the Letdown Isolation Valve
(2) manual Safety Injection

B. (1) to identify if the leak is downstream of the Letdown Isolation Valve
(2) Containment Isolation

C. (1) to obtain a more accurate leak rate determination
(2) manual Safety Injection

D. (1) to obtain a more accurate leak rate determination
(2) Containment Isolation

**RO Question #3**

The plant is responding to a LOCA. The crew has entered ES-1.2, Post LOCA Cooldown and Depressurization.

Given the following events and conditions:

- RCPs have tripped
- Pressurizer level is stable
- Only one train of ECCS is injecting
- MSIVs are CLOSED

Which ONE of the following sets of plant parameters is indicative of fully established natural circulation?

A. (1) $T_{HOT}$ stable or lowering
(2) $T_{COLD}$ at saturation temperature for S/G pressure

B. (1) Subcooling based on CETs less than FIG-1.0, Figure MIN Subcooling, requirements
(2) $T_{COLD}$ at saturation temperature for S/G pressure

C. (1) $T_{HOT}$ stable or lowering
(2) $T_{COLD}$ at saturation temperature for RCS pressure

D. (1) Subcooling based on CETs less than FIG-1.0, Figure MIN Subcooling, requirements
(2) $T_{COLD}$ at saturation temperature for RCS pressure

**RO Question #4**

Given the following plant conditions:

- The plant is operating at 100% power
- 'A' AND 'B' Charging Pumps are both running in MANUAL
- 40 gpm orifice is in service
- 'B' Reactor Makeup Water and Boric Acid Pumps are in AUTO
- 'A' CCW Pump is running
- PRZR level is 56% and stable
- VCT level is 30% and stable

Next, the following occurs:

- Bus 16 is LOST due to an overcurrent fault
- **NO operator actions occur**

Which of the following describes the effect on:

(1) Pressurizer level;

**AND**

(2) VCT level?

A. (1) Pressurizer level will LOWER until Letdown isolates at 13%, then begin to RISE;
(2) VCT level will RISE until Letdown isolates, then begin to LOWER until Auto Makeup initiates at 20%

B. (1) Pressurizer level will LOWER until Letdown isolates at 13%, then begin to RISE;
(2) VCT level will RISE until Letdown isolates, then begin to LOWER until Charging Pump suction SWAPS to the RWST at 5%

C. (1) Pressurizer level will remain STABLE;
(2) VCT level will RISE until Letdown isolates, then begin to LOWER until Auto Makeup initiates at 20%

D. (1) Pressurizer level will remain STABLE;
(2) VCT level will RISE until Letdown isolates, then begin to LOWER until Charging Pump suction SWAPS to the RWST at 5%

**RO Question #5**

Given the following initial plant conditions:

- The plant is in MODE 5
- RCS level has been lowered to 9 inches for work on Reactor Coolant RTDs
- RHR Pump 'A' is providing cooling at 450 gpm

Subsequently:

- FI-626, RHR Loop Flow, is fluctuating from 50 gpm to 800 gpm
- Pump motor amps are oscillating, and discharge pressure is fluctuating
- RCS temperature is 110°F and slowly rising
- The Unit Supervisor enters AP-RHR.2, Loss of RHR While Operating at RCS Reduced Inventory Conditions

(1) Which ONE of the following conditions is occurring;
**AND**
(2) Which of the following actions is required for operation of RHR Pumps in accordance with AP-RHR.2?

A. (1) RHR Pump 'A' has reached runout conditions
(2) Stop 'A' RHR Pump

B. (1) RHR Pump 'A' has reached runout conditions
(2) Throttle HCV-626, RHR HX Bypass, to stabilize flow

C. (1) RHR Pump 'A' has indications of cavitation
(2) Stop 'A' RHR Pump

D. (1) RHR Pump 'A' has indications of cavitation
(2) Throttle HCV-626, RHR HX Bypass, to stabilize flow

**RO Question #6**

Given the following plant conditions:

- Plant is operating at 100% power
- PT-449, PRZR pressure, fails high

**Assuming no operator action**, which ONE of the following answer choices completes the statement below?

PRZR pressure will lower until…

A. PT-429, PRZR pressure, actuates heaters, then pressure stabilizes below program, but above the PRZR low pressure trip setpoint.

B. the reactor trips, then PT-429, PRZR pressure, actuates heaters and pressure stabilizes below program.

C. the reactor trips, then PT-429, PRZR pressure, actuates heaters and pressure slowly rises back to program.

D. the reactor trips, Safety Injection actuates, and pressure then stabilizes.

**RO Question #7**

Given the following plant conditions:

- Reactor Trip Breaker testing is in progress on Train 'B'
- 'B' Reactor Trip Breaker is OPEN
- 'B' Reactor Trip Bypass Breaker is racked IN and CLOSED
- A transient occurs initiating an AUTOMATIC Reactor Trip signal
- The Reactor does **NOT** trip from the AUTOMATIC signal

Which ONE of the following describes the condition that has contributed to the failure of the Automatic Reactor Trip? **(Assume no Operator actions taken)**

**Reactor Trip....**

A. Breaker 'A' Shunt Trip Coil failed to de-energize.

B. Breaker 'A' Undervoltage Trip Coil failed to de-energize.

C. Bypass Breaker 'B' Shunt Trip Coil failed to energize.

D. Bypass Breaker 'B' Undervoltage Trip Coil failed to energize.

**RO Question #8**

Given the following plant conditions:

- A LOCA has occurred
- Concurrently, one S/G has experienced a tube rupture
- Multiple electrical grid issues are also occurring
- The core is being cooled by reflux cooling

Which ONE of the following correctly completes the statements below?

1) The Operator must take action to ensure ___(1)___ in order to promote reflux cooling.
2) Reflux cooling will occur in the ruptured S/G as long as the ruptured S/G ___(2)___ remains less than that of the RCS.

A. (1) the intact S/G is fully depressurized
   (2) pressure

B. (1) water level is maintained in the intact S/G
   (2) pressure

C. (1) the intact S/G is fully depressurized
   (2) temperature

D. (1) water level is maintained in the intact S/G
   (2) temperature

**RO Question #9**

Given the following initial plant conditions:

- Operating crew is performing a Reactor startup from a maintenance outage
- Core Burnup: 12,500 MWD/MTU (EOL)
- HCO has completed withdrawing Shutdown Bank control rods
- Chemistry reports that RCS Boron concentration is significantly lower than the previous sample
- The STA calculates Shutdown Margin (SDM) and determines that SDM does **NOT** meet the limits specified in the COLR (Core Operating Limits Report)

1) In accordance with Technical Specification 3.1.1, Shutdown Margin (SDM), the operating crew must initiate boration to restore SDM to within limits within _____.
2) If a Steam Line Rupture were to occur inside CNMT, the Reactor _____ go critical.

A. 1) 30 minutes
   2) will NOT

B. 1) 30 minutes
   2) may

C. 1) 15 minutes
   2) will NOT

D. 1) 15 minutes
   2) may

**RO Question #10**

Given the following plant conditions:

- The plant is operating at 40% power
- The operating crew is preparing to place MFW Pump ‘A’ in service
- MFW Pump ‘B’ trips

Which ONE of the following completes the statements below?

The trip of MFW Pump ‘B’ will _____(1)____ the Main Turbine.

AP-TURB.1, Turbine Trip Without Rx Trip Required, directs that reactor power be reduced and maintained at a reduced power level to be within the feedwater capabilities of the _____(2)____ Pumps.

A. (1) require manual action to trip
   (2) AFW

B. (1) directly cause an automatic trip of
   (2) AFW

C. (1) require manual action to trip
   (2) SAFW

D. (1) directly cause an automatic trip of
   (2) SAFW

**RO Question #11**

Given the following initial plant conditions:

- A loss of all AC power has occurred
- The Immediate Actions of ECA-0.0, Loss of All AC Power, have been performed
- Attempts to restore power from the Control Room have been unsuccessful
- A Safety Injection (SI) signal is present, but NOT reset

Subsequently:

- RCS pressure is 1700 psig and stable
- PRZR level is 20% and stable
- Subcooling: 40°F

Which ONE of the following is correct with respect to SI reset?

A. As the SI signal is valid, it should NOT be reset.

B. The SI signal should be reset to permit automatic loading of the AC Emergency Bus.

C. The SI signal should be reset to prevent automatic starting of ECCS equipment when AC Emergency Bus power is restored.

D. Resetting SI is not necessary under these conditions because the signal will not seal-in with all the AC Emergency Buses de-energized.

**RO Question #12**

Given the following plant conditions:

- A Station Blackout has occurred
- The crew is performing ECA-0.0, Loss of All AC Power
- TDAFW Pump is delivering 180 gpm total flow
- RCS Subcooling is -1°F
- PRZR level is 4% and slowly lowering
- 'A' and 'B' S/G WR levels are 210 inches and slowly rising
- The Reactor Protection and Control System rack doors in the Control Room have been opened
- 'A' EDG has been started and is supplying its associated buses
- 'A' MDAFW Pump failed to start
- The Crew is preparing to transition to the appropriate recovery procedure

**NOTE: FR-H.1, Response to Loss of Heat Sink**
**ECA-0.1, Loss of All AC Power Recovery Without SI Required**
**ECA-0.2, Loss of All AC Power Recovery with SI Required**

Which ONE of the following describes the recovery strategy?

A. Transition to FR-H.1; when FR-H.1 is complete, transition to ECA-0.1.

B. Transition to FR-H.1; when FR-H.1 is complete, transition to ECA-0.2.

C. Transition to ECA-0.1 and enter FR-H.1 when directed by ECA-0.1.

D. Transition to ECA-0.2 and enter FR-H.1 when directed by ECA-0.2.

**RO Question #13**

Given the following plant conditions:

- The plant is operating at 100% power
- The 'B' Inverter experiences an Auto-Static TRANSFER
- Annunciator E-3, INVERTER TROUBLE, is received

Which ONE of the following correctly answers the statements below?

(1) The affected Instrument Bus will be _____.

**AND**

(2) In accordance with Technical Specification LCO 3.8.7, AC Instrument Bus Sources – MODES 1, 2, 3, and 4, the affected Instrument Bus source _____ OPERABLE.

