EOP-1.0, “Standard Post-Trip Actions,” and EOP-2.0, "Reactor Trip Recovery" contain guidance regarding operation of the feedwater system. What is the guidance given, and why is it important?

a. Raise feedwater flow using Main Feed Pump speed controllers to compensate for the rapid lowering of S/G levels (shrink effect) after the trip. This aids in maintaining T_{AVE} at less than 540° F.

b. Manually lower feedwater flow using Main Feed Pump speed controllers to prevent over-feeding the S/Gs. This action avoids unnecessary cycling of ESS equipment.

c. Trip both Main Feed Pumps to compensate for the rapid rise in S/G levels (swell effect) after the trip. Manually start one Auxiliary Feedwater Pump to provide finer control and aid in maintaining T_{AVE} greater than 525° F.

d. Manually lower feedwater flow using Main Feed Pump speed controllers to prevent over-feeding the S/Gs. This action helps prevent feedwater isolation due to feed regulating valve high level override.

A Pressurizer code safety valve has indications of leakage. The following indications are noted:

- Pressurizer pressure is 2060 psia and stable.
- Pressurizer Vapor Space is 640°F and stable.
- Safety Valve tailpipe temperature indicates approximately 230°F and rising slowly.
- Quench Tank pressure is 6 psig and rising 1 psi every 10 minutes.

Which one of the following is the reason for the lower temperature indication seen downstream of the safety valve?

a. The leak is too small to overcome ambient heat loss to the containment.

b. The fluid temperature downstream of the safety valve lowers because a large amount of energy is lost in the throttling process.

c. The fluid temperature corresponds to the Quench Tank saturation pressure because minimal energy is lost in a throttling process.

d. The volume of water in the Quench Tank quenches the superheated vapor downstream of the leaking safety valve.

For a Small Break LOCA event with all equipment operating as designed, which one of the following ensures adequate heat removal from the core?

a. PCS flow out of the break with all PCPs running.

b. Steam Generators.

c. PCS flow out of the break with off site power not available.

d. Safety Injection flow.

During a Large Break LOCA with two phase natural circulation occurring, which one of the following sets of indications must be monitored to determine that heat removal and inventory functions are being satisfied?

a. PCS loop Delta T and Core Exit Thermocouples.

b. Tcolds and Thots.

c. PCS loop Delta T, and Tcolds.

d. Core Exit Thermocouples and Thots.

From full power a Loss of All Offsite Power occurs. All other equipment functions as designed.

Several minutes later the NCO-Turbine notes that Lower Seal Temperature indications (on Panel C-11) for all four Primary Coolant Pumps (PCPs) starts trending upward. This rising temperature is expected because...

a. the Seal Impeller is no longer providing forced flow through the seal cartridge area.

b. the Piggyback impeller is no longer providing forced flow through the seal cartridge area.

c. Component Cooling Water is no longer circulating through the seal heat exchanger.

d. Controlled Bleedoff flow from PCP seals is now at a lower flow rate.

With the plant at 60% power, a loss of all charging flow occurs. Why is it important to maintain the secondary plant (main steam flow) as stable as possible until the problem has been corrected?

a. With the Pressurizer level now reducing at 44 gpm, a load rejection transient would accelerate the level reduction.

b. VCT level will lower to the point where explosive hydrogen is released if main steam flow rises.

c. Letdown temperature will damage the purification demineralizer resins if a load rejection occurs.

d. With the Pressurizer level now reducing at 4 gpm, a rise in main steam flow will accelerate the level reduction.

The following conditions exist:

- The plant is in Mode 5.
- P-67A, LPSI pump, is in service.
- While performing a PCS drain, the PCS level is inadvertently lowered to 618'0".
- Level is then stabilized with the drain secured.

The following then occurs:

- PCS temperatures begin to rise.
- SDC flow begins fluctuating between 1000 to 1500 gpm.
- EK-1162, "LPSI PP LOW DISCH PRESSURE" alarm is received.

Which of the following describes the required action?

a. Stop P-67A, and then start P-67B.

b. Start P-67B, and then stop P-67A.

c. Adjust CV-3025, SDC HX outlet valve, to stabilize PCS temperature.

d. Adjust LPSI injection MOVs to reduce SDC flow.

During power operations, the following equipment is operating:

- P-52C, Component Cooling Water (CCW) pump.
- C-54, Waste Gas Compressor.

A Component Cooling Water leak occurs on the valve body of MV-CC117, SFP HXS E-53A/B CCW INLET, on the 10" header to the Spent Fuel Pool Heat Exchangers. The following valid alarms are annunciating:

- EK-1172, COMPONENT CLG SURGE TANK T-3, HI-LO LEVEL
- EK-1368, RADWASTE PANEL C40 OFF NORMAL
- EK-1167, COMPONENT CLG PUMPS P-52A,P-52B, P-52C TRIP

CCW Surge Tank continues to lower.

Which procedural action will enable restoration of the Component Cooling Water system, including restart of a Component Cooling Water Pump?

a. Align T-2, Condensate Storage Tank, to supply T-81, Primary System Makeup Tank, loads.

b. Select HS-0944A, Cooling Water to Spent Fuel Pool & Radwaste Evaps, to BYPASS to minimize the leakage, yet maintain cooling to C-54.

c. Close CV-0977B, CCW RETURN FROM RW EVAPS & C-54, to minimize the leakage, even though C-54 will lose cooling.

d. Select HS-0944A, Cooling Water to Spent Fuel Pool & Radwaste Evaps, to CLOSE to minimize the leakage, even though C-54 will lose cooling.

During a plant cooldown, the following alarm annunciates:

EK-0759, NO PCS PROTECTION CHANNEL A

Which one of the following actions will aid in diagnosing the validity of this alarm?

a. Verify Subcooled Margin Monitor, SMM-0114, indicates > 25°F subcooling.

b. Check status of TI-0112CA, Cold Leg indications on PPC.

c. Check indicating status of TI-0112HA, Hot Leg Temperature indicator.

d. Check status of RED "TRIPPED" light on LTOP Channel A panel.

