

**Catawba Nuclear Station 2014 NRC Initial Licensed Operator Written Exam  
REACTOR OPERATOR**

**Question 1**

Which ONE of the following describes an action and the reason for that action, in accordance with EP/1/A/5000/E-0 (Reactor Trip or Safety Injection)?

- A.     Verify all area monitor EMF Trip 1 lights dark.  
        Used to diagnose a LOCA outside of containment
- B.     Isolate the ruptured S/G.  
        Prevent exceeding offsite dose limits.
- C.     Verify Monitor Light Panel Sp Lights lit.  
        Ensure ECCS flow path is properly aligned.
- D.     Trip all NCPs.  
        To reduce heat input into the NC system.

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**Question 2**

Given the following sequence of events:

- Unit 1 is at 100% power.
- 1NC-35B (PZR PORV Isol) is in the "CLOSE" position due to a seat leak on 1NC-36B (PZR PORV).

**Subsequently:**

- A pressure transient resulted in an NC system pressure increase.
- 1NC-34A (PZR PORV) opened but did not re-close.
- NC pressure is 2200 psig and decreasing.
- 1NC-34A is manually isolated using 1NC-33A (PZR PORV Isol).

- (1) What is the current MCB switch position for 1NC-33A?
  - (2) Which Selected Pressurizer Pressure channel is designed to provide a BLOCK signal to 1NC-34A on decreasing pressure?
- A. (1) CLOSE  
(2) Selected Pressurizer Pressure 1 (SPP-1)
- B. (1) OVERRIDE  
(2) Selected Pressurizer Pressure 1 (SPP-1)
- C. (1) CLOSE  
(2) Selected Pressurizer Pressure 2 (SPP-2)
- D. (1) OVERRIDE  
(2) Selected Pressurizer Pressure 2 (SPP-2)

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**Question 3**

Given the following Unit 1 conditions:

**Initial:**

- A small break LOCA has occurred.
- EP/1/A/5000/E-1 (Loss of Reactor or Secondary Coolant) has been entered.
- Neither train of ICCM is available.

**Subsequently:**

- The crew has transitioned to EP/1/A/5000/ES-1.2 (Post LOCA Cooldown and Depressurization).
- S/G PORVs are being used for cooldown.
- Current NC pressure is 665 psig.
- Core exit thermocouple temperatures are 488°F.
- T-Colds are 487.7°F.

- (1) In accordance with E-1, the value of subcooling is \_\_\_\_\_ (1) \_\_\_\_\_ .
- (2) Based on current conditions, steam header pressure is \_\_\_\_\_ (2) \_\_\_\_\_ .

**Reference Provided**

- A. (1) - 8° F  
(2) 608 psig
- B. (1) - 8° F  
(2) 593 psig
- C. (1) + 12° F  
(2) 608 psig
- D. (1) + 12° F  
(2) 593 psig

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**Question 4**

Given the following Unit 1 conditions:

- A LOCA has occurred from 100% power.
- 1ETB has de-energized due to an overcurrent actuation.
- EP/1/A/5000/E-1 (Loss of Reactor or Secondary Coolant) was implemented.
- The crew has performed the appropriate steps of EP/1/A/5000/ES-1.4 (Transfer to Hot Leg Recirculation).

For the above conditions, and in accordance with ES-1.4;

- (1) Is hot leg recirculation flow sufficient?
  - (2) Which 1MC-11 control panel indication is used to verify whether hot leg recirculation has been established?
- A. (1) YES  
(2) ND flow to Hot Legs B and C
- B. (1) NO  
(2) ND flow to Hot legs B and C
- C. (1) YES  
(2) NI Pump discharge flow
- D. (1) NO  
(2) NI Pump discharge flow

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**Question 5**

- (1) The Thermal Barrier Heat Exchanger is the \_\_\_\_\_ (1) \_\_\_\_\_ cooling source for NC Pump seals.
- (2) Thermal Barrier Heat Exchanger cooling \_\_\_\_\_ (2) \_\_\_\_\_ be available following a Hi-Hi Containment pressure signal.
- A. (1) primary  
(2) will NOT
- B. (1) primary  
(2) will
- C. (1) backup  
(2) will NOT
- D. (1) backup  
(2) will

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**Question 6**

In accordance with AP/1/A/5500/019, (Loss of Residual Heat Removal System), Enclosure 10, "Long Term Core Cooling Parameters":

- (1) For the Containment Sump Recirculation Criteria, if the ONLY sump level annunciators lit are 1AD-20, B/2, and 1AD-21, B/2 (CONT. SUMP LEVEL > 2.5 FT), then the containment sump level requirement \_\_\_\_ (1) \_\_\_\_ met.
  - (2) The operator is directed to stop all pumps taking suction from the FWST if level decreases to a maximum value of \_\_\_\_ (2) \_\_\_\_.
- A. (1) is  
(2) 5%
  - B. (1) is  
(2) 10%
  - C. (1) is not  
(2) 5%
  - D. (1) is not  
(2) 10%

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**Question 7**

Unit 1 was at 100%. Given the following conditions and sequence of events:

- A plant transient results in a cooldown of the NC system causing the "Backup Heaters" to energize and the "C" PZR heaters to be full "ON".
- Pressurizer Pressure Channel 1 fails offscale high.

**Subsequently:**

- Pressurizer Pressure Channel 2 fails offscale low.
- The following annunciators are received simultaneously with the second pressure channel failure:
  - 1AD-2 / E8 (DCS Trouble)
  - 1AD-2 / F8 (DCS Alternate Action)
- The OATC notifies the rest of the crew that there is an Alternate Action on Pressurizer Pressure Select 1 and Select 2.

Assuming NO operator actions:

- (1) The Pressurizer Pressure Master will \_\_\_\_\_ (1) \_\_\_\_\_ .
- (2) "C" Pressurizer heaters will \_\_\_\_\_ (2) \_\_\_\_\_ .
- A. (1) swap to Manual  
(2) de-energize
- B. (1) swap to Manual  
(2) remain energized
- C. (1) remain in Automatic  
(2) de-energize
- D. (1) remain in Automatic  
(2) remain energized

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**Question 8**

Given the following conditions:

- Unit 1 was at 72% power and increasing following a refueling outage.
- The main turbine tripped due to low condenser vacuum.
- DRPI indicates Control Bank "D" at 178 steps and inserting.

- (1) One of the required Immediate Actions is to \_\_\_\_\_ (1) \_\_\_\_\_ .
- (2) Following completion of this step, control rod speed will indicate \_\_\_\_\_ (2) \_\_\_\_\_ .
- A. (1) Verify Control Rods IN "AUTO" AND STEPPING IN  
(2) 72 steps per minute
- B. (1) Verify Control Rods IN "AUTO" AND STEPPING IN  
(2) 48 steps per minute
- C. (1) Insert Control Rods in MANUAL  
(2) 72 steps per minute
- D. (1) Insert Control Rods in MANUAL  
(2) 48 steps per minute



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**Question 9**

Given the following:

- Unit 1 has experienced a S/G Tube Rupture.
- The crew has transitioned to EP/1/A/5000/E-3 (Steam Generator Tube Rupture) and is preparing to initiate a cooldown.