A. (1) de-energized
(2) is NOT

B. (1) energized
(2) is NOT

C. (1) de-energized
(2) is

D. (1) energized
(2) is

**RO Question #14**

Given the following plant conditions:

- 'A' DC Bus develops a fault, causing the bus to de-energize
- Subsequently, a loss of Offsite Power occurs

Which ONE of the following describes how the loss of the 'A' DC Bus will affect Emergency Diesel Generator operation?

A. 'A' EDG will not start in response to an automatic signal; 'B' EDG will start in response to an automatic signal

B. 'A' EDG can only be started manually from the local panel; 'B' EDG will start in response to an automatic signal

C. Both EDGs will start in response to an automatic signal, but 'A' EDG will NOT tie to the Safeguards Buses

D. Both EDGs will start in response to an automatic signal, but 'A' EDG will require local actions to cross-tie the Fuel Oil System for long-term operation

**RO Question #15**

Plant conditions occurred as follows:

- While operating at rated power, there was a disturbance on the electrical power grid which required the unit to perform a load reduction
- The CO reports that Main Generator MVARs have gone from 50 MVARs OUT to 30 MVARs IN and this trend continues as indicated on the MCB meter
- Main Generator loading is 600 MWe

Using the provided Generator Capability Curve, if current trends continue:

1) Which MVAR limit will be met **FIRST**?

**AND**

2) In this condition, with concurrence from RG&E ECC the crew should _____ Main Generator output voltage to remain within the Generator Capability Curve.

A. 1) -70 MVARs
   2) raise

B. 1) 260 MVARs
   2) raise

C. 1) -70 MVARs
   2) lower

D. 1) 260 MVARs
   2) lower

**RO Question #16**

Given the following plant conditions:

- A LOCA outside Containment has occurred
- The crew is performing the actions in ECA-1.2, LOCA Outside Containment
- RCS cooldown is NOT in progress

Which ONE of the following indications is used to determine if the leak has been isolated in accordance with ECA-1.2?

A. RCS pressure

B. Pressurizer level

C. Safety Injection flow

D. RVLIS indication

**RO Question #17**

The Plant was operating at 100% power when the following conditions occurred:

- A design basis LOCA occurred concurrent with a loss of Offsite Power
- 'A' D/G failed to start and CANNOT be started
- 'B' CCW and 'B' SW Pumps are OOS for repairs
- The crew is performing E-1, Loss of Reactor or Secondary Coolant
- The HCO is performing Step 18, "Verify CNMT Sump Recirculation Capability"

CNMT Sump Recirculation Capability is NOT available because the required number of _____ are not available.

A. SW Pumps

B. RHR Pumps

C. RHR heat exchangers

D. RHR Pump Suction valves from Sump B

**RO Question #18**

A feedline break has resulted in a Reactor Trip and Safety Injection:

- 'C' SI Pump is out of service for repairs
- 'B' EDG failed to start
- The crew has entered FR-H.1, Response to Loss of Secondary Heat Sink, due to AFW failure
- Bleed and Feed has just been established
- RCS pressure is 1700 psig and LOWERING
- FI-924, SI LINE FLOW TO RCS LOOP B, indicates 600 gpm
- FI-925, SI LINE FLOW TO RCS LOOP A, indicates 0 gpm

Subsequently Offsite Power Circuit 767 trips

Which ONE of the following describes:

1) the number of SI Pumps **delivering flow to the core, if any**;
   **AND**
2) the long-term effect on Containment radiation levels assuming **NO** additional operator actions occur?

A. 1) one
   2) slightly elevated due to PRT Rupture Disk failure

B. 1) one
   2) significantly elevated due to PRT Rupture Disk failure and subsequent fuel failure

C. 1) none
   2) slightly elevated due to PRT Rupture Disk failure

D. 1) none
   2) significantly elevated due to PRT Rupture Disk failure and subsequent fuel failure

**RO Question #19**

Given the following plant conditions:

- The unit was stable at 80% power
- Rod Control is in MANUAL
- RG&E Energy Control Center directed a rapid load reduction to 70% due to a problem on the electrical grid
- Upon completion of the load reduction, the HCO reported that Annunciator C-5, PPCS ROD SEQUENCE OR ROD DEVIATION, was alarming
- Bank 'D' step counters read 181 steps
- MRPI indication for Bank 'D', Group 2 rod G-3 is 164 steps
- $T_{AVG}$ has stabilized at 4°F HIGHER than $T_{REF}$
- The US has entered AP-RCC.2, RCC/RPI Malfunction

Which choice identifies:
(1) the initial method for restoring $T_{AVG}$ to program; **AND**
(2) the alarm which will indicate that the problem is an actual misaligned RCC?

A. (1) insert rods to match $T_{AVG}$ to $T_{REF}$;
(2) Quadrant Power Tilt

B. (1) insert rods to match $T_{AVG}$ to $T_{REF}$;
(2) "ROD DEVIATION" alarm on the MRPI Screen

C. (1) initiate a boration to match $T_{AVG}$ to $T_{REF}$;
(2) Quadrant Power Tilt

D. (1) initiate a boration to match $T_{AVG}$ to $T_{REF}$;
(2) "ROD DEVIATION" alarm on the MRPI Screen

**RO Question #20**

Given the following plant conditions:

- 100% Reactor power
- LT-428 Pressurizer level channel has failed to 0%
- PRZR level DEFEAT switch L/428A is in NORMAL

Which ONE of the following describes:

1) The Charging Pump in AUTO will _____ Charging line flow;
   **AND**
2) Pressurizer Heaters will be _____.

A. 1) raise
   2) de energized

B. 1) lower
   2) de energized

C. 1) raise
   2) energized

D. 1) lower
   2) energized

**RO Question #21**

Given the following plant conditions:

- A reactor startup is in progress
- Control Bank 'A' is at 50 steps
- Both Intermediate Range channels indicate approximately 2 $x10^{-11}$ amps
- Source Range Channel N-31 fails DOWNSCALE

Which ONE (1) of the following describes the required response and the reason for the response?

A. Suspend the reactor startup; with only one Source Range channel OPERABLE, the minimum required Source Range High Flux Trip protection is not met.

B. Continue the reactor startup; with only one Source Range channel OPERABLE; one hour is allowed to restore two channels to service.

C. Suspend the reactor startup; Source Range channels are not required to trip the reactor; however, the Source Range monitoring functions must be available.

D. Continue the reactor startup; the Intermediate Range Neutron Flux Trip and the Power Range Neutron Flux-Low Trip provide the necessary core protection.

**RO Question #22**

Given the following plant conditions:

- The plant is at 100% power
- Intermediate Range Channel N-36 has failed LOW
- The operating crew has defeated N-36 in accordance with ER-NIS.2, IR Malfunction

Which ONE of the following correctly describes the status of the INTERMED RANGE 2 TRIP BYPASS Status Lamp on the MCB prior to and following the defeat of N-36?

| | PRIOR TO DEFEAT | FOLLOWING DEFEAT |
|---|---|---|
| A. | Illuminated | Illuminated |
| B. | Illuminated | Extinguished |
| C. | Extinguished | Illuminated |
| D. | Extinguished | Extinguished |

**RO Question #23**

Given the following plant conditions:

- Plant is at 100% power
- 'A' Gas Decay Tank (GDT) is in service
- The auto-swap feature has failed and 'A' Gas Decay Tank pressure is 110 psig and rising at 5 psig/minute

**Assuming NO Operator actions are taken**, if the pressure rise continues;

(1) what is the expected trend in radiation levels expected over the next 10 minutes; **AND**

(2) which radiation monitor would be indicative of the expected system response?

A. 1) initially no change and then a sudden increase in radiation level
   2) R-41, Continuous Air Monitor Aux BLDG Intermediate Level

B. 1) a continuous gradual increase in radiation levels
   2) R-41, Continuous Air Monitor Aux BLDG Intermediate Level

C. 1) initially no change and then a sudden increase in radiation level
   2) R-10B, Plant Vent Iodine

D. 1) a continuous gradual increase in radiation levels
   2) R-10B, Plant Vent Iodine

**RO Question #24**

Which ONE of the following Radiation Monitors in alarm would result in Main Control Board Annunciator E-24, RMS AREA MONITOR HIGH ACTIVITY, alarming?

A. R-9, LETDOWN LINE

B. R-45, CONTROL ROOM TRAIN ‘A’

C. R-16, CONTAINMENT FAN COOLING

D. R-17, COMPONENT COOLING

**RO Question #25**

Given the following plant conditions:

- The Unit Supervisor has determined that a Control Room evacuation is required in accordance with ER-FIRE.1, Alternate Shutdown for Control Room Abandonment
- Source Range Count Rate is RISING
- RCS Temperature is LOWERING

In accordance with ER-FIRE.1:

(1) What instrument indication will the HCO utilize to evaluate SDM;
**AND**
(2) What action would stabilize the SR Count Rate?

A. 1) Temporary Source Range Count Rate
2) continue the cooldown and allow RCS temperature to 'soak' at a lower value

B. 1) Temporary Source Range Count Rate
2) stop the RCS cooldown and allow RCS temperature to rise

C. 1) RCS Loop $T_{COLD}$
2) continue the cooldown and allow RCS temperature to 'soak' at a lower value

D. 1) RCS Loop $T_{COLD}$
2) stop the RCS cooldown and allow RCS temperature to rise

**RO Question #26**

Plant Staff has determined that a reactor shutdown is required in accordance with AP-RCS.3, High Reactor Coolant Activity, due to elevated Letdown line radiation levels.

Which ONE of the following describes:

(1) the procedure utilized by the Operating crew to shutdown the plant as directed by AP-RCS.3; **AND**

(2) the basis for a plant shutdown should Technical Specifications (TS) Specific Activity limits be exceeded?

A. (1) AP-TURB.5, Rapid Load Reduction
(2) to comply with accident analysis assumptions for a Steam Generator Tube Rupture with TS maximum RCS activity

B. (1) AP-TURB.5, Rapid Load Reduction
(2) to comply with accident analysis assumptions for a Main Steam Line Break with TS maximum primary-to-secondary leak rate.