For which type of Anticipated Transient Without Scram event will P-55A speed controller (SIC-0216) output signal be expected to move in the MAXIMUM output direction, prior to any operator action?

a. Loss of Load.

b. Containment High Pressure.

c. Steam Generator Low Pressure.

d. Pressurizer Low Pressure (TM/LP).

Which one of the following describes the design of the Main Steam Isolation Valves automatic closure logic for a Main Steam Line Break inside containment?

a. **EITHER** Steam Generator pressure lowers to 500 psia **AND** Containment pressure rises to 4 psig.

b. **BOTH** Steam Generator pressures lower to 500 psia **AND** Containment pressure rises to 4 psig.

c. **BOTH** Steam Generator pressures lower to 500 psia **OR** Containment pressure rises to 4 psig.

d. **EITHER** Steam Generator pressure lowers to 500 psia **OR** Containment pressure rises to 4 psig.

Given the following conditions:

- EOP-7.0, Loss of All Feedwater, actions are in progress.
- "A" Steam Generator level is minus 90%.
- "B" Steam Generator level is minus 60%.
- The crew is preparing to use the Condensate Pumps for feeding the Steam Generators.
- Each Feed Regulating Bypass Valve (CV-0734, CV-0735) has been positioned to 20% open as read on valve position indicators on panel C-01.
- Feed pump discharge pressure = 500 psia.
- S/G pressure = 420 psia.

Which of the following describes whether the resulting amount of feed flow will be acceptable, and why or why not?

a. Feed flow to EACH S/G will be acceptable. The operating crew may feed S/Gs at this rate until levels are restored to between 60% - 70%.

b. Feed flow to NEITHER S/G will be acceptable. The operating crew must RAISE feed flow to both S/Gs to avoid the potential for significant S/G tube bundle damage.

c. Feed flow to "B" S/G will be acceptable. The operating crew must RAISE feed flow to "A" S/G to raise level above -84% to avoid the need to initiate once-through-cooling.

d. Feed flow to "B" S/G will be acceptable. The operating crew must REDUCE feed flow to "A" S/G to avoid the potential for significant S/G tube bundle damage.

During a Station Blackout event, what is the optimal method of controlling PCS temperature during natural circulation cooling?

a. Turbine Bypass Valve with PIC-0511 in AUTO.

b. Atmospheric Dump Valves with HIC-0780A/B in MANUAL.

c. Atmospheric Dump Valves with HIC-0780A/B in AUTO.

d. Turbine Bypass Valve with PIC-0511 in MANUAL.

A loss of offsite power has caused a reactor trip. A decision has been made to cooldown the plant by Natural Circulation. The highest available temperature indication for the PCS is 455° F.

Which one of the following is the MINIMUM PCS pressure allowed in accordance with EOP-8.0, Loss of Offsite Power/Forced Circulation Recovery?

a. 620 psia

b. 580 psia

c. 570 psia

d. 450 psia

Given the following conditions:

- The plant is in MODE 2.
- Charging Pump P-55A is operating.
- Charging Pumps P-55B and P-55C are in AUTO.
- All control systems are aligned normally and functioning properly.
- A loss of Instrument AC Bus Y-01 occurs.

Which of the following describes why ONP-24.5, "Loss of Instrument AC Bus Y01" directs the operators to isolate PCP bleedoff from the Volume Control Tank (VCT) and realign it to the Primary System Drain Tank?

a. Minimizes the likelihood of gas intrusion in to the PCP seals.

b. Minimizes the amount of pressure reduction in the VCT.

c. Prevents a complete draining of the VCT.

d. Prevents overfilling of the VCT.

D/G 1-1 is in service fully loaded for a monthly surveillance test when breaker 72-302 (D/G 1-1 Field Flashing) on D-11A trips. Which one of the following describes the effect, if any, on D/G 1-1 and why?

a. No effect. Field current is provided by the generator voltage regulator automatically after engine startup.

b. Diesel output breaker, 152-107, trips on undervoltage to protect the generator from overcurrent due to the loss of voltage.

c. Diesel trips on overspeed. The loss of field current power causes a loss of generator load which will result in an overspeed.

d. No effect. Field current is not required after the generator builds up sufficient voltage on startup.

The plant is at 80% during a power ascension when the following alarm annunciates:

EK-1347, "CONTAINMENT AIR COOLERS SERV WATER LEAK"

The operator then takes all required Operator Actions of the alarm response procedure. After these actions are complete, it is noted that the alarm had NOT cleared.

Based on the above conditions, which one of the following describes the location and expected flow rate of the leak?

a. The leak is NOT on a Containment Air Cooler and has a flow rate less than 200 gpm.

b. The leak is on ONE Containment Air Cooler and has a flow rate greater than 300 gpm.

c. The leak is on ONE Containment Air Cooler and has a flow rate less than 200 gpm.

d. The leak is NOT on a Containment Air Cooler and has a flow rate greater than 300 gpm.

With the plant at full power, Instrument Air Compressor C-2A is RUNNING, C-2B and C-2C are in AUTO and NOT running.

The following valid alarms annunciate:

- EK-1101, CONTAINMENT INSTR AIR LO PRESS
- EK-1102, INSTRUMENT AIR LO PRESS
- Several seconds later, EK-1103, SERVICE AIR LO PRESS annunciates.

Additional conditions:

- Instrument Air header pressure (as indicated on PIA-1210) has stabilized at 82 psig.
- ONLY C-2A is running. C-2B and C-2C are NOT running.
- Local pressure indication for all three Instrument Air Receiver Tanks has stabilized at approximately 105 psig.
- No manual operator action has been taken.

What is occurring, and what is the effect on plant equipment?

a. An air leak on the Service Air system DOWNstream of Service Air header isolation CV-1212; the Cooling Tower Pumps trip on low makeup basin level signal.

b. High differential pressure on the in-service Instrument Air post-filter (F-5); Track Alley/VRS sprinkler systems actuate.

c. A leak on the Instrument Air system UPstream of the Instrument Air Dryer; Main Transformer deluge system actuates.

d. Instrument Air Dryer temperature at 300°; various air operated control valves throughout the plant will begin spuriously changing position.