- (1) Concerning this cooldown, this procedure will specify \_\_\_\_\_ (1) \_\_\_\_\_.
- (2) NC pump trip criteria, based on NC subcooling, \_\_\_\_\_ (2) \_\_\_\_\_ apply after starting a controlled cooldown.
- A. (1) maximum rate while attempting to avoid a Main Steam Isolation  
(2) does NOT
- B. (1) maximum rate while attempting to avoid a Main Steam Isolation  
(2) does
- C. (1) as close as possible without exceeding 100°F per hour  
(2) does NOT
- D. (1) as close as possible without exceeding 100°F per hour  
(2) does

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**Question 10**

Given the following conditions on Unit 1:

- The unit has experienced a feedwater line break of the 1A S/G inside containment and a total loss of feedwater.
- EP/1/A/5000/FR-H.1 (Response to Loss of Secondary Heat Sink) has been entered and feed and bleed of the NC system was initiated.
- Shortly after opening the PZR PORVs, the Turbine Driven CA pump is returned to service and a source of feedwater is available.
- CETs are stable.
- All S/G WR levels are indicating 8%.

(1) In accordance with FR-H.1, Enclosure 6 (S/G CA Flow Restoration), CA flow is required to be restored to \_\_\_\_\_ (1) \_\_\_\_\_ at a rate not to exceed 100 gpm.

(2) The restoration of flow criteria is important in order to minimize \_\_\_\_\_ (2) \_\_\_\_\_ .

- A. (1) ALL intact S/Gs  
(2) additional NC cooldown causing thermal stress to the reactor vessel
- B. (1) ALL intact S/Gs  
(2) the thermal stress to prevent failure of S/G components
- C. (1) only ONE intact S/G  
(2) additional NC cooldown causing thermal stress to the reactor vessel
- D. (1) only ONE intact S/G  
(2) the thermal stress to prevent failure of S/G components

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**Question 11**

Given the following:

- Unit 1 is in Mode 4.
- 1ETA experienced a blackout due to Transformer 1ATC failure.
- 1A D/G started and subsequently tripped on Generator Differential.

What TS LCO Required Actions apply, based on these events?

- A. 3.8.1 (AC Sources – Operating) ONLY
- B. 3.8.1 (AC Sources – Operating) AND 3.8.9 (Distribution Systems – Operating)
- C. 3.8.2 (AC Sources – Shutdown) ONLY
- D. 3.8.2 (AC Sources – Shutdown) AND 3.8.10 (Distribution Systems – Shutdown)

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**Question 12**

Given the following:

- A loss of offsite power occurred on Unit 1.
- Both essential busses are powered by their D/Gs.

**Subsequently:**

- "A" train safety injection occurred on Unit 1 due to a LOCA.
- "B" train safety injection did not actuate automatically or manually.
- No other operator actions have occurred.

(1) Breaker "FTA B/O ALT FDR FRM ETA" will be \_\_\_\_\_ (1) \_\_\_\_\_ .

(2) Breaker "FTB B/O ALT FDR FRM ETB" will be \_\_\_\_\_ (2) \_\_\_\_\_ .

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

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**Question 13**

Given the following:

- Unit 1 is at 100% power.
- Annunciator 1AD-11/ G4 (120VAC ESS PWR CHANNEL D TRBL) is LIT.
- All Channel 4 Instruments have failed low.

Which of the following status lights will be LIT as a result of this failure?

1. 1C S/G Steamline Lo Pressure
2. 1D S/G Steamline Lo Pressure
3. Containment Hi Pressure

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

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**Question 14**

Given the following conditions:

- Unit 1 NC system temperature is at 335°F and decreasing for a refueling outage.
- Vital charger 1ECC fails.
- 1EMXA is unavailable to power spare charger 1ECS.

- (1) What other MCC can provide an alternate supply to 1ECS?
  - (2) Does OP/1/A/6350/008 (125VDC/120VAC Vital Instrument and Control Power System) allow alignment of the alternate supply to 1ECS based on current Unit 1 conditions?
- A. (1) 1EMXC  
(2) Yes
  - B. (1) 1EMXC  
(2) No
  - C. (1) 1EMXJ  
(2) Yes
  - D. (1) 1EMXJ  
(2) No



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**Question 16**

Given the following Unit 1 conditions:

- The crew is responding to a loss of all feedwater event from an initial 100% power.
- The crew is implementing EP/1/A/5000/FR-H.1 (Response to Loss of Secondary Heat Sink).
- NCS pressure is 2335 psig.
- Incore thermocouples indicate 545°F.

In accordance with Step 23 of FR-H.1, "Establish NC System bleed path as follows:"

- (1) The operator will select "OPEN" on \_\_\_\_ (1) \_\_\_\_ PZR PORV(s).
- (2) The reason for this requirement is \_\_\_\_ (2) \_\_\_\_ .

Which ONE of the following completes the above statements?

- A. (1) one  
(2) protect the S/G tubes from creep failure
- B. (1) one  
(2) to ensure adequate flow for decay heat removal
- C. (1) two  
(2) protect the S/G tubes from creep failure
- D. (1) two  
(2) to ensure adequate flow for decay heat removal



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**Question 17**

Given the following:

- A large break LOCA has occurred on Unit 1.
- EP/1/A/5000/ES-1.3 (Transfer to Cold Leg Recirculation) has been entered due to low FWST level.
- All attempts to open containment sump isolation valves, in accordance with step 4 of ES-1.3, have been unsuccessful.

- (1) Which procedure will the crew transition to?
  - (2) How will the crew respond to CSF Status Trees following transition?
- A. (1) EP/1/A/5000/ECA-1.3 (Containment Sump Blockage)  
(2) Implement CSFs as required.
  - B. (1) EP/1/A/5000/ECA-1.1 (Loss of Emergency Coolant Recirculation)  
(2) Implement CSFs as required.
  - C. (1) EP/1/A/5000/ECA-1.3 (Containment Sump Blockage)  
(2) Monitor CSFs for information only.
  - D. (1) EP/1/A/5000/ECA-1.1 (Loss of Emergency Coolant Recirculation)  
(2) Monitor CSFs for information only.

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**Question 18**

Given the following Unit 1 conditions:

- Following a Unit trip from 100% power, the crew entered EP/1/A/5000/ECA-2.1 (Uncontrolled Depressurization of All Steam Generators).
- Attempts to close any MSIV using its individual valve control board pushbutton have failed.
  