C. (1) O-2.1, Normal Shutdown to Hot Shutdown
(2) to comply with accident analysis assumptions for a Steam Generator Tube Rupture with TS maximum RCS activity

D. (1) O-2.1, Normal Shutdown to Hot Shutdown
(2) to comply with accident analysis assumptions for a Main Steam Line Break with TS maximum primary-to-secondary leak rate.

**RO Question #27**

Given the following plant conditions:

- Plant was operating at 100% power
- 0100, the reactor tripped due to a fire in 'A' Reactor Trip Breaker
- 0105, Offsite Power tripped
- 0110, plant stabilized at Hot Shutdown conditions:
  - $T_{AVG}$: 547°F and stable
  - Loop $\Delta T$: 40°F
- 0115, crew transitioned to ES-0.2, Natural Circulation Cooldown
- 0130, Operating crew commences RCS cooldown with $T_{COLD}$ indicating 502°F

Which ONE of the following identifies the maximum amount of additional RCS cooldown that can occur from 0130 to 0200 in accordance with ES-0.2?

A. 0°F

B. 25°F

C. 50°F

D. 70°F

**RO Question #28**

Given the following plant conditions:

- Plant is operating at 100% power
- V-289, Charging Pumps Discharge Isolation Valve to RCP Seal Injection, has just been closed to isolate a piping rupture in the Auxiliary Building
- Annunciators B-9 and B-10, RCP 1A and 1B LABYR SEAL LO DIFF PRESS, are in alarm
- FI-115A and FI-116A, RCP Seal Inj Flow 1A and 1B, indicate 0 gpm

Which ONE of the following correctly answers the statements below?

1) Cooling of the RCP seals will continue via the _____.
2) RCP operation without seal injection shall generally be less than 24 hours due to _____.

A. 1) RCP Thermal Barrier
   2) elevated RCP seal operating temperatures

B. 1) RCP Thermal Barrier
   2) RCP seal cooling utilizing unfiltered water

C. 1) V-386, RCP A & B Seal Bypass AOV
   2) elevated RCP seal operating temperatures

D. 1) V-386, RCP A & B Seal Bypass AOV
   2) RCP seal cooling utilizing unfiltered water

**RO Question #29**

Prior to starting the 'A' RCP to initiate a plant heatup, the following conditions exist:

- RHR system in service
- RCS filled and vented
- VCT pressure = 17 psig
- RCS pressure = 330 psig
- PRZR level = 50%
- 'A' Loop Cold Leg Temperature TI-409B = 170ºF
- 'B' Loop Cold Leg Temperature TI-410B = 157ºF
- 'A' S/G Handhold Temperature = 172ºF
- 'B' S/G Handhold Temperature = 160ºF
- 'A' RCP No.1 Seal D/P = 310 psid

For the given conditions, which of the following identifies a RCP starting requirement that is **NOT** satisfied?

A. VCT pressure

B. RCS pressure

C. No.1 Seal D/P

D. RCS to S/G ΔT

**RO Question #30**

Given the following plant conditions:

- Plant is operating at 45% power
- The Control Room Operators have observed indications of a small RCS leak inside Containment
- HCO has calculated RCS leak rate to be 5 gpm
- A Containment entry was performed, and the leak is located and isolated on the piping elbow downstream of V-543, Letdown Inlet Block Valve to AOV-427
- Following closure of V-543, leak rate on this line is determined to be 0.1 gpm

Which ONE of the following correctly completes the following statements?

1) Pressurizer level will be controlled by _____ following actions in accordance with the applicable procedure(s).
2) Following closure of V-543, the leakage is classified as _____ LEAKAGE.

A. 1) placing Excess Letdown in service
   2) IDENTIFIED

B. 1) placing Excess Letdown in service
   2) PRESSURE BOUNDARY

C. 1) stopping and starting Charging Pumps
   2) IDENTIFIED

D. 1) stopping and starting Charging Pumps
   2) PRESSURE BOUNDARY

**RO Question #31**

Given the following plant conditions:

- A plant cooldown is in progress in accordance with O-2.2, Plant Shutdown from Hot Shutdown to Cold Conditions
- 'A' RHR cooling loop is in service
- 'B' RHR cooling loop is in standby
- V-709C and V-709D, RHR Pump Discharge Crosstie Valves, are open

Which ONE of the following identifies the MAXIMUM permissible RHR flow rate for the given plant conditions?

A. 400 gpm

B. 1200 gpm

C. 1500 gpm

D. 2900 gpm

**RO Question #32**

Given the following plant conditions:

- Plant is shutdown for a mid-cycle outage
- MOV-851A, RHR Pump Suction from CNMT Sump B, is closed for performance of MOV-850A stroke testing
- MOV-850A, RHR Pump Suction from CNMT Sump B, is stuck OPEN and can NOT be closed
- The Control Room Operators are preparing to realign RHR System for cooldown in accordance with O-2.2, Plant Shutdown from Hot Shutdown to Cold Conditions

What is the effect, if any, of having MOV-850A, stuck open on the operation of RHR for normal cooldown?

A. RHR system can be placed in service since MOV-851A, RHR Pump Suction from CNMT Sump B, is closed.

B. RHR system can be placed in service once either MOV-896A or MOV-896B, RWST Outlet to CNMT Spray & Safety Injection Pumps, is closed.

C. The RHR system can NOT be placed in service until MOV-897 and MOV-898, SI Recirc to RWST, are closed.

D. The RHR system can NOT be placed in service. MOV-700 and MOV-701, RHR Pump Suction from Loop A Hot Leg, can NOT be opened with MOV-850A open.

**RO Question #33**

Given the following plant conditions:

- Plant was operating at 100% power when a LOCA occurred
- Safety Injection (SI) was initiated and all SI Pumps are operating as designed

Immediately upon the Safety Injection flow initiation, the **INNER WALL** of the SI piping where it connects to the RCS undergoes __(1)__ stress. If one of the SI pipes that connects to the RCS fails from this stress, sufficient SI cooling flow __(2)__ be available to the core.

A. (1) tensile
(2) would

B. (1) tensile
(2) would NOT

C. (1) compressive
(2) would

D. (1) compressive
(2) would NOT

**RO Question #34**

Which ONE of the following choices correctly completes the statements below?

1) The Pressurizer Relief Tank (PRT) water level is maintained between _____ during normal operation.
2) An adverse effect of **NOT** maintaining PRT level within this design level band is that if level is too low, there would be insufficient water volume to …

A. 1) 50% to 75%
   2) adequately scrub the radioactive gases that leak into the PRT from the top of the PRZR, resulting in subsequent elevated gaseous activity levels inside CNMT.

B. 1) 50% to 75%
   2) absorb and condense a design discharge of PRZR Safety Valves leading to a possible overtemperature and overpressure condition of the PRT.

C. 1) 61% to 84%
   2) adequately scrub the radioactive gases that leak into the PRT from the top of the PRZR, resulting in subsequent elevated gaseous activity levels inside CNMT.

D. 1) 61% to 84%
   2) absorb and condense a design discharge of PRZR Safety Valves leading to a possible overtemperature and overpressure condition of the PRT.

**RO Question #35**

Given the following initial plant conditions:

- 'A' CCW Pump is running
- 'B' CCW Pump is in standby

Subsequently:

- Radiation Monitor R-17, Component Cooling Water, WARNING LED is lit
- CCW Surge Tank level – 55% and slowly rising
- CCW header pressure – 50 psig and slowly lowering

Which ONE of the following correctly states the expected plant response for the given plant conditions?

A. 'A' CCW Pump receives a TRIP signal

B. 'B' CCW Pump receives an automatic START signal

C. RCV-017, CCW Surge Tank Vent, receives an automatic CLOSE signal

D. MOV-814, CCW from Rx Support CLRS ISOL VLV, receives an automatic CLOSE signal

**RO Question #36**

Given the following plant conditions:

- Plant is operating at 100% power
- 'A' CCW Pump and Heat Exchanger are in service
- 'B' CCW Heat Exchanger is isolated and drained to repair a tube leak
- Control Room Operators are monitoring PPCS point F0619, Component Cooling Loop Total Flow

Which ONE of the following choices correctly answers the questions below?

1) What is the MAXIMUM allowed CCW flow for the given plant conditions?

**AND**

2) What is the reason for the MAXIMUM allowed CCW flow?

A. 1) < 2400 gpm
   2) CCW Pump runout

B. 1) < 4900 gpm
   2) CCW Pump runout

C. 1) < 2400 gpm
   2) CCW Heat Exchanger flow induced vibration

D. 1) < 4900 gpm
   2) CCW Heat Exchanger flow induced vibration

**RO Question #37**

Given the following plant conditions:

- Plant is operating at 100% power
- PRZR parameters are initially at their normal program values
- A leak has developed on the weld at the point the reference leg taps off the Pressurizer for the controlling Pressurizer level detector
- PRZR level is changing approximately 1%/min
- PRZR pressure is changing approximately 20 psig/min

Which ONE of the following correctly describes the **FIRST** effect on the Pressurizer Control System? (**Assume no Operator actions taken**)

A. Backup Heaters energize

B. Spray Valves modulate OPEN

C. Proportional Heaters turn OFF

D. Proportional Heaters go to full voltage

**RO Question #38**

Given the following plant conditions:

- Plant is operating at 30% power

Which ONE of the following describes the plant response that is COMMON (for 'A', 'B', 'C', **AND** 'D' Instrument Buses) to the loss of **ANY** single Instrument Bus?
**(Assume no Operator actions)**

A. Reactor trip will occur

B. Normal Letdown will isolate

C. Power Range overpower rod stop

D. AMSAC will automatically block after a time delay

**RO Question #39**

With regards to the Reactor Protection System protection circuits, which ONE of the following correctly completes the statements below?

With regards to the Pressurizer Low Pressure Trip, when the Bistable Proving switch is placed in DEFEAT (up):

1) Power is supplied to the associated Proving Lamp from the associated _____.

2) IF the associated bistable has reached its trip setpoint, the Proving Lamp status will be _____.

A. 1) DC Bus
   2) ON

B. 1) DC Bus
   2) OFF

C. 1) Instrument Bus
   2) ON

D. 1) Instrument Bus
   2) OFF

**RO Question #40**

Given the following plant conditions:

- Plant was operating at 25% power when a LOCA occurred
- No automatic Reactor Protection or Engineered Safety Feature actuation setpoints have been reached
- Both Steam Generator narrow range levels have remained greater than 35%
- AOV-427, Isolation Air Operated Valve to the Regenerative Heat Exchangers, has been CLOSED
- PRZR level continues to lower

Which ONE of the following describes the correct status of AFW Pumps following the completion of verifying Immediate Actions for the appropriate plant EOP?