While balancing rods during power ascension, the NCO releases the RAISE-LOWER switch and a regulating rod continues withdrawing. EM OFF is then selected and rod motion stops. As a result, the regulating rod is now 7 inches further withdrawn than any other rod in that group. Which one of the following describes any expected rod deviation alarms, and any required Limiting Condition of Operation (LCO) entry for control rod alignment per Technical Specifications?

a. TWO rod deviation alarms are annunciating on Panel C-12, and LCO entry is required.

b. ONE rod deviation alarm is annunciating on Panel C-12, and LCO entry is required.

c. ONE rod deviation alarm is annunciating on Panel C-12, and LCO entry is NOT required.

d. NO rod deviation alarms are annunciating on Panel C-12, and LCO entry is NOT required.

With the plant at 10% power, Wide Range Nuclear Instrument NI-3A fails high. Which one of the following will occur and how is this confirmed?

a. The reactor will trip. Check three red matrix lights LIT on high rate auxiliary trip units for RPS channels 'A' and 'C'.

b. The reactor will remain at power with EK-0602A “HIGH POWER RATE CHANNEL TRIP” annunciating. Check three red matrix lights LIT on high rate auxiliary trip unit for RPS channel 'A'.

c. The reactor will trip. Check three red matrix lights LIT on high rate auxiliary trip units for RPS channels 'B' and 'D'.

d. The reactor will remain at power with EK-0602A “HIGH POWER RATE CHANNEL TRIP” annunciating. Check three red matrix lights LIT on high rate auxiliary trip unit for RPS channel 'C'.

Given the following plant conditions:

- The plant is in MODE 3.
- PCS Temperature is 532°F.
- PCS Pressure is 2060 psia.
- Triple charging and letdown are in service for PCS cleanup.
- A tube leak from 'B' Steam Generator of 5 gpm has occurred.

LCC-11 is then lost due to an overcurrent condition. Which one of the following describes the response of Volume Control Tank level indication (1) before the loss of LCC-11 and (2) after the loss of LCC-11? Assume no operator action occurs.

	(1)	(2)
a.	decreases	decreases
b.	no change	increases
c.	decreases	increases
d.	increases	no change

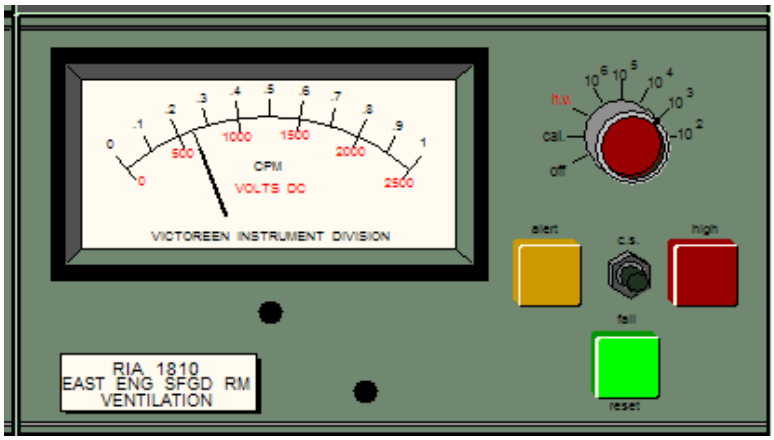
Note the below graphic of RIA-1810, East Eng Safeguard Radwaste Isolation Vent Radiation Monitor. Why does the Alarm Response Procedure (ARP-8) for this monitor contain guidance that disallows the operators from selecting the setpoint range to the 1.0E+6 scale?

a. During a LOCA event (post-RAS) if leakage from safeguards pump seals occurs, dose levels at the site boundary could be higher than required limits.

b. This action would isolate air flow to and from East Engineered Safeguards, which will result in the room overheating if the plant is in Mode 1.

c. This action would start P-1810, East Engineered Safeguards Sample Pump, which will initiate a diagnostic check of the sample flow path through RIA-1810.

d. During a Design Basis Accident, East Engineered Safeguards Room area radiation levels would not be detectable, since RIA-1810 is inoperable on this scale.



Given the following conditions:

- The plant is at 100% power.
- NO equipment is out of service.
- Bus 1C and 1D are being powered from Safeguards Bus.

A fire then occurs on the Startup Transformer 1-2. One of the alarms that has annunciated is:

- EK-0527, S/U XFMR NO. 1-2 SUDDEN PRESSURE

How will this fire be controlled and how is the plant affected?

a. Deluge actuation does not occur; the Fire Brigade must be used to fight this fire. The plant will trip due to the Sudden Pressure relay actuation on S/U Transformer 1-2.

b. Deluge actuation will provide extinguishing water for this fire. The plant will trip due to the Sudden Pressure relay actuation on S/U Transformer 1-2.

c. Deluge actuation will provide extinguishing water for this fire. The plant will NOT trip, but Rear Bus de-energizes due to Sudden Pressure relay actuation.

d. Deluge actuation does not occur; the Fire Brigade must be used to fight this fire. The plant will NOT trip, and Rear Bus remains energized.

Given the following conditions:

- P-8B, Turbine Driven Aux. Feedwater Pump, is the only available operating AFW Pump.
- The Control Room has been evacuated due to a fire.

Auxiliary Shutdown Panel C-150 is being placed in service. What will be the effect on the Auxiliary Feedwater components?

a. Any valid low suction pressure trip of P-8B must be reset at C-150.

b. P-8B will operate but the low suction pressure trip will not be available.

c. AFW Control Valves, CV-0727 and CV-0749, must be locally controlled.

d. CV-0522B, Steam Supply to P-8B, must be manually controlled locally.

During a normal plant shutdown:

- Both Main Feed Pumps have tripped.
- The plant is currently in MODE 3.
- All 4 Primary Coolant Pumps are in service.
- S/G Pressures are 1000 psia.