- 1AD-03, C/5 "SM ISOL TRN A" - LIT
- 1AD-03, D/5 "SM ISOL TRN B" - LIT
- 1AD-03, E/5 "SM ISOL VLVS NOT FULLY OPEN" - DARK

- (1) In accordance with ECA-2.1, \_\_\_\_\_ (1) \_\_\_\_\_ will be dispatched to isolate air to MSIVs?
- (2) If an MSIV can be closed, what plant parameter is monitored to determine when this procedure can be exited?
- A. (1) Maintenance  
(2) S/G pressure
- B. (1) Maintenance  
(2) NC loop T-hots
- C. (1) Auxiliary Operators  
(2) NC loop T-hots
- D. (1) Auxiliary Operators  
(2) S/G pressure

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**Question 19**

Given the following Unit 1 conditions:

- The Unit is at 100% power.
- While performing the RCCA movement test, control bank D rod H-8 slips into the core to 198 steps withdrawn.
- All other Bank D control rods are at 216 steps withdrawn as indicated on DRPI and step demand counters.
- 1AD-2, D/10 (RPI Urgent Failure) is LIT.
- The crew is performing AP/1/A/5500/014 (Control Rod Misalignment) and currently referring to OP/1/A/6150/008 (Rod Control).

(1) All required actions of Technical Specification 3.1.4 (Rod Group Alignment Limits) will be complete if rod H-8 is realigned within \_\_\_\_\_ (1) \_\_\_\_\_.

(2) To correct the above condition, which rod, or rods, will be repositioned in accordance with OP/1/A/6150/008 (Rod Control)?

- A. (1) 30 minutes  
(2) Rod H-8
- B. (1) 30 minutes  
(2) All rods in the affected bank except H-8
- C. (1) 1 hour  
(2) Rod H-8
- D. (1) 1 hour  
(2) All rods in the affected bank except H-8

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**Question 20**

Given the following conditions:

- Unit 1 is at 50% following a runback.
- Tavg is 3° F > Tref.
- An Alternate Action occurs on Selected Tavg.

- (1) What is Unit 1 current Pressurizer level control setpoint?
- (2) If the same conditions (as detailed above) occurred on Unit 2 , Tavg would be \_\_\_\_\_ (2) \_\_\_\_\_ than the Tavg for Unit 1.
- A. (1) 40%  
(2) higher
- B. (1) 40%  
(2) lower
- C. (1) 43%  
(2) higher
- D. (1) 43%  
(2) lower

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**Question 21**

Given the following Unit 1 conditions:

- A reactor startup is in progress.
- Intermediate Range power is stable at 10-6 % power on both channels.

**Subsequently:**

Source Range N31 control power fails.

- (1) The reactor \_\_\_\_\_ (1) \_\_\_\_\_ trip.
- (2) N31 indication will \_\_\_\_\_ (2) \_\_\_\_\_ .
- A. (1) will  
(2) continue to indicate actual counts
- B. (1) will  
(2) be lost
- C. (1) will not  
(2) continue to indicate actual counts
- D. (1) will not  
(2) be lost

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**Question 22**

Given the following:

Unit 1 was stable at 8% power following reactor startup when the N-35 Intermediate Range Instrument Power supply failed.

- (1) The reactor tripped due to a signal generated from \_\_\_\_\_ (1) \_\_\_\_\_.
- (2) Following the reactor trip, N-31 \_\_\_\_\_ (2) \_\_\_\_\_ providing accurate indication of Source Range flux.
- A. (1) N-35 ONLY  
(2) is NOT
- B. (1) N-35 ONLY  
(2) is
- C. (1) N-31 AND N-35  
(2) is
- D. (1) N-31 AND N-35  
(2) is NOT

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**Question 23**

Given the following:

- The refueling crew is lowering an irradiated fuel assembly next to a new fuel assembly in the core for Unit 1.
- The assembly inadvertently drops completely into the core.
- 1RAD-3, D/2 (1EMF-17 REACTOR BLDG REFUEL BRIDGE) actuates.
- No other annunciators have been received.
- The crew has entered AP/1/A/5500/025 (Damaged Spent Fuel).

As a result of this event:

- (1) The Containment Evacuation Alarm will be \_\_\_\_\_ (1) \_\_\_\_\_ initiated.
- (2) VP (Containment Purge) will be \_\_\_\_\_ (2) \_\_\_\_\_ secured.

- A. (1) automatically  
(2) automatically
- B. (1) manually  
(2) automatically
- C. (1) automatically  
(2) manually
- D. (1) manually  
(2) manually

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**Question 24**

Given the following:

- A plant fire has resulted in smoke intrusion in the Control Room and evacuation in accordance with AP/1/A/5500/017 (Loss of Control Room).
- Preparations to purge the Control Room are being made.

In accordance with AP/17:

- (1) The smoke will be purged through the \_\_\_\_\_ (1) \_\_\_\_\_ building.
- (2) The required alignment of the Control Room Ventilation system \_\_\_\_\_ (2) \_\_\_\_\_ result in an automatic transfer of Spent Fuel Pool Ventilation to Filter Mode.

- A. (1) service  
(2) will
- B. (1) service  
(2) will NOT
- C. (1) auxiliary  
(2) will
- D. (1) auxiliary  
(2) will NOT



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**Question 25**

Given the following Unit 1 conditions:

- The Unit experienced a Medium Break LOCA.
- Containment pressure reached a maximum of 2.8 psig.
- The crew is currently performing steps of EP/1/A/5000/ES-1.2 (Post LOCA Cooldown and Depressurization).
- The crew is at Step 14 for initiating NC System depressurization.

(1) When directed to initiate depressurization, the procedure FIRST directs use of \_\_\_\_\_ (1) \_\_\_\_\_ .

(2) The purpose of this step is to ensure the Pressurizer is refilled to a MINIMUM required level of greater than \_\_\_\_\_ (2) \_\_\_\_\_ .

- A. (1) normal PZR spray valves  
(2) 25%
- B. (1) normal PZR spray valves  
(2) 44%
- C. (1) a single PZR PORV  
(2) 25%
- D. (1) a single PZR PORV  
(2) 44%

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**Question 26**

Given the following Unit 1 conditions:

**Initial Conditions:**

- The Unit was in Mode 3.

**Subsequent Conditions:**

- A steam generator over pressure event occurred.
- The crew entered EP/1/A/5000/FR-H.2 (Response to S/G Overpressure).

**Current Conditions:**

- 1B S/G pressure is 1235 psig.
- 1B S/G NR level is 99%.
- The 1A, 1C and 1D S/G pressures are all 850 psig and 50% NR level.
- All feedwater isolation status lights are DARK.

Which ONE of the following describes the FIRST action to be taken in accordance with this procedure?

- A. Open the 1B S/G PORV to immediately reduce pressure in the 1B S/G.
- B. Dump steam from the 1B S/G using CA pump #1 to immediately reduce pressure in the 1B S/G.
- C. Manually isolate feedwater to the 1B S/G to prevent additional feedwater from further pressurizing the 1B S/G.
- D. Dump steam from the 1A, 1C and 1D S/Gs to reduce NC system temperature and reduce pressure in the 1B S/G.