A. Both Motor Driven AFW Pumps should have started, **ONLY**

B. Turbine Driven AFW Pump should have started, **ONLY**

C. Both Motor Driven and the Turbine Driven AFW Pumps should have started

D. None of the AFW Pumps should have started

**RO Question #41**

Which one of the following correctly identifies an interlock/trip associated with the Penetration Cooling Fans?

A. High vibration trips the associated fan

B. Starting interlock prevents both fans from running at the same time

C. Fire protection switches trip the associated fan

D. High alarm on R-13, Plant Vent Particulate, trips the running fan and prevents start of the standby fan

**RO Question #42**

Given the following plant conditions:

- The unit has experienced a Design Basis Loss of Coolant Accident (DB LOCA)
- During execution of E-0, Reactor Trip or Safety Injection, a Station Blackout occurred
- The Control Room crew is performing ECA-0.0, Loss of All AC Power
- Containment Pressure and Temperature are steadily rising

1. What is the **MINIMUM** combination of Containment Cooling Systems (CCS) that must be returned to service to meet the assumptions used in the DB LOCA accident analysis?
   **AND**
2. Without **MINIMUM** CCS available, at what pressure would the Containment **DESIGN** limit **FIRST** be exceeded?

A. 1. (1) Containment Spray Pump and (1) Containment Recirc Fan
   2. Containment pressure > 60 psig

B. 1. (1) Containment Spray Pump and (1) Containment Recirc Fan
   2. Containment pressure > 55 psig

C. 1. (1) Containment Spray Pump and (2) Containment Recirc Fans
   2. Containment pressure > 60 psig

D. 1. (1) Containment Spray Pump and (2) Containment Recirc Fans
   2. Containment pressure > 55 psig

**RO Question #43**

Plant conditions are as follows:

- The unit is performing a startup following a Mid-cycle maintenance outage
- The SHUTDOWN BANK has been fully withdrawn
- The CONTROL BANKS are being withdrawn to criticality
- Atmospheric Relief Valves (ARVs) are in MANUAL

Which ONE of the following plant evolutions would cause the reactor to go critical **PRIOR** to the value obtained in the Estimated Critical Position (ECP)? (**Assume no other operator action**)

A. Steam Generator operating level is reduced from 60% to 50%.

B. (1) Steam Generator Automatic Relief Valve (ARV) fails closed.

C. (15) gallons of Boric Acid is added to the Reactor Coolant System.

D. MSIVs are bypassed to warm-up the Main Steam Header.

**RO Question #44**

Given the following plant conditions:

- Plant is operating at 100% power
- Both Feedwater Regulating Valves (FRVs) are in MANUAL due to ADFCS failure
- PI-2044 and PI-2045, FW PUMP A/B SUCTION PRESS, indicate 200 psig and slowly lowering
- PI-4017, CNDST BSTR DISCH PRESS, indicates 340 psig and slowly lowering

**With no Operator actions,** which ONE of the following describes:
1) the expected trend in Steam Generator Feedwater flow; **followed by**
2) the automatic action that will assist in restoring MFW Pump suction pressure?

A. 1) lowering
   2) AOV-3959, Condensate Bypass Valve, opening

B. 1) lowering
   2) Standby Condensate Booster Pump starting

C. 1) rising
   2) AOV-3959, Condensate Bypass Valve, opening

D. 1) rising
   2) Standby Condensate Booster Pump starting

**RO Question #45**

Given the following plant conditions:

- Control Room Operators are performing ECA-0.0, Loss of All AC Power
- Bus 16 has been reported as damaged
- 'A' and 'B' EDGs can NOT be started
- Turbine Driven AFW Pump is isolated and drained for repairs

Which ONE of the following correctly lists:
1) an Auxiliary Feedwater Pump that can be started to restore S/G water level; **AND**
2) the approximate MAXIMUM Auxiliary Feedwater flow that will be provided?

A. 1) 'A' Motor Driven AFW Pump
   2) 200 to 225 gpm

B. 1) 'A' Motor Driven AFW Pump
   2) 235 to 280 gpm

C. 1) 'C' Standby AFW Pump
   2) 200 to 225 gpm

D. 1) 'C' Standby AFW Pump
   2) 235 to 280 gpm

**RO Question #46**

Given the following plant conditions:

- Control Room Operators are performing the actions of ECA-0.0, Loss of All AC Power
- Annunciator J-24, EMERGENCY DIESEL GEN 1A PANEL, is lit due to 'A' EDG tripping on overspeed when Offsite Power was lost
- 'B' EDG tripped on low lube oil pressure and is not available
- 'A' EDG is available to restart
- EO has reset 'A' EDG Overspeed Trip Lever
- EO has depressed the Local Alarm Reset pushbutton

Which ONE of the following is the expected response of 'A' EDG and its output breakers when the Control Room Operator depresses the D/G A FIELD RESET and D/G A RESET pushbuttons on back of the Main Control Board?

A. 'A' EDG will start automatically and D/G A BUS 14 and BUS 18 SUPPLY BREAKERs will automatically close.

B. 'A' EDG will start automatically and D/G A BUS 14 and BUS 18 SUPPLY BREAKERs must be manually closed.

C. 'A' EDG must be manually started and then D/G A BUS 14 and BUS 18 SUPPLY BREAKERs will automatically close.

D. 'A' EDG must be manually started and D/G A BUS 14 and BUS 18 SUPPLY BREAKERs must be manually closed.

**RO Question #47**

Given the following plant conditions:

- An accident has resulted in automatic Safety Injection (SI) and Containment Spray (CS) actuation
- CNMT pressure is 30 psig and slowly lowering
- AOV-5392, Instrument Air to CNMT Isolation Valve, has been reset and opened
- Subsequently:
  - Bus 16 NORMAL Supply breaker has tripped
  - 'B' EDG output breaker closed and re-energized Bus 16

Which ONE of the following describes the response of 'B' SI and 'B' CS Pumps?

A. Both pumps will automatically restart

B. Both pumps must be manually restarted using the individual pump breaker controls

C. 'B' SI Pump will automatically restart, but 'B' CS Pump must be started manually using its individual pump breaker control

D. 'B' CS Pump will automatically restart, but 'B' SI Pump must be manually started using its individual pump breaker control

**RO Question #48**

Which ONE of the following correctly describes how the 480 VAC Distribution System will be affected by the loss of a DC Distribution Train?

**NOTE: MCC – Motor Control Center**

A. Associated 480 Volt Buses and MCCs lose control power.

B. Associated 480 Volt Buses and MCCs automatically swap to the backup DC Train for control power.

C. Associated 480 Volt Buses automatically swap to the backup DC Train for control power;
associated MCCs lose control power.

D. Associated 480 Volt Buses lose control power;
associated MCCs automatically swap to the backup DC Train for control power.

**RO Question #49**

Given the following plant conditions:

- The plant has experienced a Large Break LOCA concurrent with a loss of Offsite Power
- 'B' EDG tripped 3 minutes after starting
- Control Room Operators have just transitioned to E-1, Loss of Reactor or Secondary Coolant
- Safety Injection has been RESET

Which ONE of the following correctly answers the below statements?

1) A possible cause of 'B' EDG initially tripping is _____.
2) Once 'B' EDG is available and energizes Buses 16 and 17, 'B' Train ECCS loads will _____.

A. 1) Low oil pressure
   2) be manually started

B. 1) Low oil pressure
   2) automatically load onto Bus

C. 1) Overcurrent
   2) be manually started

D. 1) Overcurrent
   2) automatically load onto Bus

**RO Question #50**

Which ONE of the following correctly lists Emergency Diesel Generator loading limits that are applicable during a loss of Offsite Power?

A. 1950 kW for 2 hours, 2250 kW for 0.5 hour

B. 1950 kW continuous, 2250 kW for 2 hours

C. 2250 kW for 2 hours, 2350 kW for 0.5 hour

D. 2200 kW continuous, 2300 kW for 2 hours

**RO Question #51**

Which ONE of the following process Radiation Monitors would automatically isolate or terminate a release when its alarm setpoint is reached?

A. R-14A, Plant Vent High Range Effluent SPING

B. R-20A, Spent Fuel Pool Heat Exchanger Service Water

C. R-21, Retention Tank

D. R-48, Air Ejector and Gland Steam Exhaust

**RO Question #52**

Given the following plant conditions:

- The unit has tripped due to a large break Loss of Coolant Accident (LOCA)
- Concurrently a Loss of all Off-site Power has occurred
- Both EDGs have started and restored power to 480V safeguards Buses
- FCV-4561 status light is BRIGHT on the MCB
- FCV-4562 status light is DIM on the MCB
- MOV-852A and MOV-852B Red lights are LIT, Green lights are OFF

**NOTE: FCV-4561, CONTAINMENT COOLERS SW OUTLET FLOW CONTROL AOV**
**FCV-4562, AIR OPERATED BYPASS OF VALVE 4561**

(1) What is the number of Service Water Header Isolation Valves that are CLOSED?
**AND**
(2) Which Service Water Flow Control Valve (FCV) is **NOT** in its safeguards position?

A. (1) Six (6) valves
(2) FCV-4561

B. (1) Six (6) valves
(2) FCV-4562

C. (1) Twelve (12) valves
(2) FCV-4561

D. (1) Twelve (12) valves
(2) FCV-4562

**RO Question #53**

Given the following plant conditions:

- Electric plant is in a Normal 50/50 lineup
- Plant trips due to a Steam Generator Tube Rupture (SGTR)
- Concurrently, a differential fault on Offsite Power Circuit 7T causes it to trip
- Control Room crew are at E-3, Steam Generator Tube Rupture, Step 27, Establish IA to CNMT

Which ONE of the following describes:
(1) which Air Compressor will be started to supply Instrument Air;
**AND**
(2) the reason that Instrument Air is being restored to Containment?