For the above conditions, which one of the following describes the minimum actions necessary for ensuring the Auxiliary Feedwater System will provide the required flow for adequate core cooling?

a. If using P-8A or P-8B, the required flow will be met. If using only P-8C, reduce S/G pressure to ≤ 900 psia or secure all 4 Primary Coolant Pumps.

b. If using P-8A or P-8B, reduce S/G pressure to ≤ 900 psia. If using only P-8C, reduce S/G pressure to ≤ 900 psia or secure all 4 Primary Coolant Pumps.

c. If using P-8A or P-8B, the required flow will be met. If using only P-8C, reduce S/G Pressure to ≤ 900 psia and secure all 4 Primary Coolant Pumps.

d. If using P-8A or P-8B, reduce S/G pressure to ≤ 900 psia. If using only P-8C, reduce S/G pressure to ≤ 900 psia and secure all 4 Primary Coolant Pumps.

The crew is performing actions of ONP-23.1, "Primary Coolant Leak" in MODE 1 with the following indications:

- PZR Level is 57% and lowering slowly.
- T_{AVE} is 560°F and constant.
- Charging Pump P-55A is in service.

The Control Room Supervisor directs you to perform a PCS Leak Rate Calculation over a 15 minute time period. Which one of the following describes an appropriate method to perform this leak rate calculation and the reason?

a. Estimate containment sump fill rate using 15 minute sump fill rate on PPC (L_RATE_15MIN_SUMP). This is acceptable since any fluid entering the containment sump is assumed to be the source of the leak.

b. Observe the VCT and PZR Level rate of change and convert to gallons/minute. This is acceptable for a 15 minute period.

c. Perform an addition of Charging Flow, Letdown Flow and Controlled Bleed off flow from each PCP. This is acceptable due to only one charging pump in service.

d. Add Control Rod Drive Seal leak-off value to Charging Pump Seal Leak off value. This is acceptable because it would determine unidentified leakage.

During implementation of EOP-9.0, Functional Recovery Procedure, which one of the following is the lowest charging flow rate which will satisfy the reactivity control safety function?

a. 53 gpm

b. 44 gpm

c. 35 gpm

d. 25 gpm

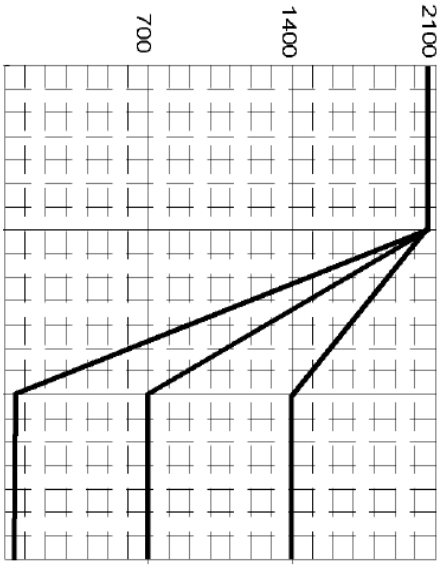
Note the following recorder indication from PR-0130A, PCP P-50A Seal Pressure. Controlled Bleedoff Flow is indicating 0 gpm. Which one of the following can be diagnosed regarding the condition of the seals for P-50A, Primary Coolant Pump?

a. Only the 1st and 2nd stage seals have failed.

b. Only the 3rd and 4th stage seals have failed.

c. Only the 1st, 2nd, and 3rd stage seals have failed.

d. Only the 2nd, 3rd, and 4th stage seals have failed.



The plant is in Mode 2 when Component Cooling Water is lost to the Letdown Heat Exchanger. Which one of the following describes the automatic action that is expected to occur within the Chemical and Volume Control System?

a. Letdown Containment Isolation Valve CV-2009 closes when letdown temperature reaches 110° F.

b. Letdown Orifice Bypass Control Valves, CV-2002 and CV-2202, modulate to maintain letdown temperature at less than 110° F.

c. Intermediate Letdown Pressure Control Valves, CV-2012 and CV-2022, close on a high temperature of 130° F.

d. Ion Exchangers Bypass Valve CV-2023 swaps to the BYPASS position on a high letdown temperature of 130° F.

The plant is on Shutdown Cooling with CV-3006, SDC HX Bypass Valve, throttled as needed. If the air line to CV-3006 is damaged such that NO operating air is supplied, what would be the resulting valve position and the reason for this design? CV-3006 would fail…

a. OPEN, to prevent overcooling the PCS.

b. CLOSED, to prevent runout of the operating LPSI pump.

c. OPEN, since that is the fail safe position for an SIAS.

d. CLOSED, since that is the fail safe position for a RAS.

The following plant conditions exist:

- Plant is in MODE 6 with PCS Temperature 110°F.
- Reactor Cavity water level is 638'.
- Shutdown cooling is being provided by LPSI Pump, P-67A, with LPSI Pump, P-67B, secured.
- While transferring LPSI Pumps for Shutdown Cooling, P-67B breaker 152-111, failed to close after several attempts.

Which of the following actions is required to be taken immediately?

Restore P-67B breaker to operable status:

a. AND establish reactor cavity water level ≥ 647'.

b. AND close all containment penetrations providing direct access from containment to outside atmosphere.

c. OR establish reactor cavity water level ≥ 647'.

d. OR close all containment penetrations providing direct access from containment to outside atmosphere.

Given the following conditions:

- Boric Acid Storage Tank, T-53A, level is 94%.
- An Auxiliary Operator has been designated as the Boric Acid batcher, and has a mixed batch of Boric Acid (T-77, Boric Acid Batch Tank, is full) ready to release to T-53A.

Which one of the following describes how the shift must control and monitor this evolution?

a. The AO should release all the contents of T-77 to T-53A in order ensure T-53A level is above the low alarm setpoint. The AO notifies the Control Room when the transfer is complete so that Chemistry sampling can be requested.

b. To prevent overflowing T-53A, the NCO and AO should align in advance on how much of T-77 should be released. The AO monitors T-53A level from the batching room and terminates the batch when T-53A level indicates 100%.

c. No transfer of T-77 to T-53A may occur since T-53A level is already at its high level alarm setpoint.

d. Since there is no level indication for T-53A in the batching room, the AO must maintain close communication with the NCO. Only part of T-77 may be released to T-53A, in order to avoid a nuisance high level alarm for T-53A.