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**Question 27**

Given the following Unit 1 conditions:

- 1EMF-53A (Containment High Range) Trip 2 alarm has actuated.
  - 1EMF-53B (Containment High Range) has lost power due to supply breaker trip.
- (1) The loss of power \_\_\_\_\_ (1) \_\_\_\_\_ require entry into the action statement of Tech. Spec. 3.3.3 (Post Accident Monitoring Instrumentation).
- (2) VUCDT (Ventilation Unit Condensate Drain Tank) has been isolated by closure of Containment Isolation Valve (s) \_\_\_\_\_ (2) \_\_\_\_\_ .

Nomenclature:            1WL-867A (VUCDT Cont Isol)  
                                 1WL-869B (VUCDT Cont Isol)

- A.    (1) will  
      (2) 1WL-867A ONLY
- B.    (1) will NOT  
      (2) 1WL-867A ONLY
- C.    (1) will  
      (2) 1WL-867A AND 1WL-869B
- D.    (1) will NOT  
      (2) 1WL-867A AND 1WL-869B

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**Question 28**

Regarding the cooling of the NC Pump motor and seals:

- (1) For normal conditions, \_\_\_\_\_ (1) \_\_\_\_\_ cools the air as it exits the **motor**.
- (2) Following a complete loss of KC (with NO Safety Injection), NCP seal cooling \_\_\_\_\_ (2) \_\_\_\_\_ be maintained.

Which ONE of the following completes the statements above?

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

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**Question 29**

Given the following:

- A 1000 gallon dilution is being performed on Unit 1 in accordance with OP/1/A/6150/009 (Boron Concentration Control).

During this addition:

- (1) If left in Automatic, 1NV-172A (3-Way Divert To VCT-RHT) will begin to divert flow when VCT level reaches \_\_\_\_\_ (1) .
  - (2) VCT pressure will be controlled \_\_\_\_\_ (2) by use of a Hydrogen supply makeup valve.
- A. (1) 75%  
(2) manually
  - B. (1) 75%  
(2) automatically
  - C. (1) 70%  
(2) manually
  - D. (1) 70%  
(2) automatically

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**Question 30**

Given the following:

- Unit 1 is currently in Mode 5.
- Plant cooldown is in progress for refueling outage.
- 1A ND has been placed in service.
- Preps are being made to place 1B ND in service.
- 1A and 1B NC Pumps are in operation.

**Subsequently:**

- 1ND-3 (1A ND Pump Suction From NC Loop B Header Relief) fails open.
- PZR level and NC pressure are decreasing.

(1) What is the correct procedure entry for this condition?

(2) What is the first action required?

- A. (1) AP/1/A/5500/019 (Loss of Residual Heat Removal System)  
(2) Secure 1A and 1B NCPs
- B. (1) AP/1/A/5500/019 (Loss of Residual Heat Removal System)  
(2) Secure 1A ND Pump
- C. (1) AP/1/A/5500/027 (Shutdown LOCA)  
(2) Secure 1A and 1B NCPs
- D. (1) AP/1/A/5500/027 (Shutdown LOCA)  
(2) Secure 1A ND Pump

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**Question 31**

Unit 2 is making preparations to enter Mode 3 following refueling. In accordance with the following Technical Specifications:

- 3.5.2 (ECCS - Operating)
- 3.5.3 (ECCS - Shutdown)

       (1) additional ND pump(s) is/are required in Mode 3 as compared to Mode 4, AND  
       (2) additional NI pump(s) is/are required in Mode 3 as compared to Mode 4.

- A.    (1) One  
       (2) One
- B.    (1) One  
       (2) Two
- C.    (1) No  
       (2) One
- D.    (1) No  
       (2) Two

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**Question 32**

In describing automatic operation of valves associated with the Pressurizer Relief Tank (PRT):  
\_\_\_\_\_ (1) \_\_\_\_\_ receives a CLOSE signal on a \_\_\_\_\_ (2) \_\_\_\_\_ actuation.

Which ONE of the following completes the above statement?

- A.     (1)     1NC-53B (N2 to PRT Cont Isol)  
          (2)     Phase A
- B.     (1)     1NC-54A (N2 to PRT Cont Isol)  
          (2)     Phase B
- C.     (1)     1NC-56B (RMW Pump Disch to PRT Cont Isol)  
          (2)     Phase B
- D.     (1)     1NC-58A (PRT Spray Supply Isol)  
          (2)     Phase A



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**Question 33**

Given the following:

- Unit 1 is in Mode 3 at normal operating pressure/temperature.
- 1RAD-1 A/4 (1EMF-46A Train A KC Hi Rad) has actuated.
- Pressurizer level is stable.
- Charging flow has increased.
- The crew is attempting to identify a NC system leak into the KC system.
- KC Surge Tank levels have changed as follows in the last 40 minutes:
  - KC Surge Tank 1A level has increased from 41% to 43%
  - KC Surge Tank 1B level has increased from 45% to 47%

**Reference Provided**

(1) The current leakage rate into the KC system is \_\_\_\_\_ (1) \_\_\_\_\_ gpm.

(2) The CRS will enter \_\_\_\_\_ (2) \_\_\_\_\_ .

- A. (1) 2.5  
(2) AP/1/A/5500/010 (Reactor Coolant Leak)
- B. (1) 2.5  
(2) AP/1/A/5500/027 (Shutdown LOCA)
- C. (1) 5  
(2) AP/1/A/5500/010 (Reactor Coolant Leak)
- D. (1) 5  
(2) AP/1/A/5500/027 (Shutdown LOCA)

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**Question 34**

If a NC pump thermal barrier heat exchanger develops a leak, the ....

- A. KC surge tank vent to atmosphere will close due to high radiation.
- B. thermal barrier heat exchanger return isolation valve will close due to high flow.
- C. reactor building non-essential header will isolate due to high flow.
- D. thermal barrier heat exchanger supply isolation valve will close due to high activity.

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**Question 35**

Given the following Unit 2 initial conditions:

- Preparations are in progress for Unit startup.
- The Unit is at normal operating pressure and temperature.

**Subsequently:**

- A loss of offsite power occurs.
- 2ETA is now powered from 2A D/G.
- 2ETB is de-energized.
- PZR level is 90% and stable.

In accordance with Tech. Spec. 3.4.9 (Pressurizer):

- (1) Action \_\_\_\_\_ (1) \_\_\_\_\_ required to address Pressurizer level.
- (2) Action \_\_\_\_\_ (2) \_\_\_\_\_ required to address Pressurizer heater capacity.

- A. (1) is  
(2) is
- B. (1) is not  
(2) is
- C. (1) is  
(2) is not
- D. (1) is not  
(2) is not

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**Question 36**

Given the following initial conditions:

- Unit 1 is at 45% power.
- 1B CFPT has been tagged for condenser leak repair.

**Subsequently:**

- 1A CFPT trips due to low oil pressure.

In response to this condition:

- (1) The Main Turbine \_\_\_\_\_ (1) \_\_\_\_\_ immediately trip.
- (2) The Reactor \_\_\_\_\_ (2) \_\_\_\_\_ immediately (automatically) trip.

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

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**Question 37**

Given the following;

- Unit 1 is at 43% following a power reduction for Main Turbine work.
- AFD is 1.5% and increasing due to a Xenon transient.