A. (1) 'C' Instrument Air Compressor
(2) to allow control of Charging and Letdown valves

B. (1) 'C' Instrument Air Compressor
(2) to allow restoration of blowdown flow

C. (1) Diesel Air Compressor
(2) to allow control of Charging and Letdown valves

D. (1) Diesel Air Compressor
(2) to allow restoration of blowdown flow

**RO Question #54**

Given the following plant conditions:

- Plant is operating at 100% power
- Service Air Compressor is running
- Service and Instrument Air systems are cross-connected in accordance with T-1C, Instrument Air/Service Air Cross Connect
- The following Annunciators are received in the Control Room:
  - J-29, 480V TRANSFORMER BREAKER TRIP
  - L-6, BUS 13 UNDERVOLTAGE NON-SAFEGUARD

**Assuming NO Operator actions are taken**, which ONE of the following describes the Air Compressor that will be running?

A. 'A' Instrument Air Compressor

B. 'B' Instrument Air Compressor

C. 'C' Instrument Air Compressor

D. Service Air Compressor

**RO Question #55**

Given the following initial plant conditions:

- A loss of coolant accident (LOCA) has occurred
- The operating crew manually tripped the reactor
- Automatic Safety Injection failed to actuate
- The HCO manually actuated Safety Injection by depressing the MANUAL SAFETY INJECTION pushbutton, **ONLY**

Currently:

- The operating crew is transitioning to E-1, Loss of Reactor or Secondary Coolant
- All actions in E-0, Reactor Trip or Safety Injection, have been completed to the current Step

Which ONE of the following describes:
(1) the status of Containment Isolation (CI) actuation; **AND**
(2) the components' response to the CI signal?

A. (1) automatic CI signal has actuated
   (2) ALL Containment penetrations have been isolated

B. (1) automatic CI signal has actuated
   (2) non-essential process line penetrations, **ONLY**, have been isolated

C. (1) CI signal has been manually actuated
   (2) ALL Containment penetrations have been isolated

D. (1) CI signal has been manually actuated
   (2) non-essential process line penetrations, **ONLY**, have been isolated

**RO Question #56**

Given the following plant conditions:

- Plant is operating at 100% power
- PCV-434, PRZR Safety Valve, fails open

1) Is PCV-434 isolable from the Control Room?
2) If the valve remains open, after 20 minutes, what will Pressurizer level be?

A. 1) YES
   2) 100%

B. 1) YES
   2) 0%

C. 1) NO
   2) 100%

D. 1) NO
   2) 0%

**RO Question #57**

Given the following plant conditions:

- Plant is operating at 100% power
- Normal 50/50 electrical alignment

Subsequently:

- Offsite Power circuit 767 is lost
- 'B' EDG fails to start

Which ONE of the following identifies:
(1) the status of Pressurizer Heater groups;
**AND**
(2) the reason for that status?

A. (1) **NEITHER** the Proportional or Backup Heaters are available/energized.
(2) Pressurizer level channel LT-428 is de-energized.

B. (1) **NEITHER** the Proportional or Backup Heaters are available/energized.
(2) Bus 16 is de-energized.

C. (1) **ONLY** the Proportional Heaters are energized
(2) Pressurizer level channel LT-428 is de-energized.

D. (1) **ONLY** the Proportional Heaters are energized
(2) Bus 16 is de-energized.

**RO Question #58**

Given the following plant conditions:

- Plant is operating at 100% power
- 'B' Emergency Diesel Generator (EDG) is tagged for maintenance
- All Offsite Power has just been lost

Which ONE of the following describes:
1) the effect, if any, on the Microprocessor Rod Position Indication (MRPI) system; **AND**
2) the procedure the Control Room will enter to mitigate the event?

A. 1) no effect
   2) AP-ELEC.1, Loss of 12A and/or 12B Busses

B. 1) no effect
   2) ECA-0.0, Loss of All AC Power

C. 1) MRPI is de-energized
   2) AP-ELEC.1, Loss of 12A and/or 12B Busses

D. 1) MRPI is de-energized
   2) ECA-0.0, Loss of All AC Power

**RO Question #59**

Which ONE of the following could be an indication that the core is potentially uncovered?

| | **CET Temperature** | **RCS Pressure** |
|---|---|---|
| A. | 550°F | 1150 psia |
| B. | 570°F | 1300 psia |
| C. | 590°F | 1350 psia |
| D. | 610°F | 1700 psia |

**RO Question #60**

Given the following plant conditions:

- Plant is in MODE 6
- Lifting of the Reactor head is about to commence
- Containment Purge system is in operation with the following fans running:
  - Purge Exhaust Fans 'A' and 'B'
  - Purge Supply Fan 'A'
- Radiation Monitor R-12, Containment Ventilation Gas, alarms
- Annunciator A-25, CONTAINMENT VENTILATION ISOLATION, is extinguished

Which ONE of the following correctly answers the following statements?

1) Prior to **ANY Operator actions being taken**, conditions for lifting the Reactor head _____.

**AND**

2) Control Room Operators will be required to _____.

A. 1) are met, reactor head lift may continue
   2) Depress MANUAL CNMT ISOLATION pushbutton to actuate CNMT Ventilation Isolation

B. 1) are met, reactor head lift may continue
   2) Manually STOP CNMT Purge Supply and Exhaust Fans and CLOSE Purge Supply and Exhaust AOVs

C. 1) are NOT met
   2) Depress MANUAL CNMT ISOLATION pushbutton to actuate CNMT Ventilation Isolation

D. 1) are NOT met
   2) Manually STOP CNMT Purge Supply and Exhaust Fans and CLOSE Purge Supply and Exhaust AOVs

**RO Question #61**

Which ONE of the following describes (1) an automatic feature; **AND** (2) a passive feature that prevents uncovering of the fuel in the Spent Fuel Pool (SFP) if a leak were to develop on the in-service SFP Cooling Pump?

A. (1) Automatic trip of the 'A' SFP cooling pump on low water level, AND
(2) A siphon break in the SFP cooling water return line approximately at the normal spent fuel pool level

B. (1) Automatic trip of the 'A' SFP cooling pump on low water level, AND
(2) A siphon break in the SFP cooling water return line approximately 5'4" above the top of the fuel racks

C. (1) Automatic trip of the 'B' SFP cooling pump on low water level, AND
(2) A siphon break in the SFP cooling water return line approximately at the normal spent fuel pool level

D. (1) Automatic trip of the 'B' SFP cooling pump on low water level, AND
(2) A siphon break in the SFP cooling water return line approximately 5'4" above the top of the fuel racks

**RO Question #62**

Given the following plant conditions:

- Plant is in a Refueling Outage
- Core reload is in progress
- 'A' RHR loop has been in operation for the last 48 hours
- The Refueling crew is attempting to insert a fuel assembly into the core adjacent to the 'A' hot leg nozzle
- The Refueling SRO has requested the Control Room secure 'A' RHR Pump to facilitate installation of the fuel assembly into the core

Which ONE of the following correctly completes the statement below?

In accordance with Technical Specification LCO 3.9.4, Residual Heat Removal (RHR) and Coolant Circulation – Water Level ≥ 23 Ft, the required RHR loop may be removed from operation for **(1)** per **(2)** period, provided no operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than that required to meet the minimum boron concentration of LCO 3.9.1, Boron Concentration.

A. (1) ≤ 1 hour
   (2) 4 hour

B. (1) ≤ 1 hour
   (2) 8 hour

C. (1) ≤ 2 hours
   (2) 4 hour

D. (1) ≤ 2 hours
   (2) 8 hour

**RO Question #63**

Given the following plant conditions:

- Plant was operating at 100% power
- An event occurred causing both MSIVs to close
- Automatic Reactor Trip has occurred

**With no Operator actions taken**, RCS $T_{AVG}$ stabilize at approximately _____.

A. 547°F

B. 552°F

C. 554°F

D. 556°F

**RO Question #64**

Given the following plant conditions:

- Plant is in MODE 6
- Circ Water interlock for R-18, Liquid Waste Disposal, is bypassed
- 'A' Monitor Tank release is in progress
- Lake temperature is 31.5°F
- Operating crew has entered ER-SC.3, Low Screenhouse Water Level

Which ONE of the following correctly completes the statements below?

(1) IF the Recirc Gate is opened due to lowering Screenhouse water level, the R-18 alarm setpoint will be _____ conservative.

(2) If ALL Service Water Pumps were tripped due to loss of suction, the Monitor Tank release would _____.

A. (1) less
(2) continue

B. (1) less
(2) be automatically isolated

C. (1) more
(2) continue

D. (1) more
(2) be automatically isolated

**RO Question #65**

Given the following plant conditions:

- A loss of Instrument Air is occurring
- Instrument Air is lined up as follows:
  - Instrument and Service Air headers are cross-connected
  - Service Air Compressor running
  - Instrument Air Header pressure lowered to 85 psig and is currently 88 psig and rising slowly
  - Service air pressure is 85 psig and slowly lowering

Which ONE of the following correctly completes the statements below regarding expected valve positions?

(1) V-7000, SERVICE AIR / INSTRUMENT AIR CROSS CONNECT LOW PRESSURE AUTOMATIC ISOLATION VALVE, will be _____.

(2) AOV-5251, SERVICE AIR CROSS-TIE AIR OPERATED VALVE TO INSTRUMENT AIR VALVE, will be_____.

| | **(1) V-7000 position** | **(2) AOV-5251 position** |
|---|---|---|
| A. | OPEN | OPEN |
| B. | OPEN | CLOSED |
| C. | CLOSED | OPEN |
| D. | CLOSED | CLOSED |

**RO Question #66**

Given the following plant conditions:

- Plant is in Refueling Outage
- Core offload is in progress

Which ONE of the following conditions will REQUIRE the suspension of fuel movement in Containment?

A. The running Auxiliary Building Exhaust Fan trips

B. No audible count rate on either Source Range NI is functioning

C. Chemistry reports Reactor Cavity boron concentration has lowered to 2795 ppm

D. An EO reports that the outer personnel air lock door is broken and can NOT be closed

**RO Question #67**

Given the following plant conditions:

- Plant start up is in progress following a Refueling Outage
- Main Turbine is being prepared to synchronize to the electrical grid
- Reactor power is being maintained between 15% and 20%

Which set of the following indications could be used to confirm Reactor power?