Given the following conditions:

- The plant is at 100% power.
- Quench Tank pressure is 8 psig and rising slowly.
- Quench Tank level is 64% and stable.

The Quench Tank rupture disc will discharge to containment when pressure rises to (1) _____. The operator needs to (2) _____.

a. (1) 25 psig
   (2) Vent the Quench Tank to the Containment Vent Header using ARP-4, Primary System Volume Level Pressure.

b. (1) 100 psig
   (2) Vent the Quench Tank to the Waste Gas Surge Tank, using SOP-1A, Primary Coolant System.

c. (1) 25 psig
   (2) Drain the Quench Tank to the Equipment Drain Tank to reduce level and pressure, using SOP-17A, Clean Radioactive Waste System.

d. (1) 100 psig
   (2) Drain the Quench Tank to the Primary System Drain Tank to reduce level and pressure, using SOP-1A, Primary Coolant System.

Which one of the following describes operational aspects of PCS hydrogen removal METHOD 2: Chemical Degas and Purging the Volume Control Tank (VCT)?

a. Requires PCS subcooling to be maintained LOW to enhance hydrogen removal, and is terminated when PCS hydrogen is < 5 cc/kg.

b. Used only when the plant is in MODE 2, and requires a minimum of 4 VCT nitrogen purges to prevent a flammable gas mixture.

c. Requires single charging and letdown in order to avoid excessive hydrogen in the VCT, and is terminated when VCT hydrogen is < 5%.

d. Used only when PZR bubble is collapsed and requires Containment Vent Header Isolation Valves CV-1101 and CV-1102 be open to prevent hydrogen buildup in containment.

The Plant is in Mode 1 with all equipment in the normal configuration when the following occurs:

- A loss of off-site power coincident with a Safety Injection Actuation.
- Both D/Gs start and sequence loads per design.

Two minutes later, CCW Pump, P-52B, trips with a resultant CCW header pressure of 68 psig. Which one of the following describes the effect on CCW Pump, P-52C, and the appropriate action to take?

a. Will auto start. Verify P-52C discharge pressure >115 psig.

b. Will auto start. Check for excessive loading on D/G 1-1.

c. Will NOT auto start. Manually start P-52C and ensure acceptable loading on D/G 1-1.

d. Will NOT auto start. Reduce CCW loads to avoid a runout condition on P-52A.

During a plant startup the crew is performing a critical approach via dilution. Which one of the following describes the importance of having Spray Bypass Needle Valves (PC-1056 and PC-1058) throttled open 2 turns, as required by procedure?

a. Provides faster response for Pressurizer pressure control by raising the differential pressure across the main spray valves.

b. Aids in an accurate prediction of reactor criticality, by maintaining equal boron concentration between the Pressurizer and the PCS, in case of main spray valve closure.

c. Ensures the Pressurizer hydrogen concentration is equal to that of the PCS, by continually mixing PCS and Pressurizer inventory, in case of main spray valve closure.

d. Ensures Auxiliary Spray function is maintained ready for emergency use if needed, by continual flow through the Auxiliary Spray header.

The following plant conditions exist:

- The plant is at full power.
- Pressurizer pressure controller, PIC-0101A, is controlling in AUTO.
- PZR Pressure Transmitter, PT-0101A, bellows ruptures.

Primary Coolant System pressure indication on PIC-0101A will:

a. Lower.

b. Lower and then stabilize at approximately 2010 psia.

c. Rise.

d. Rise and then stabilize at approximately 2100 psia.

The Reactor Protection System (RPS) Trip Unit Red Matrix lamps may only be replaced as part of a planned work activity in order to prevent:

a. a shorted bulb causing a reactor trip from a loss of two Matrix Logic Ladder power supplies.

b. grounding an RPS trip unit causing a potential for an Anticipated Transient Without Scram.

c. an unplanned Action Statement entry due to rendering a trip unit inoperable.

d. personnel injury from the electrical shock hazard associated with a shorted component.

From power operations, a transient occurs that requires the operators to manually trip the reactor. The manual pushbutton methods of tripping the reactor (on Panels C-02 and C-06) have NOT been successful and the operators have determined that the following action is required:

- **OPEN** CRD Clutch Power Feeder Breakers 42-1RPS and 42-2RPS.

When 42-1RPS and 42-2RPS are opened, which one of the following indications do the control operators expect to see in the Control Room, including indicating lamps on individual Clutch Power Supply panels (Panel C-06), and the RED tile annunciator for EK-0972, Reactor Trip?

Indicating Lights on PANEL C-06

	AC ON (WHITE)	DC ON (WHITE)	TRIP (RED)	EK-0972 (RED tile)
a.	OFF	OFF	OFF	ON
b.	ON	OFF	ON	OFF
c.	OFF	OFF	ON	ON
d.	ON	OFF	OFF	OFF

The plant has experienced a loss of Preferred AC Bus Y-10. Which one of the following describes the minimum logic necessary to automatically initiate Recirculation Actuation (RAS) on low SIRWT Level?

a. **BOTH** level switches powered from the left channel reach a low level setpoint.

b. **BOTH** level switches powered from the right channel reach a low level setpoint.

c. **ANY** level switch powered from the right channel reaches a low level setpoint.

d. **ANY** level switch powered from the left channel reaches a low level setpoint.

With the plant initially at full power, a Design Basis Accident occurs. Both Emergency Diesel Generators start. The right channel DBA sequencer actuates, but the left channel DBA sequencer fails to actuate. Which one of the following lists the expected indications for Containment Air Cooler fans?

a. ALL 'A' fans OFF; ALL 'B' fans OFF.

b. ALL 'A' fans ON; ALL 'B' fans OFF.

c. V-1A, V-2A, V-3A ON, V-4A and all ‘B’ fans OFF.

d. V-4A ON, V-1A, V-2A, V-3A and all ‘B’ fans OFF.