- (1) The Reactor Trip Protective feature that will protect the core from exceeding thermal limits due to excessive local power density if  $\Delta I$  is not corrected is \_\_\_\_\_ (1) \_\_\_\_\_.
- (2) Technical Specification 3.2.3 (Axial Flux Difference) \_\_\_\_\_ (2) \_\_\_\_\_ applicable under these conditions.

A. (1)  $OT\Delta T$   
(2) is NOT

B. (1)  $OT\Delta T$   
(2) is

C. (1)  $OP\Delta T$   
(2) is NOT

D. (1)  $OP\Delta T$   
(2) is

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**Question 38**

In order to manually start 1A NS Pump, a containment pressure signal equal to \_\_\_\_\_ (1) \_\_\_\_\_ must be inserted at the \_\_\_\_\_ (2) \_\_\_\_\_.

- A.     (1)     0.35 psig  
         (2)     Spray Test Panel (Logic Bay)
- B.     (1)     0.35 psig  
         (2)     1CPCC1 (1ETA) panel
- C.     (1)     0.90 psig  
         (2)     Spray Test Panel (Logic Bay)
- D.     (1)     0.90 psig  
         (2)     1CPCC1 (1ETA) panel

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**Question 39**

- (1) Immediately following an inadvertent manually initiated Safety Injection Signal (Ss), a P-4 Signal       (1)       required in order to allow reset of the Ss.
- (2) If the 1A D/G load sequencer signal cannot be reset, control power must be removed at       (2)      .
- A. (1) is  
(2) 1EDE
- B. (1) is NOT  
(2) 1EDE
- C. (1) is  
(2) 1EADA and 1VADA
- D. (1) is NOT  
(2) 1EADA and 1VADA

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**Question 40**

During the performance of AP/1/A/5500/017, (Loss of Control Room), the operators are performing Enclosure 3 (Turbine Bldg Operator Actions).

In accordance with this procedure:

- (1) Locally (at both CPCS control cabinets) verify that containment pressure does not exceed a maximum of \_\_\_\_\_ (1) .
- (2) Local monitoring of containment pressure once per hour \_\_\_\_\_ (2) meet the requirement of AP/17.

- A. (1) 0.3 psig  
(2) does NOT
- B. (1) 0.3 psig  
(2) does
- C. (1) 3 psig  
(2) does NOT
- D. (1) 3 psig  
(2) does



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**Question 41**

Given the following:

- Unit 2 is in Mode 4.
- 2AD-13 A/7 ICE COND LOWER INLET DOORS OPEN is LIT.
- 2AD-13 A/8 ICE BED RTD LO/HI/HI-HI TEMP is LIT.
- The lower inlet door position display panel indicates that a door is open.
- Ice Bed temperature is confirmed to be 23° F.
- No other alarms related to the ice condenser, NF system or AHUs are lit.

LCO 3.6.12 (Ice Bed) requirements \_\_\_\_\_ (1) \_\_\_\_\_ met due to \_\_\_\_\_ (2) \_\_\_\_\_ .

- A. (1) are NOT  
(2) ice condenser door position
- B. (1) are NOT  
(2) ice bed temperature
- C. (1) are  
(2) ice condenser door position
- D. (1) are  
(2) ice bed temperature

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**Question 42**

Given the following Unit 1 conditions:

- The unit is at 100% power.
- It has been determined that two Ice Condenser Lower Inlet doors are physically restrained from opening.

(1) In accordance with Tech. Spec. 3.6.13, (Ice Condenser Doors), the time required to restore operability of inlet doors \_\_\_\_\_ (1) \_\_\_\_\_ within 1 hour.

(2) The value of Containment design pressure is \_\_\_\_\_ (2) \_\_\_\_\_ .

A. (1) is  
(2) 15 psig

B. (1) is  
(2) 3 psig

C. (1) is NOT  
(2) 3 psig

D. (1) is NOT  
(2) 15 psig

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**Question 43**

- (1) 1B NS (Containment Spray) Pump is normally powered from \_\_\_\_\_ (1) .
- (2) In accordance with Extensive Damage Mitigation Guidelines, when 1B NS pump is powered from the alternate source, starting of the pump will be from \_\_\_\_\_ (2) .

Which ONE of the following completes the statements above?

- A. (1) 1ETB  
(2) Unit 1
- B. (1) 1EMXB  
(2) Unit 2
- C. (1) 1ETB  
(2) Unit 2
- D. (1) 1EMXB  
(2) Unit 1

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**Question 44**

Given the following initial conditions:

- Unit 1 is in Mode 3 at normal operating temperature and pressure.
- All Shutdown Banks have been withdrawn.
- Steam dumps are in Automatic with a setpoint of 1092 psig.

**Subsequently:**

- An Auxiliary Operator assigned to warm steam piping downstream of the MSIVs inadvertently OPENS all steamline drains.
- (1) If no operator action is taken, the primary system cooldown will stop at an NC system temperature of approximately \_\_\_\_\_ (1) \_\_\_\_\_ .
- (2) Tech Spec 3.4.2 (RCS Minimum Temperature for Criticality) mode of applicability conditions \_\_\_\_\_ (2) \_\_\_\_\_ been entered.
- A. (1) 553°F  
(2) have
- B. (1) 553°F  
(2) have NOT
- C. (1) 516°F  
(2) have
- D. (1) 516°F  
(2) have NOT

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**Question 45**

- (1) At 85% turbine load MSR exhaust is \_\_\_\_\_ (1) \_\_\_\_\_ aligned to supply steam to the main feed pumps.
- (2) Following a main turbine trip, a manual alignment of Main Steam \_\_\_\_\_ (2) \_\_\_\_\_ required in order to supply steam to the main feed pumps.
- A. (1) automatically  
(2) is NOT
- B. (1) automatically  
(2) is
- C. (1) manually  
(2) is NOT
- D. (1) manually  
(2) is

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**Question 46**

In accordance with OP/1/A/6100/003, (Controlling Procedure for Unit Operation), which ONE of the following will require that the CF Flow Venturi Correction Factor be reset to 1.0?

- A. An increase in turbine MW output from 50% to 60% at 2 MW/min.
- B. One channel of feedwater flow fails low.
- C. A load rejection from 85% to 65% due to a feed pump trip.
- D. Mode 3 entry from Mode 4.