1. Feed Flow rate
2. Control Rod position
3. Steam Dump operation
4. RCS Loop Differential Temperature

A. 1, 2, 3

B. 1, 2, 4

C. 1, 3, 4

D. 2, 3, 4

**RO Question #68**

A Temporary Procedure Change has been prepared for CPI-TAVG-401, CALIBRATION OF TAVG LOOP 401, which does **NOT** involve a change of intent of the procedure.

Which ONE of the following states the approval signatures required **before** the procedure can be used?

**NOTE: SRO – Senior Reactor Operator**
**SQR – Station Qualified Reviewer**
**SFAM – Site Functional Area Manager**

A. SRO only

B. SRO and SQR only

C. SRO and SFAM only

D. SRO, SQR, and SFAM

**RO Question #69**

Which ONE of the following personnel can be selected to verify that a briefing is thorough and complete for an Infrequent Plant Activity (IPA) Briefing in accordance with HU-AA-1211, Pre-Job Briefings?

A. Unit Supervisor

B. Shift Manager

C. Test Coordinator

D. Operations Director

**RO Question #70**

Given the following plant conditions:

- The plant is at 100% power
- A Containment entry is in progress

Which ONE of the conditions listed below requires the Containment to be evacuated?

A. Swapping Containment Recirc Fans is required

B. Unexpected R-11, CNMT Vent Particulate, alarm

C. Radio communications with the Control Room becomes unavailable

D. Upon entry, it is discovered that area lighting is OFF in the intermediate and basement levels

**RO Question #71**

Given the following plant conditions:

- A Steam Generator Tube Rupture has occurred on 'B' S/G
- The crew has performed all actions of E-3, Steam Generator Tube Rupture, up to the step to commence depressurization of the RCS

Which ONE of the following describes the action taken with 'B' S/G Atmospheric Relief Valve (ARV), **AND** the reason for this action?

A. CLOSED with controller in MANUAL; minimize radioactive release to atmosphere

B. CLOSED with controller in MANUAL; ensures minimum RCS subcooling will be maintained when RCS depressurization is initiated

C. Set at 1050 psig with controller in AUTO; minimize radioactive release to atmosphere

D. Set at 1050 psig with controller in AUTO; ensures minimum RCS subcooling will be maintained when RCS depressurization is initiated

**RO Question #72**

Which one of the following is correct regarding Planned Special Exposures (PSE)?

A. The PSE is separate from the annual routine dose; and is limited by additional annual and lifetime doses.

B. The PSE is separate from the annual routine dose; and is limited by an annual dose limit **ONLY**.

C. The PSE is considered as part of the annual routine dose; and is limited by additional annual and lifetime doses.

D. The PSE is considered as part of the annual routine dose; and is limited by an annual dose limit **ONLY**.

**RO Question #73**

Given the following plant conditions:

- The Emergency Response Organization has been activated
- Command and Control has been shifted from the Control Room to the Technical Support Center (TSC) and Emergency Operating Facility (EOF)

Which ONE of the following states the Emergency Response Facility responsible for:
(1) event classification; **AND**
(2) Protective Action Recommendation (PAR) determination?

A. (1) TSC
   (2) TSC

B. (1) TSC
   (2) EOF

C. (1) EOF
   (2) TSC

D. (1) EOF
   (2) EOF

**RO Question #74**

Given the following plant conditions:

- 1400 LOCA occurs in Containment
- 1410 Shift Manager declares an Alert

Which ONE of the following correctly states the latest required times for emergency notification in accordance with EP-AA-1000, Standardized Radiological Emergency Plan?

| | State/Local Agencies | NRC Operations Center |
|---|---|---|
| A. | 1415 | 1500 |
| B. | 1415 | 1510 |
| C. | 1425 | 1500 |
| D. | 1425 | 1510 |

**RO Question #75**

Given the following plant conditions:

- The reactor was manually tripped in accordance with an Abnormal Operating Procedure (AP)
- The operating crew has completed E-0, Reactor Trip or Safety Injection, Immediate Actions

Which ONE of the following correctly completes the statements below in accordance with A-503.1, Emergency and Abnormal Operating Procedures Users Guide?

1) The AP that directed the Reactor trip _____ be used in conjunction with E-0.

2) If during the performance of E-0 there are indications of AP entry conditions, then the appropriate AP _____ be performed in parallel with E-0.

A. 1) may
   2) may

B. 1) may
   2) may NOT

C. 1) may NOT
   2) may

D. 1) may NOT
   2) may NOT

**SRO Question #76**

Plant conditions occurred at the following times:

1330 - While operating at rated power, the following Annunciators alarmed:

- A-6, CONT SPRAY PUMP COOLING WATER OUT LO FLOW
- A-7(15), RCP A(B) CCW RETURN HI TEMP OR LO FLOW
- A-9, RHR PUMP COOLING WATER OUTLET LO FLOW
- A-14, SAFETY INJ PUMPS COOLING WATER OUT LO FLOW
- A-17, MOTOR OFF RCP CCWP
- A-22, CCW PUMP DISCHARGE LO PRESS

1331 - Standby CCW Pump tripped upon starting, leaving no CCW Pumps running.
- CCW Surge Tank level is trending up.
- R-17, CCW Radiation Monitor, is in alarm and counts are trending up slowly.

Based on the information given, which ONE of the following are the required action(s) to be taken **IMMEDIATELY** after 1331?

**NOTE: AP-CCW.1, Leakage into the Component Cooling Loop**
**AP-CCW.2, Loss of CCW During Power Operation**

A. Direct entry into AP-CCW.1 and verify that the CCW Surge Tank Vent Valve has automatically isolated.

B. Direct entry into AP-CCW.2 and trip the reactor, perform the Immediate Actions of E-0, and then trip the RCPs.

C. Direct entry into AP-CCW.2 and IF a RCP bearing temperature exceeds 200°F, THEN trip the reactor and then trip the RCPs.

D. Direct entry into AP-CCW.1 and verify seal injection flow normal, then manually close the Thermal Barrier Return Valves (AOV-754A/754B).

**SRO Question #77**

Given the following plant conditions:

- Plant is operating at 100% power
- 'B' Charging Pump is out of service for plunger repairs
- The following Annunciators are received:
  - A-2, VCT LEVEL 14 % 86
  - A-4, REGEN HX LETDOWN OUT HIGH TEMP 395°F
  - A-10, VCT PRESSURE 15 PSI 65
  - F-14, CHARGING PUMP SPEED
- The HCO reports:
  - FI-128C, Charging Line Flow, fluctuating between 0 and 5 gpm
  - FI-115A and FI-116A, RCP Seal INJ Flow, indicates 0 gpm
- Primary EO reports loud noise coming from 'A' and 'C' Charging Pumps

In accordance with the applicable Abnormal Operating Procedure (AP):
1) the operating crew will shutdown the plant at a rate of _____;
**AND**
2) final RCS pressure will be stabilized at _____.

A. 1) 3 %/minute
   2) 1350 – 1450 psig

B. 1) 3 %/minute
   2) 1750 – 1950 psig

C. 1) 5 %/minute
   2) 1350 – 1450 psig

D. 1) 5 %/minute
   2) 1750 – 1950 psig

**SRO Question #78**

Given the following initial plant conditions:

- Plant was operating at 100% power
- Both MFW Pumps tripped
- The Reactor and Turbine failed to automatically trip
- HCO unsuccessfully attempted to manually trip the Reactor
- US has entered FR-S.1, Response to Reactor Restart/ATWS
- Crew is at Step 4, Initiate Emergency Boration of RCS
- Current plant conditions:
  - EO reports both Control Rod Drive MG Set Breakers tripped locally
  - HCO reports ALL Control and Shutdown Rods on bottom
  - CO reports:
    - NO MDAFW Pumps can be started
    - PI-2048, TDAFW PUMP DISCH PRESS, indicates 0 psig
    - Both S/G narrow range water levels indicate approximately 5% and lowering

Which ONE of the following describes the procedure transition that the US will perform?

A. Immediately transition to E-0, Reactor Trip or Safety Injection

B. Immediately transition to FR-H.1, Response to Loss of Secondary Heat Sink

C. Complete FR-S.1, then transition to E-0, Reactor Trip or Safety Injection

D. Complete FR-S.1, then transition to FR-H.1, Response to Loss of Secondary Heat Sink

**SRO Question #79**

Given the following plant conditions:

- The plant has experienced a loss of vital DC Bus 'A' resulting from a fire in Main DC Distribution Panel 'A'
- All available EOs are fighting the fire
- The operating crew is implementing the appropriate Emergency Operating Procedures
- The STA is working with a spare RO to implement ER-ELEC.2, Recovery from Loss of A or B DC Train
- EMD reports that repairs will be completed in approximately 48 hours

1) In accordance with ER-ELEC.2, the spare RO will transfer Bus 11A control power to DC Bus 'B' inside Bus 11A _____ cubicle.

**AND**

2) The operating crew will stabilize the plant in _____ conditions.

A. 1) Reactor Coolant Pump No. 1A
   2) Cold Shutdown

B. 1) STA Service XFMR No. 13
   2) Cold Shutdown

C. 1) Reactor Coolant Pump No. 1A
   2) Hot Standby

D. 1) STA Service XFMR No. 13
   2) Hot Standby

**SRO Question #80**

Given the following plant conditions:

- Plant is operating at 100% power
- RG&E Energy Control Center reports grid disturbances are occurring
- Annunciator J-27, GENERATOR VOLTAGE REGULATOR ALARM, is received
- CO reports Generator MVARs indicate + 260 and rising

Which ONE of the following correctly completes the statement below?

The Main Generator Voltage Regulator will trip to MANUAL _____(1)_____ upon reaching the Over Excitation Protection Limit and RG&E Energy Control Center must be notified that the Main Generator voltage regulator is in MANUAL within _____ to meet a North American Electric Reliability Corporation (NERC) requirement.