Given the following conditions:

- A LOCA is in progress.
- RAS has occurred due to a low SIRW tank level.
- CHP has automatically initiated.
- Containment pressure is 3.5 psig and lowering.
- Equipment is functioning per design with the exception of:
  - Containment Spray Pump, P-54B, is out of service for maintenance.
  - Containment Spray Pump, P-54C tripped and will not restart.

What are the required actions for the above conditions, and what will be the effect on containment cooling?

a. Trip BOTH HPSI Pumps and close ONE containment spray valve. Containment cooling capability will be reduced by 50%.

b. Trip ONE HPSI Pump and close ONE containment spray valve. Containment cooling will remain adequate for plant conditions.

c. Trip ONE HPSI Pump and close ONE containment sump isolation valve. Containment cooling will be reduced by approximately 25%.

d. Operate BOTH HPSI Pumps. Close ONE containment spray valve. Containment cooling capability will remain adequate for plant conditions.

Consider a Large Break LOCA with a concurrent loss of CCW to Engineered Safeguards. Which one of the following describes the effect, if any, on operation of the Containment Spray Pumps based on cooling of the pump seals? (Assume Service Water Backup cooling is NOT available.)

a. Can be operated as needed throughout the event with minimal effect on pump seals.

b. Approximately 10 minutes after Safety Injection Signal occurs pump seal failure is expected to occur.

c. Approximately 10 minutes after Recirculation Actuation Signal occurs pump seal failure is expected to occur.

d. Cannot be operated since Service Water backup cooling is not available.

Given the following conditions:

- An uncomplicated reactor trip occurred from 100% power 1 hour ago.
- EOP-1.0, “Standard Post Trip Actions”, and EOP-2.0, “Reactor Trip Recovery”, have been completed.
- PCS Temperature is being maintained with the Turbine Bypass Valve in AUTO.

A Steam Generator tube leak occurs on the ‘B’ S/G. All of the following radiation monitors will aid in diagnosing that a Steam Generator Tube Leak event is occurring **EXCEPT**:

a. RIA 2325/2326, Radioactive Gaseous Effluent Monitor.

b. RIA-0631, Condenser Off-Gas Monitor.

c. RIA-0707, Steam Generator Blowdown Monitor.

d. RIA-2323, ‘B’ S/G Main Steam Line Monitor.

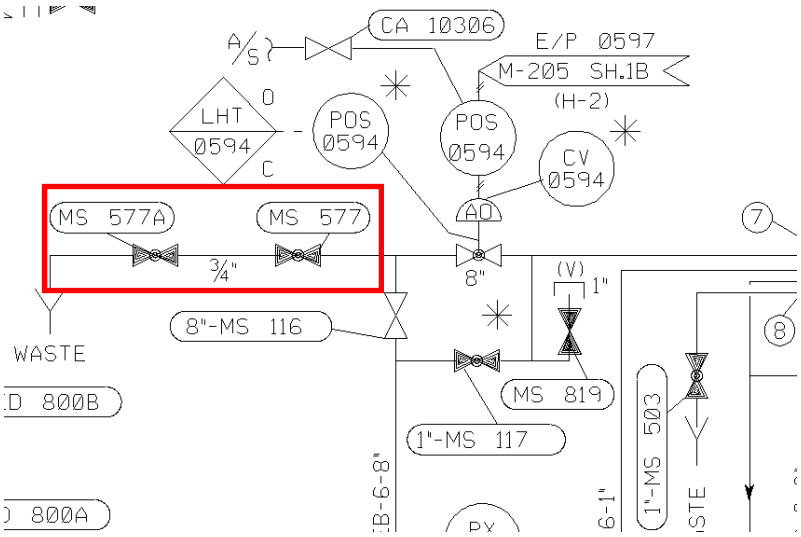
Refer to the below P&ID. Valve packing has been adjusted for MV-MS577A, MSR E-9A MS Drain. It is desired by the work group to OPEN MV-MS577, MSR E-9A MS Drain Isolation, overnight to monitor the effectiveness of the valve packing adjustment. MV-MS577 position is NOT controlled by the work order. Which one of the following is one of the actions the off-going NCO is required to perform?

a. Prepare an Operating Permit tag to hang on MV-MS577.

b. Ensure MV-MS577 position is added to the Secondary AO turnover sheet.

c. Ensure a Temporary Modification tag is provided to the oncoming NCO for hanging on MV-MS577.

d. Make appropriate entry into the Equipment and System Operational Guidance/Recommendation Book.



The plant is operating at 60% power with the Steam Generator Level Control System in automatic, when Annunciator EK-0961, “STEAM GEN E-50A HI LEVEL” alarms.

Which one of the following sets of indications would be expected immediately for the above plant conditions?

	CV-0701, FRV, Position Indicator, POI-0701	‘A’ Steam Generator Level
a.	Lowering	55%
b.	Rising	55%
c.	Rising	55%
d.	Lowering	85%

From full power, a Loss of All Offsite Power occurs. D/G 1-2 did not start automatically, and will not start manually. If an Auxiliary Feedwater Actuation Signal occurs, which motor driven Auxiliary Feedwater Pump(s) will be operating?

a. ONLY AFW Pump P-8A.

b. ONLY AFW Pump P-8C.

c. NEITHER AFW Motor Driven Pump.

d. BOTH AFW Motor Driven Pumps.

Given the following conditions:

- A reactor trip from full power occurred 50 minutes ago.
- AFAS automatically actuated.
- Auxiliary Feedwater Pump P-8A is running and delivering 165 gpm to each S/G.
- P-8C is in AUTO, and not running.
- Auxiliary Feedwater Actuation Signal (AFAS) has NOT been reset.
- 'A' S/G level is 68%, 'B' S/G level is 60%.

Then, flow to 'A' S/G (via FIC-0749) is manually reduced to 90 gpm and flow to 'B' S/G (via FIC-0727) is manually reduced to 110 gpm.