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**Question 47**

The following table reflects Steam Generator parameters following a Reactor Trip/Safety Injection.

| <b>S/G</b> | <b>NR Level</b> | <b>Pressure</b>       | <b>MSIV</b> |
|------------|-----------------|-----------------------|-------------|
| 1A         | 8% - decreasing | 230 psig - decreasing | Open        |
| 1B         | 35% - Stable    | 840 psig - decreasing | Closed      |
| 1C         | 8% - decreasing | 230 psig - decreasing | Open        |
| 1D         | 0% - Stable     | 0 psig - stable       | Open        |

- (1) The first direction to isolate CA flow to 1D S/G is contained in \_\_\_\_\_ (1) \_\_\_\_\_ of EP/1/A/5000/E-0 (Reactor Trip or Safety Injection).
- (2) If conditions are met to enter EP/1/S/5000/FR-P.1 (Response to Imminent Pressurized Thermal Shock Condition), direction will be given to provide \_\_\_\_\_ (2) \_\_\_\_\_ flow to 1A and 1C S/Gs.
- A. (1) Enclosure 1 (Foldout Page)  
(2) 0 gpm
- B. (1) Enclosure 4 (NC Temperature Control)  
(2) 0 gpm
- C. (1) Enclosure 1 (Foldout Page)  
(2) 75 gpm
- D. (1) Enclosure 4 (NC Temperature Control)  
(2) 75 gpm

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**Question 48**

Given the following:

- Operators are preparing to perform the 1A D/G surveillance PT.
- The BOP has placed the D/G 1A CTRL LOCATION switch to "LOCAL"

- (1) 1ETA-03 (ETA Norm Fdr Frm ATC) \_\_\_\_\_ (1) \_\_\_\_\_ be operated from 1MC-11.
- (2) In order to prevent a reverse power trip following parallel of the D/G, the operator will depress "Raise" on the \_\_\_\_\_ (2) \_\_\_\_\_.
- A. (1) can  
(2) speed control
- B. (1) can NOT  
(2) speed control
- C. (1) can  
(2) voltage control
- D. (1) can NOT  
(2) voltage control



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**Question 49**

Given the following condition:

- Inverter 1KXIA experienced a total loss of output voltage.
- (1) 1KXPA power supply will be automatically transferred to \_\_\_\_\_ (1) .
- (2) Once 1KXIA has returned to normal operating parameters, how will 1KXPA supply be swapped back to 1KXIA?
- A. (1) CDA  
(2) Automatically after 60 seconds.
- B. (1) CDA  
(2) Manually.
- C. (1) RDA  
(2) Automatically after 60 seconds.
- D. (1) RDA  
(2) Manually.

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**Question 50**

Regarding the 1A D/G VG air compressor 1A1:

- (1) 1A1 VG air compressor is powered from \_\_\_\_\_ (1) \_\_\_\_\_ .
- (2) Following a blackout, compressor 1A1 \_\_\_\_\_ (2) \_\_\_\_\_ be loaded as part of the first D/G sequencer load group.
- A. (1) 1EMXE  
(2) will
- B. (1) 1EMXC  
(2) will not
- C. (1) 1EMXE  
(2) will not
- D. (1) 1EMXC  
(2) will

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**Question 51**

In accordance with SLC 16.11-7 (Radioactive Gaseous Effluent Monitoring Instrumentation), and assuming 1EMF-36 (Unit Vent Monitor) is functional:

- (1) Initiation of a VP (Containment Purge) release \_\_\_\_\_ (1) \_\_\_\_\_ require 1EMF-39 (Containment Monitor - Gas) to be functional.
- (2) Following initiation of a VP release, 1EMF-39 \_\_\_\_\_ (2) \_\_\_\_\_ required to remain functional in order to continue the release.

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

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**Question 52**

Given the following Unit 1 conditions:

**At 1000**

- The Unit was at 100% power.
- A Zone A and Zone B lockout occurs.
- While performing steps of EP/1/A/5000/E-0, the CRS has implemented AP/1/A/5500/007, (Loss of Normal Power).

**At 1005**

- Zone A and Zone B lockouts have been cleared and RESET.

**At 1010**

- The CRS has directed that preparations for performance of Case III (Loss of All 6.9 KV Busses) actions be initiated.
- The crew performs Step 14 of AP/007, Case I, (Loss of Normal Power to an Essential Power Train), and notes that the "YV Operable" light is NOT lit.

Which ONE of the following describes at time 1010;

- (1) The status of the "YV Isolated" and the "RN Operable" lights.
  - (2) What action is required which will maintain containment cooling for these conditions, in accordance with AP/007?
- A. (1) LIT.  
(2) Ensure at least two (2) RN pumps operating.
- B. (1) LIT.  
(2) Return YV to normal operation.
- C. (1) DARK.  
(2) Ensure at least two (2) RN pumps operating.
- D. (1) DARK.  
(2) Return YV to normal operation.

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**Question 53**

Given the following:

- VI compressors E & F are in operation.
- "D" VI compressor is secured. The REMOTE COMMUNICATION ENABLED/DISABLED switch is in the "DISABLED" position.

**Subsequently:**

- An instrument air leak developed.
- VI pressure is currently 78 psig and decreasing.

Assuming no operator action:

(1) 1VI-670 (VI Dryer Bypass Valve) is currently \_\_\_\_\_ (1) \_\_\_\_\_ .

(2) "D" VI compressor is currently \_\_\_\_\_ (2) \_\_\_\_\_ .

- A. (1) closed  
(2) secured
- B. (1) closed  
(2) operating
- C. (1) open  
(2) secured
- D. (1) open  
(2) operating

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**Question 54**

Unit 1 containment pressure has exceeded 0.5 psig due to a steam leak. As a result, Lower Containment Vent Unit (LCVU) cooling water flow will be controlled \_\_\_\_\_ (1) \_\_\_\_\_ and LCVU speed will be controlled \_\_\_\_\_ (2) \_\_\_\_\_ .

- A. (1) manually  
(2) manually
- B. (1) automatically  
(2) manually
- C. (1) manually  
(2) automatically
- D. (1) automatically  
(2) automatically

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**Question 55**

Which ONE of the following completes the statements below?

- (1) The minimum design pressure of containment is \_\_\_\_ (1) \_\_\_\_ .
- (2) The Containment Air Release (VQ) Fans are designed to automatically trip on  
\_\_\_\_ (2) \_\_\_\_ .
- A. (1) - 1.5 psig  
(2) low air flow
- B. (1) - 1.5 psig  
(2) low containment pressure
- C. (1) - 0.5 psig  
(2) low air flow
- D. (1) - 0.5 psig  
(2) low containment pressure

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**Question 56**

Given the following:

- Unit 1 is at 100% power.
- Loop "1C" Tavg has failed high.
- The RO suspects this is because the loop Tcold instrument has failed high.

(1) In order to verify this, the RO will expect to see the loop delta temperature gauge at \_\_\_\_\_ (1) \_\_\_\_\_.

(2) Each loop Tavg is calculated using one Tcold and \_\_\_\_\_ (2) \_\_\_\_\_ Thot input(s).

- A. (1) top of scale  
(2) one
- B. (1) bottom of scale  
(2) one
- C. (1) top of scale  
(2) three
- D. (1) bottom of scale  
(2) three



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**Question 57**

The Turbine Load Inhibit (C-16) signal prevents \_\_\_\_\_ (1) \_\_\_\_\_ turbine load increase when active. The temperature error portion of this circuit is based on the difference between reference temperature and the second \_\_\_\_\_ (2) \_\_\_\_\_ NC loop Tavg.