A. (1) immediately
   (2) 30 minutes

B. (1) immediately
   (2) 60 minutes

C. (1) after a time delay
   (2) 30 minutes

D. (1) after a time delay
   (2) 60 minutes

**SRO Question #81**

Given the following plant conditions:

- A Reactor TRIP and Safety Injection occurred due to a LOCA
- The STA reports an ORANGE path indicated on CORE COOLING, with no other RED or ORANGE path conditions present
- Annunciator AA-8, RCS SUBCOOLING MARGIN MONITOR < 35˚F, is in alarm
- SPDS on PPCS is providing CET values
- CET Panel displays are dark, with NO readings available
- RCS pressure is 1600 psig and LOWERING

In accordance with FIG-1.0, Figure MIN Subcooling, which ONE of the following (1) PRESSURE and (2) TEMPERATURE instrumentation can be used to verify subcooling values for the CSFSTs?

A. (1) Narrow Range PRZR pressure instruments
   (2) Any $T_{AVG}$ PPCS indications that are operable

B. (1) Narrow Range PRZR pressure instruments
   (2) PPCS CET indications that are operable

C. (1) Any RCS Wide Range pressure instruments
   (2) Any $T_{AVG}$ PPCS indications that are operable

D. (1) Any RCS Wide Range pressure instruments
   (2) PPCS CET indications that are operable

**SRO Question #82**

Given the following initial plant conditions:

- Plant is operating at 100% power
- Control Bank 'D' step counters indicate 216 steps

Subsequently:

- N-42 fails low
- HCO verifies Main Generator load stable and place the Rod Control Bank Selector switch to M
- Annunciator C-5, PPCS ROD SEQUENCE OR ROD DEVIATION, alarms
- Bank 'D' control rod G3 is mechanically bound at 216 steps
- Control Bank D step counters indicate 200 steps

In accordance with Technical Specification LCO 3.1.4, Rod Group Alignment Limits, Bases,

1) Control Rod G3 is _____.
2) the minimum misalignment assumed in safety analysis with respect to power distribution and SDM is _____.

A. 1) INOPERABLE
   2) 25 steps

B. 1) INOPERABLE
   2) 12 steps

C. 1) OPERABLE
   2) 25 steps

D. 1) OPERABLE
   2) 12 steps

**SRO Question #83**

Given the following initial plant conditions:

- The plant is at 100% power, BOL
- Resin bed flush was completed
- Reactor power unexpectedly elevated to the reactor trip setpoint

Subsequently:

- All automatic and manual actions to trip the reactor were unsuccessful
- The HCO is driving the rods inward in MANUAL
- Emergency boration via MOV-350 is not working (MOV jammed)
- One Charging Pump and both Boric Acid Pumps are running
- SI has NOT actuated

In accordance with FR-S.1 and ER-CVCS.1, which ONE (1) of the following describes the procedurally directed method to establish boric acid injection to the RCS?

**NOTE: FR-S.1, Response to Reactor Restart/ATWS**
**ER-CVCS.1, Reactor Makeup Control Malfunction**

A. Open V-356, Immediate Borate Manual Valve

B. Manually initiate SI and complete Steps 3-7 of E-0, Reactor Trip or Safety Injection

C. Initiate normal boration flow at maximum rate

D. Realign the Charging Pump suction to the RWST

**SRO Question #84**

Given the following plant conditions:

- A plant startup is in progress in accordance with O-1.2, Plant Startup from Hot Shutdown to Full Load
- N-35 indicates 3 x $10^{-11}$ amps and stable
- N-36 indicates 4 x $10^{-11}$ amps and stable

Subsequently:

- Annunciator E-10, INTER RANGE LOSS OF DETECTOR VOLTAGE, alarms
- HCO reports N-35 now indicates < 1 x $10^{-11}$ amps

Which ONE of the following describes the actions required by Technical Specifications?

A. Restore N-35 to OPERABLE prior to raising power ≥ 5 x $10^{-11}$ amps

B. Restore N-35 to OPERABLE prior to raising power > 6% RTP

C. Insert control rods and place plant in MODE 3

D. Raise THERMAL POWER to ≥ 8% RTP

**SRO Question #85**

Given the following plant conditions:

- The crew had implemented AP-RCS.3, High Reactor Coolant Activity, at 100% power
- During the subsequent load reduction, an RCS leak developed which resulted in the need for a manual reactor trip and Safety Injection actuation
- Containment pressure is 19 psig and slowly rising
- 'A' MDAFW Pump tripped upon start, and the TDAFW Pump trip throttle valve tripped and cannot be reset
- 'B' MDAFW Pump flowrate is 180 gpm
- 'A' S/G Narrow Range level is 0%
- 'B' S/G Narrow Range level is 28% and slowly rising
- R-29 and R-30, CNMT HIGH RANGE, read 12 R/hr and 15 R/hr, respectively
- The crew has just transitioned to E-1, Loss of Reactor or Secondary Coolant
- The STA has informed the US that a Critical Safety Function Status Tree (CSFST) entry condition has been met, and recommends transitioning to that procedure

Which ONE of the following identifies the correct procedure flowpath?

A. Transition to FR-H.1, Response to Loss of Secondary Heat Sink

B. Transition to FR-Z.1, Response to High Containment Pressure

C. Remain in E-1 and consider implementing FR-H.5 **ONLY**, Response to Steam Generator Low Level

D. Remain in E-1 and consider implementing FR-H.5 **AND/OR** FR-Z.3, Response to High Containment Radiation Level

**SRO Question #86**

Given the following initial plant conditions:

- The plant was at 100% power, BOL
- 'A' and 'C' Charging Pumps are RUNNING
- 'B' Charging Pump is OOS for maintenance
- STP-O-31A, Charging Pump A Inservice Test, is in progress following the replacement of Charging Pump 'A' and 'C' Relief Valves
- The operating crew is performing Step 6.3 for the Charging Pump 'A' Minimum Output Verification

Subsequently:

- Annunciator A-4, REGEN HX LETDOWN OUT HI TEMP 395ºF, is received
- The crew initially entered AP-CVCS.1, CVCS Leak
- EO reports the relief valves on the running Charging Pumps are LIFTING
- FI-128, CHARGING LINE FLOW, has lowered to 0 gpm
- Annunciator F-4, PRESSURIZER LEVEL DEVIATION -5 NORMAL +5, is received
- PRZR level is SLOWLY LOWERING

Which ONE of the following states:

1) the TRM basis for the Charging Pump Minimum Flow verification?
**AND**
2) the procedure used to provide mitigating actions?

A. 1) to provide minimum cooling flow to Non-Regenerative Heat Exchanger
2) AP-CVCS.3, Loss of All Charging Flow

B. 1) to offset the maximum decay of 100% peak Xenon
2) AP-CVCS.3, Loss of All Charging Flow

C. 1) to provide minimum cooling flow to Non-Regenerative Heat Exchanger
2) AP-RCS.1, Reactor Coolant Leak

D. 1) to offset the maximum decay of 100% peak Xenon
2) AP-RCS.1, Reactor Coolant Leak

**SRO Question #87**

Given the following plant conditions:

- Reactor trip occurs from 100% power due to an inadvertent SI
- Concurrently, Bus 11B fails to transfer to Bus 12B

**With no Operator actions**, answer the following:

(1) What is the status of the MSIVs?
**AND**
(2) What is the mitigating procedure for this event?

A. (1) 'A' MSIV is OPEN, **ONLY**
(2) ES-1.1, SI Termination

B. (1) 'A' MSIV is OPEN, **ONLY**
(2) ES-1.2, Post LOCA Cooldown and Depressurization

C. (1) 'B' MSIV is OPEN, **ONLY**
(2) ES-1.1, SI Termination

D. (1) 'B' MSIV is OPEN, **ONLY**
(2) ES-1.2, Post LOCA Cooldown and Depressurization

**SRO Question #88**

Given the following initial plant conditions:

- Approximately 60% power with a down power in progress at 1%/minute
- FT-476, MFW Flow Loop B, is OOS and has been defeated in accordance with ER-INST.1, Reactor Protection Bistable Defeat After Instrumentation Loop Failure

Subsequently:

- FT-477, MFW Flow Loop B, fails high

(1) The failure of the second MFW flow instrument will cause _____ MFW Regulating Valve(s) to shift to MANUAL.

**AND**

(2) In accordance with AR-G-20, ADFCS SYSTEM TRANSFER TO MANUAL CONTROL, the US will direct the CO to manually control S/G water level by _____.

A. (1) **ONLY** 'B'
   (2) depressing the OUTPUT ▲▼ pushbuttons, **ONLY**

B. (1) BOTH 'A' and 'B'
   (2) depressing the OUTPUT ▲▼ pushbuttons, **ONLY**

C. (1) **ONLY** 'B'
   (2) depressing the MANUAL pushbutton for 3 seconds and then depressing the OUTPUT ▲▼ pushbuttons

D. (1) BOTH 'A' and 'B'
   (2) depressing the MANUAL pushbutton for 3 seconds and then depressing the OUTPUT ▲▼ pushbuttons

**SRO Question #89**

Given the following plant conditions:

- Operating crew has entered ER-FIRE.1, Alternate Shutdown for Control Room Abandonment, due to a fire in the Main Control Complex affecting MCB controls
- The US has directed the HCO to perform Attachment 19, Place TDAFW Pump In Service, and maintain S/G level between 350 to 400 inches on Wide Range level
- CST level is 4.0 feet and lowering (using the conversion plaque behind CST 'B')
- IBELIP indication, LI-460AA, S/G A Wide Range Level, is 330 inches and lowering
- IBELIP indication, LI-506A, S/G B Wide Range Level, is not available
- 4160V Buses 11A and 11B are deenergized

In accordance with ER-FIRE.1:

(1) What flow path will be used as the suction source for the TDAFW Pump?

**AND**

(2) How will TDAFW Pump flow be controlled?