Which one of the following describes the expected response of AFW Pump P-8C, AND the reason for that response?

a. Not start automatically, since P-8A is running and S/G levels are both greater than the minimum required.

b. Not start automatically, since P-8A is running and AFW flow satisfies the minimum required.

c. Start automatically, since one S/G level is outside of the normal band.

d. Start automatically, since AFW flow is less than the minimum required.

The Plant is operating at steady state 100% Rx power. Breaker 152-106, Bus 1C supply from S/U Xfmr 1-2, is out of service and the applicable LCO is in effect. Safeguards / Station Power Incoming Breaker, 152-105, trips open on overcurrent which de-energizes 2400V Bus 1C. Diesel Generator 1-1 will...?

a. start on an undervoltage signal, come up to speed and voltage and energize Bus 1C after all load breakers to Bus 1C automatically trip open.

b. start on an undervoltage signal, come up to speed and voltage and will not energize Bus 1C.

c. start on an undervoltage signal, come up to speed and voltage and will only energize Bus 1C if all load breakers to Bus 1C are manually opened.

d. not start as the result of this occurrence.

The plant is at 100% power operations with Station Battery Chargers #1 and #2 in service. The #1 DC Bus Tie Breaker 72-10 fails open.

Which one of the following describes the condition of the DC Bus loads?

a. Only Preferred AC Bus Y-10 will be de-energized.

b. All Preferred AC Buses will remain energized.

c. Only DC Bus D-10L loads will remain energized.

d. All DC Bus D-10L loads will be de-energized.

Given the following plant conditions:

- The plant is at full power.
- Fuel Oil Transfer Pump P-18B is tagged out for maintenance.
- Due to Chemistry sampling, D/G 1-2 Fuel Oil Day Tank T-25B level has lowered.
- Fuel Oil Transfer Pump P-18A has automatically started and is pumping fuel oil to T-25B.

While this fuel oil transfer is in progress the following occurs:

- A Loss of All Offsite Power occurs.
- D/G 1-1 FAILS to automatically start and will NOT start manually.
- D/G 1-2 starts and loads per design.

When D/G 1-2 loading sequence is complete, fuel oil transfer to T-25B will resume…

a. as a result of D/G 1-2 loading as designed.

b. ONLY if MCC-8 is reenergized by manual action.

c. ONLY if MCC-2 is reenergized by manual action.

d. as a result of gravity feed from T-10A, Fuel Oil Tank.

An authorized Waste Gas Batch Release of Waste Gas Decay Tank T-101A, has just been initiated, and then automatically stopped. EK-1364, GASEOUS WASTE MONITORING HI RADIATION, has annunciated due to actuation of RIA-1113, Waste Gas Discharge Process Monitor. It is desired to restart the batch release.

How is the batch release restarted, and where are the controls located?

a. RAISE the alarm setpoint for RIA-1113 on Main Control Room Panel C-11 (rear) AND restart the in service Main Exhaust Fan.

b. RAISE the alarm setpoint for RIA-1113 on Radwaste Panel C-40 AND push CV-1123 High Radiation Reset on Main Control Room Panel C-11 (rear).

c. PUSH CV-1123 High Radiation Reset on Radwaste Panel C-40, AND restart the in service Main Exhaust Fan.

d. RAISE the alarm setpoint for RIA-1113 on Main Control Room Panel C-11 (rear) AND push CV-1123 High Radiation Reset on Radwaste Panel C-40.

If the Turbine Bldg. were to experience a loss of Non-Critical Service water due to a piping system malfunction, which annunciators would alert the control room operators that a reactor trip was required?

a. EK-0260 H2 Cooler Hi Temp, and EK-1165 Non-Critical Serv Water Lo Press.

b. EK-0259 Exciter Cooler Hi Temp, and EK-1165 Non-Critical Serv Water Lo Press.

c. EK-0156/62 Condensate Pump Hi Temp, and EK-0259 Exciter Cooler Hi Temp.

d. EK-0259 Exciter Cooler Hi Temp, and EK-0260 H2 Cooler Hi Temp.

Instrument Air Compressor, C-2A, is in operation with Instrument Air Compressor, C-2C, in AUTO. Instrument Air Compressor, C-2B, is tagged out for maintenance. An air leak caused air header pressure to lower to 85 psig. The air leak was subsequently isolated, at which time header pressure returned to 110 psig. How would C-2C respond to this instrument air pressure transient? C-2C will...

a. not auto-start during this instrument air transient.

b. auto-start and continue to run unloaded until placed in OFF and returned to AUTO.

c. auto-start, but will stop after running unloaded for a period of time.

d. auto-start and run fully loaded until placed in OFF and returned to AUTO.

Following a Loss of Coolant Accident inside Containment, Containment Pressure peaked at 3.5 psig and containment radiation peaked at 15R/Hr. Which of the following valves would you expect to have automatically CLOSED?

a. MSIVs, Main Feed Regulating Valves, and S/G Blowdown Isolation Valves.

b. Nitrogen to Containment Valve, Letdown Orifice Isolation Valves, and Component Cooling Water to Containment.

c. Primary System Drain Tank Outlet Valves, Hydrogen Monitor Isolation Valves, and S/G Blowdown Isolation Valves.

d. Feed Regulating Bypass Valves, Primary Sampling Isolation Valves, and Shield Cooling Surge Tank Fill Valve.

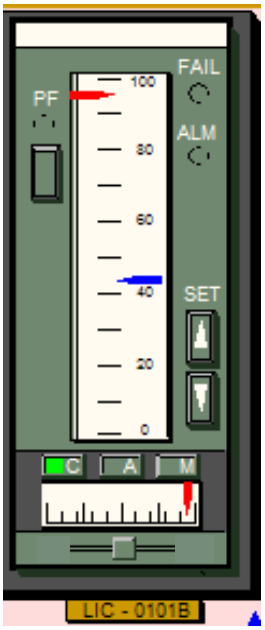
During a plant shutdown for a refueling outage, the reactor is at 28% power, and T_{AVE} is at 540° F. Due to a failure, LIC-0101B, PZR Level Controller, output signal is at MAXIMUM output (see below picture of LIC-0101B). The operator must take corrective action to address which one of the following concerns?

a. Pressurizer LOW level with potential de-energization of ALL Pressurizer heaters.

b. Pressurizer HIGH level with the potential to exceed Technical Specifications for level.

c. Pressurizer HIGH level with potential to exceed alarm setpoint for high pressure.

d. Pressurizer LOW level with the potential to exceed Technical Specifications for level.