- A. (1) ONLY an automatic  
(2) highest
- B. (1) ONLY an automatic  
(2) lowest
- C. (1) Automatic AND Manual  
(2) highest
- D. (1) Automatic AND Manual  
(2) lowest

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**Question 58**

Given the following Unit 1 initial conditions:

- The Unit was in Mode 3.

**Subsequently:**

- A Large Break LOCA occurred.
- The crew has entered EP/1/A/5000/E-1 (Loss of Reactor or Secondary Coolant).
- A core exit thermocouple (CET) for quadrant II on the plasma display is reading 50°F lower than other adjacent nearby CETs.

- (1) How does the lower reading CET affect the subcooling value displayed on the Plasma Display, if at all?
- (2) In addition to the control room, CET indication is also available at the \_\_\_\_\_ (2) \_\_\_\_\_.
- A. (1) The indicated subcooling will increase.  
(2) ASP
- B. (1) The indicated subcooling will increase.  
(2) SSF
- C. (1) The indicated subcooling will not be affected.  
(2) ASP
- D. (1) The indicated subcooling will not be affected.  
(2) SSF

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**Question 59**

Unit 1 was operating at 100% power when the following sequence of events occurred:

- A Loss of Offsite Power occurred.
- The reactor tripped.
- When 1A D/G attempted to load 1ETA, 87G (Generator Differential) relay actuated due to a fault.
- Just after the reactor trip, a LOCA inside containment developed.
- Containment pressure has risen to 3.1 psig and is slowly increasing.

Which ONE of the following describes the status of the VE (Annulus Ventilation) fans?

- A. ONLY 1B VE fan is running.
- B. 1A AND 1B VE fans are running.
- C. ONLY 1B VE fan will start after a 9 minute time delay.
- D. 1A AND 1B VE fans will start after a 9 minute time delay.

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**Question 60**

Given the following:

- Unit 1 is at 100% power.
- 1A KF (Spent Fuel Cooling) Pump is in service.
- 1A VF (Spent Fuel Pool Ventilation) is operating in a normal alignment.

**Subsequently:**

- A large break LOCA has occurred on Unit 1.
- Containment pressure is 3.2 psig.
- 1EMF-39 (Containment) is in Trip 2.
- 1EMF-35 (Unit Vent) is in Trip 1.
- 1EMF-42 (Fuel Building Ventilation) indicates normal.
- 1EMF-15 (Spent Fuel Bldg Refueling Bridge) has experienced a loss of power.

As a result of the above conditions:

(1) 1A KF \_\_\_\_\_ (1) \_\_\_\_\_ have cooling water aligned.

(2) 1A VF \_\_\_\_\_ (2) \_\_\_\_\_ in Filter Mode.

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

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**Question 61**

Regarding Tech. Spec. 3.9.6, Refueling Cavity Water Level:

- (1) The specification is that the refueling cavity water level is to be maintained at  $\geq 23$  ft. above the top of \_\_\_\_\_ (1) .
- (2) This specification \_\_\_\_\_ (2) \_\_\_\_\_ apply during unlatching of control rod drive shafts.
- A. (1) the fuel assemblies  
(2) does
- B. (1) the fuel assemblies  
(2) does not
- C. (1) the reactor vessel flange  
(2) does
- D. (1) the reactor vessel flange  
(2) does not

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**Question 62**

During a loss of switchyard accident with a turbine/generator trip, what is the source of Auxiliary Feedwater (CA) to each steam generator? (Assume no operator action).

- A. CA pump 'A' supplying 'A' & 'C' S/Gs; CA pump 'B' supplying 'B' & 'D' S/Gs; Turbine Driven Auxiliary Feedwater Pump {CAPT#1(2)} supplying 'B' and 'C' S/Gs.
- B. CA pump 'A' supplying 'A' & 'B' S/Gs; CA pump 'B' supplying 'C' & 'D' S/Gs; Turbine Driven Auxiliary Feedwater Pump {CAPT#1(2)} supplying all four S/Gs.
- C. CA pump 'A' supplying 'A' & 'C' S/Gs; CA pump 'B' supplying 'B' & 'D' S/Gs; Turbine Driven Auxiliary Feedwater Pump {CAPT#1(2)} Supplying all four S/Gs.
- D. CA pump 'A' supplying 'A' & 'B' S/Gs; CA pump 'B' supplying 'C' & 'D' S/Gs; Turbine Driven Auxiliary Feedwater Pump {CAPT#1(2)} supplying 'B' & 'C' S/Gs.

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**Question 63**

- (1) To limit public exposure, (Selected Licensee Commitment) SLC 16.11-19 (Gas Storage Tanks) requires that a waste gas storage tank be limited to no more than \_\_\_\_\_ (1) \_\_\_\_\_ .
- (2) If this limit is exceeded the Required Action is to immediately \_\_\_\_\_ (2) \_\_\_\_\_ .
- A. (1) 97,000 Curies  
(2) reduce tank contents within limits
- B. (1) 10 Curies  
(2) reduce tank contents within limits
- C. (1) 97,000 Curies  
(2) suspend all additions of radioactive material to the tank
- D. (1) 10 Curies  
(2) suspend all additions of radioactive material to the tank

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**Question 64**

Given the following:

- 1AD-8 A/7 (VI LO PRESS) is received.
- The BOP verifies pressure as indicated on 0VIP5260 (VI Pressure) to be 74 psig and slowly decreasing.

Which ONE of the following describes the position of VI system valves (and correct setpoint) in response to the lowering VI header pressure?

- A. 1VS-78 (VS supply to VI) opens at 80 psig
- B. 1VS-78 (VS supply to VI) opens at 76 psig
- C. 1VI-500 (VI supply to VS) closes at 76 psig
- D. 1VI-500 (VI supply to VS) closes at 78 psig



**Catawba Nuclear Station 2014 NRC Initial Licensed Operator Written Exam  
REACTOR OPERATOR**

**Question 65**

Given the following conditions:

- A fire started in Unit 1 cable spread room.
- Fire protection system malfunctions occurred and the fire spread to the Unit 2 cable spread room and control room.
- Crews are transferring control to the Safe Shutdown Facility (SSF).

Which ONE of the following evolutions can be performed using controls available within the SSF once control function is transferred to the SSF?

- A. Energize 1EMXA from the SSF diesel generator.
- B. Increase pressurizer pressure with "D" pressurizer heater sub-banks.
- C. Throttle auxiliary feedwater flow to B Steam Generator using its flow control valve.
- D. Initiate cooldown by throttling B Steam Generator PORV.

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**Question 66**

Which ONE of the following events specifically requires a plant announcement in accordance with AD-OP-ALL-1000 (Conduct of Operations)?

- A. Starting 1A2 KC Pump
- B. Latching the Unit 1 Main Turbine
- C. Unit 1 Reactor Trip
- D. Mode 4 entry

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**Question 67**

Which ONE of the following completes the statement below?

"On the Operator Aid Computer, a computer point color of \_\_\_\_ (1) \_\_\_\_ indicates that the computer point is \_\_\_\_ (2) \_\_\_\_."