**NOTE: ER-AFW.1, Alternate Water Supply to the AFW Pumps**

A. (1) OPEN MOV-4013, SW Inlet Isolation
   (2) THROTTLE MOV-3996, TDAFW Pump DC Discharge Valve

B. (1) Transfer water to the CSTs in accordance with ER-AFW.1
   (2) THROTTLE MOV-3996 TDAFW Pump DC Discharge Valve

C. (1) OPEN MOV-4013, SW Inlet Isolation
   (2) THROTTLE AOV-4297, TDAFW Pump to SG 'A'

D. (1) Transfer water to the CSTs in accordance with ER-AFW.1
   (2) THROTTLE AOV-4297, TDAFW Pump to SG 'A'

**SRO Question #90**

Given the following initial plant conditions:

- Plant is at 100% power, plant air systems are split
- An A-52.12 is submitted to perform major maintenance on IAC 'C'
- Instrument Air is being supplied by IAC 'A' and 'B', Service Air is supplied by the SAC

Subsequently:

- Annunciator H-8, INSTRUMENT AIR LO PRESS 100 PSI, is received
- The operating crew enters AP-IA.1, Loss of Instrument Air
- Secondary EO reports IAC 'B' Air Dryer switchover has failed, causing the in-service air dryer to be vented to atmosphere
- Instrument Air pressure is now at 85 PSIG and lowering slowly
- S/G levels are at 45% and lowering slowly, with Feed Flow less than Steam Flow

(1) What procedure is referenced to address the CURRENT S/G level conditions?
**AND**
(2) What is the NEXT procedurally directed action?

**NOTE: T-2H, Instrument Air Dryer A or B Lineup for Operation or Standby**
**ATT-11.2, Attachment Diesel Air Compressor**

A. (1) E-0, Reactor Trip or Safety Injection
(2) Bypass IAC 'B' Air Dryer per T-2H

B. (1) AP-TURB.5, Rapid Load Reduction
(2) Place the Diesel Air Compressor in service per ATT-11.2

C. (1) E-0, Reactor Trip or Safety Injection
(2) Place the Diesel Air Compressor in service per ATT-11.2

D. (1) AP-TURB.5, Rapid Load Reduction
(2) Bypass IAC 'B' Air Dryer per T-2H

**SRO Question #91**

Given the following initial plant conditions:

- The crew is performing FR-C.1, Response to Inadequate Core Cooling
- Both RCPs are stopped
- No SI or RHR Pumps are available
- All S/G Narrow Range levels are Off-Scale low
- Total AFW flow is 220 gpm

Currently:

- CETs are reading 1250°F and RISING
- RVLIS is 47% and LOWERING
- The crew has depressurized intact S/Gs to atmospheric pressure and were unsuccessful in reducing RCS temperature

Which ONE of the following:
(1) what action would be taken to mitigate this event?
**AND**
(2) identifies the procedural path the US would take if the mitigating actions are unsuccessful?

A. (1) Start one RCP
(2) Remain in FR-C.1, Response to Inadequate Core Cooling

B. (1) Start one RCP
(2) Go to SAG-1, Main Control Severe Accident Guideline Initial Response

C. (1) Open PRZR PORVs and Block Valves and Rx vessel head vent valves
(2) Remain in FR-C.1, Response to Inadequate Core Cooling

D. (1) Open PRZR PORVs and Block Valves and Rx vessel head vent valves
(2) Go to SAG-1, Main Control Severe Accident Guideline Initial Response

**SRO Question #92**

Given the following plant conditions:

- Plant is in MODE 6
- Maintenance is scheduled to remove the Equipment Hatch to begin work on RCP 'A'
- Two CNMT Purge Exhaust Fans are running, with one CNMT Purge Supply Fan running

In accordance with S-23.2.2, Containment Purge Procedure:

(1) How will Containment Purge Ventilation be controlled to prepare for the Equipment Hatch removal?

**AND**

(2) Why is Containment Purge controlled in this manner?

A. (1) Secure all Containment Purge Ventilation
(2) Ensure air flow is into CNMT to prevent an uncontrolled release

B. (1) Secure all Containment Purge Ventilation
(2) Prevent excessive differential pressure during Equipment Hatch removal

C. (1) Reduce operating lineup to one CNMT Purge Exhaust Fan ONLY
(2) Ensure air flow is into CNMT to prevent an uncontrolled release

D. (1) Reduce operating lineup to one CNMT Purge exhaust fan ONLY
(2) Prevent excessive differential pressure during Equipment Hatch removal

**SRO Question #93**

Given the following initial plant conditions:

- The plant has reduced power to 260 Gross MW Electric to isolate 1A2 and 1B1 Waterboxes due to Condenser fouling issues per T-8C.1A2-1B1, Isolation and Restoration of 1A2 and 1B1 Condenser Waterboxes at Power
- The turbine has not previously operated in the DO NOT OPERATE region in this cycle

Subsequently:

- Annunciator H-7, CONDENSER HI PRESSURE 25.5" HG, has just alarmed
- The CO reports Condenser backpressure is at 5.5 inches Hg and RISING slowly

In accordance with AP-TURB.4, Loss of Condenser Vacuum:

(1) What is the maximum time the crew may remain in this condition for this excursion?
**AND**
(2) What action and procedure are entered if conditions remain unchanged and the allowable time has elapsed?

A. (1) 5 minutes
(2) lower turbine load in accordance with AP-TURB.5, Rapid Load Reduction

B. (1) 10 minutes
(2) lower turbine load in accordance with AP-TURB.5, Rapid Load Reduction

C. (1) 5 Minutes
(2) trip the Turbine and go to AP-TURB.1, Turbine Trip Without Rx Trip Required

D. (1) 10 minutes
(2) trip the Turbine and go to AP-TURB.1, Turbine Trip Without Rx Trip Required

**SRO Question #94**

Given the following plant conditions:

- The plant is in MODE 6
- Fuel Re-Load is in progress
- Fuel transfer gate valve is OPEN
- An irradiated Fuel Assembly is in the upender on the SFP side

Subsequently:

- Refueling SRO reports the continued draining of the SFP Level
- HCO reports a rising level in Containment Sump 'A'

In accordance with RF-601, Fuel Handling Accident Instructions:

(1) Which ONE of the following describes the action to be taken with the irradiated fuel assembly?

AND

(2) What is the NEXT recovery action per RF-601?

A. (1) ensure upender is "HOME' and in the horizontal position
   (2) direct the SFP side Operator to close the transfer gate valve

B. (1) ensure upender is "HOME' and in the horizontal position
   (2) direct the primary EO to fill SFP from RWST

C. (1) place fuel assembly into an available storage location in Region 1 of SFP
   (2) direct the SFP side Operator to close the transfer gate valve

D. (1) place fuel assembly into an available storage location in Region 1 of SFP
   (2) direct the primary EO to fill SFP from RWST

**SRO Question #95**

During the performance of an EOP, the Shift Manager in the control room thinks that a procedural deviation is required. Per A-503.1, Emergency and Abnormal Operating Procedures Users Guide, a procedure deviation should only be considered when three conditions are met.

Which ONE of the following is one of the three required conditions per A-503.1?

A. A second licensed SRO has agreed with the deviation

B. Input has been solicited from all Control Room crew members

C. Insufficient time exists to implement the normal procedure change policy

D. The Manager – Operations or General Supervisor – Shift Operations has agreed with the deviation

**SRO Question #96**

You have been directed to review and approve a tagout in accordance with OP-AA-109-101, Personnel and Equipment Tagout Process.

Which ONE of the following conditions requires the associated tagout to be considered an "EXCEPTIONAL TAGOUT"?

A. Tags Plus not applied to a Caution/Information-tagged control switch

B. Reactor Coolant System level is being maintained at < 6" for RTD replacement

C. Double isolation is not provided for a Service Water System component tagout

D. A tagged-out Confined Space whose atmospheric conditions areas have been verified acceptable

**SRO Question #97**

Given the following plant conditions:

- RCS reduced inventory operation is in progress.
- A new open CNMT penetration (#10) is about to be established and assigned to operator A.
- Estimated closure time of Penetration #10 is 7 minutes.
- Time to Boil is determined to be 15 minutes.
- There are three Responsible Individuals assigned to the Containment Closure Deviation Status:
  a. Operator A – Total of 5 Minutes assigned
  b. Operator B – Total of 12 Minutes assigned
  c. Operator C – Total of 13 Minutes assigned

After Operator A is assigned an additional action to close Penetration #10, which ONE of the following identifies the effect on the Most Limiting Total Estimated Closure (MLTEC) Time, **AND** identifies the MAXIMUM allowable MLTEC?

The MLTEC will……

A. rise; **AND**
the maximum allowable MLTEC is 15 minutes

B. rise; **AND**
the maximum allowable MLTEC is 120 minutes

C. remain the same; **AND**
the maximum allowable MLTEC is 15 minutes

D. remain the same; **AND**
the maximum allowable MLTEC is 120 minutes

**SRO Question #98**

The plant performed a down power and manually tripped the Reactor at 1200 on June 10, 2019 in preparation for a Refueling Outage.

In accordance with Technical Specification Bases, which ONE of the following correctly states:

1) the EARLIEST time that CORE ALTERATIONS may begin within Containment;

**AND**

2) the basis for this EARLIEST time?

A. 1) 1200 June 13, 2019
   2) Fuel handling accident analysis assumes the radioactive decay of the short-lived fission products.

B. 1) 1200 June 13, 2019
   2) Fuel handling accident analysis assumes 99.5% of the assumed fuel pellet gap gas activity released has decayed.

C. 1) 1200 June 17, 2019
   2) Fuel handling accident analysis assumes the radioactive decay of the short-lived fission products.

D. 1) 1200 June 17, 2019
   2) Fuel handling accident analysis assumes 99.5% of the assumed fuel pellet gap gas activity released has decayed.

**SRO Question #99**

Given the following plant conditions:

- Plant has experienced a LOCA
- The operating crew manually tripped the reactor and actuated Safety Injection (SI)

Which ONE of the following is **NOT** a responsibility of the Shift Technical Advisor (STA) in accordance with A-503.1, Emergency and Abnormal Operating Procedures Users Guide?

A. Monitor the CSFSTs when required and as directed.

B. Perform a separate assessment of event classification.

C. Ensure the EOPs and AOPs are implemented correctly per the rules of usage.

D. Assess the accident and plant conditions and make mitigation recommendations to the Shift Manager.

**SRO Question**
**#100**

Which one of the following states a responsibility that the Emergency Director **MAY** delegate the authority for in accordance with EP-AA-1000, Standardized Radiological Emergency Plan?

A. Authorize the issuance of Potassium Iodide (KI).

B. Approval of notification of offsite authorities (state, local, and NRC).

C. Approval of exposures in excess of those contained in 10CFR20, Standards for Protection Against Radiation.

D. Assuming the position of Decision Maker when a transition to Severe Accident Management Guidelines (SAMG) is initiated.