- A. (1) RED  
(2) LOCK OUT
- B. (1) BLUE  
(2) GOOD
- C. (1) MAGENTA  
(2) BAD
- D. (1) YELLOW  
(2) SUSPECT

**Catawba Nuclear Station 2014 NRC Initial Licensed Operator Written Exam  
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**Question 68**

In accordance with OP/1/A/6200/001, (Chemical and Volume Control System), if normal Pressurizer Spray is not available and the crew is using Auxiliary Spray during a cooldown of the Pressurizer:

- (1) Letdown \_\_\_\_\_ (1) \_\_\_\_\_ required to be in service.
  - (2) The above procedure guidance is based on concerns for thermal stress of the \_\_\_\_\_ (2) \_\_\_\_\_.
- 
- A. (1) is  
(2) PZR spray nozzle
  - B. (1) is  
(2) Auxiliary Spray line piping
  - C. (1) is not  
(2) PZR spray nozzle
  - D. (1) is not  
(2) Auxiliary Spray line piping

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**Question 69**

Given the following Unit 1 conditions:

- A Unit startup is in progress in accordance with OP/1/A/6100/001 (Controlling Procedure for Unit Startup).
- Auxiliary Steam (AS) from Unit 2 is being used for turbine warming.
- NC system pressure is 2235 psig.
- Steam dumps are controlling NC Tavg at 557°F.
- The crew is preparing to restore AS to a normal alignment by closing 1AS-4, (Main Steam to AS HDR CTRL Bypass).

- (1) Operation of 1AS-4 is performed \_\_\_\_\_ (1) \_\_\_\_\_ the Control Room.
- (2) In accordance with SOMP 01-02, (Reactivity Management), the Unit startup will require a dedicated \_\_\_\_\_ (2) \_\_\_\_\_ with no concurrent duties.

- A. (1) outside  
(2) RO AND SRO
- B. (1) inside  
(2) RO AND SRO
- C. (1) outside  
(2) RO ONLY
- D. (1) inside  
(2) RO ONLY

**Catawba Nuclear Station 2014 NRC Initial Licensed Operator Written Exam**  
**REACTOR OPERATOR**

**Question 70**

In accordance with Tech Spec 2.1.1 (Reactor Core SLs), the peak centerline fuel temperature shall be maintained \_\_\_\_\_ (1) \_\_\_\_\_. This limit \_\_\_\_\_ (2) \_\_\_\_\_ change over core life.

- A. (1) less than 5080°F  
(2) does NOT
- B. (1) less than 2200°F  
(2) does NOT
- C. (1) less than 5080°F  
(2) does
- D. (1) less than 2200°F  
(2) does

**Catawba Nuclear Station 2014 NRC Initial Licensed Operator Written Exam  
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**Question 71**

Given the following condition:

- A Liquid Waste Release from the 543' elevation is in progress.
- (1) In accordance with appropriate procedures, can a release from the Monitor Tank Building also be initiated concurrently?
- (2) If YES, under what conditions?  
If NO, why not?
- A. (1) YES  
(2) Provided a separate Liquid Release Permit is initiated and signed by the CRS.
- B. (1) YES  
(2) Provided the Trip 2 setpoint on EMF-49 (Liquid Waste Discharge Monitor) is recalculated for the higher combined limit.
- C. (1) NO  
(2) Because there is the potential for activity to be released into the Standby Nuclear Service Water Pond (SNSWP).
- D. (1) NO  
(2) Both discharge into the same line, which invalidates the RL Flow interlock for automatic termination.

**Catawba Nuclear Station 2014 NRC Initial Licensed Operator Written Exam  
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**Question 72**

Given the following Unit 1 conditions:

- The NV system is being aligned for startup.
- The procedure in use requires independent verification of a single valve located in a room with a general dose rate of 130 mREM/hr.
- Estimated time to independently verify the valve's position is 10 minutes.
- There are no known hot spots in the area.
- There is no airborne activity in this room.
- The room has no surface contamination areas.

In accordance with NSD 700, (Verification Techniques), independent verification of the valve above \_\_\_\_\_ (1) \_\_\_\_\_ be waived because \_\_\_\_\_ (2) \_\_\_\_\_.

Which ONE of the following completes the statement above?

- A. (1) may  
(2) the general area dose rate is greater than 100 mREM/hr
- B. (1) may NOT  
(2) the general area dose rate is less than 1 REM/hr
- C. (1) may  
(2) the radiation exposure for a single verification would exceed the allowable limit
- D. (1) may NOT  
(2) the radiation exposure for a single verification is within the allowable limit



**Catawba Nuclear Station 2014 NRC Initial Licensed Operator Written Exam  
REACTOR OPERATOR**

**Question 73**

Operators have entered EP/1/A/5000/FR-P.1 (Response to Imminent Pressurized Thermal Shock Condition) due to a valid Orange Path status for Reactor Coolant Integrity.

Consider each question **SEPARATELY** as it relates to the initial condition.

- (1) If Integrity status turns Red during performance of FR-P.1, the CRS \_\_\_\_\_ (1) \_\_\_\_\_ return to step 1.
- (2) If Core Cooling status turns Orange during performance of FR-P.1 (i.e. while Integrity is Orange), the CRS \_\_\_\_\_ (2) \_\_\_\_\_ go to EP/1/A/5000/FR-C.2.

In accordance with OMP 1-7, (Emergency/Abnormal Procedure Implementation Guidelines), which ONE of the following completes the above statements?

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

**Catawba Nuclear Station 2014 NRC Initial Licensed Operator Written Exam  
REACTOR OPERATOR**

**Question 74**

Of the four (4) nuclear instruments listed in F-0, (Critical Safety Function Status Trees), for assessing the "Subcriticality" safety function, which ONE is a Post-Accident Monitoring (PAM) instrument required by LCO 3.3.3, "PAM (Post-Accident Monitoring) Instrumentation?"

- A. Source Range
- B. Intermediate Range
- C. Power Range
- D. Wide Range

**Catawba Nuclear Station 2014 NRC Initial Licensed Operator Written Exam  
REACTOR OPERATOR**

**Question 75**

Given the following conditions:

- The Fire Detection System (EFA) is aligned to the Unit 1 Operator Aid Computer (OAC) for monitoring.
- A loss of the Unit 1 OAC then occurs.

As a result of these conditions, the EFA OAC monitoring:

- A. automatically swaps to the Unit 2 OAC.
- B. must be manually swapped to the Unit 2 OAC.
- C. automatically swaps to the computer at the fire detection panel.
- D. must be manually swapped to the computer at the fire detection panel.

**REACTOR OPERATOR  
Catawba Nuclear Station  
ILT 2014 NRC Written Exam (May 2014)**

**REFERENCE PACKAGE CONTENTS**

|                                         |                                                                  |
|-----------------------------------------|------------------------------------------------------------------|
| EXAM ID:     ILT2014NRC Exam    RO Exam |                                                                  |
| 1                                       | Databook Figure 57, Reactor Coolant Saturation Curve, Wide Range |
| 2                                       | Graph - KC Surge Tank Volume vs. Level                           |
|                                         |                                                                  |

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