With the plant at 10% power during power ascension, EK-0971, “SPI TROUBLE” annunciates in the control room and has been verified valid. Which one of the following describes the impact on the Rod Position Indication System and the required action?

a. Loss of control rod sequencing. Manually sequence rods per SOP-6, “Reactor Control System”, and verify the position of each control rod to be within 8 inches of all other control rods in its group per LCO 3.1.4, “Control Rod Alignment”

b. Loss of PPC control rod position indication processing from control rod reed switches. Verify the position of each control rod to be within 8 inches of all other control rods in its group per LCO 3.1.4, “Control Rod Alignment”.

c. Loss of Shutdown Rod upper electrical limit (UEL) status on Rod Matrix display (C-12). Use Primary Position Indication (PIP) Node for monitoring Control Rod positions and limits per ARP-5 “Primary Coolant Pump Steam Generator and Rod Drives”.

d. Loss of Power and Pre-Power Dependent Insertion Limit (PDIL, PPDIL) Processing. Verify each regulating rod group is within its withdrawal sequence, overlap and insertion limits per LCO 3.1.6 “Regulating Rod Group Position Limits”.

Refer to the below graphic of 'A' Steam Generator level instrumentation.

The plant is at 100% power. RPS Channel B for 'A' Steam Generator Low Level is BYPASSED due to a failure of LI-0751B.

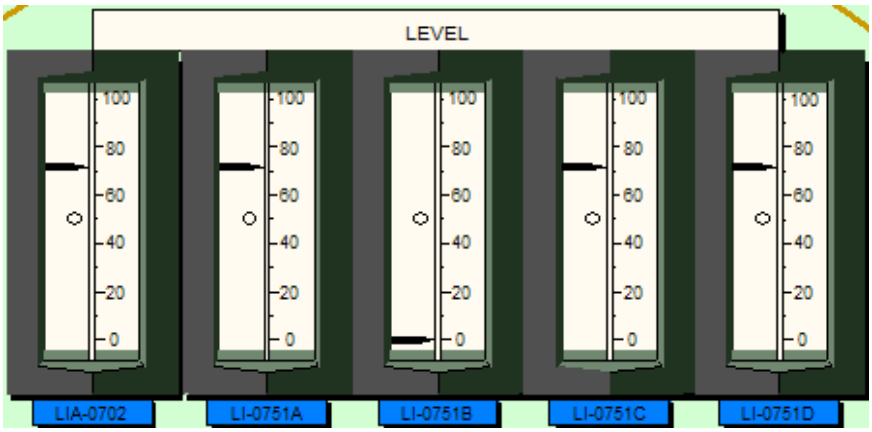
Which one of the following additional instrument failures will result in a Reactor trip? (Assume no operator action.)

a. LI-0751A fails LOW.

b. LI-0751A fails HIGH.

c. LIA-0702 fails LOW.

d. LIA-0702 fails HIGH.



P-82, Spent Fuel Pool Booster Pump is operating and circulating Spent Fuel Pool water through T-50, SFP Demineralizer. A high differential pressure across T-50 occurs. Which of the following describes the consequences of this condition?

a. An alarm annunciates in the Control Room and T-50 is automatically bypassed.

b. The Spent Fuel Pool begins heating up since recirculation flow is now restricted.

c. An alarm annunciates at Radwaste Panel C-40, and the resins need to be changed out.

d. P-82, Spent Fuel Pool Booster Pump trips on low suction pressure due to the restriction.

During fuel moves inside the containment, RIA-2316, Fuel Handling Area Monitor #1 fails and reads upscale high. Which one of the following describes the effect, if any, on the refueling machine?

a. A containment isolation occurs which causes the refueling machine grapple assembly to lose instrument air.

b. A containment isolation occurs which causes the refueling machine mast to lose lubricating water (PMU).

c. The refueling machine will continue to operate normally.

d. Fuel Handling Area Monitor alarm will cause the refueling machine computer to disable the mast assembly.

From full power plant conditions, the following occurs:

- Main Turbine vibration rises rapidly due to several turbine blades puncturing the turbine casing.
- A rapid complete loss of Main Condenser vacuum occurs.
- The Turbine NCO verifies the Main Turbine has tripped.
- The Reactor FAILS to trip automatically or manually.
- The crew takes appropriate actions for reactivity control, and reactor power is lowering.
- The Atmospheric Dump Valves FAIL to actuate.

What is the effect of the above conditions on the plant secondary system?

a. Main Steam Safety Valves operate to maintain secondary system pressure at less than 110% of design pressure.

b. Turbine Bypass Valve operates to maintain secondary system pressure at less than design pressure.

c. Main Steam Isolation Valves close to prevent excessive depressurization of the Steam Generators.

d. Steam Generator Hi-Level Override actuates to prevent water damage to Main Steam lines.

The plant is operating at 100% power when Condensate Pump P-2A trips.

What is the resulting effect on the Main Feedwater (MFW) Pumps?

a. They trip due to a reduction in MFW pump suction pressure.

b. They trip due to over-speeding of the MFW pump turbines.

c. They will experience excessive vibration due to cavitation at the pump suction.

d. The pump turbines ramp down to minimum speed to prevent overfeeding Steam Generators.

During a Waste Gas Decay Tank (T-101B) batch release, Main Exhaust Fan, V-6A, trips. Which one of the following describes the appropriate operator action?

a. Ensure RGEM has swapped to HIGH range.

b. Immediately secure the Waste Gas Decay Tank release.

c. If Main Exhaust Fan, V-6B, cannot be started within one minute, secure Auxiliary Building ventilation.

d. Depress Main Exhaust Fan Damper CLOSE pushbutton to close discharge damper on Main Exhaust Fan, V-6B.

From full power, a Safety Injection occurs, concurrent with a loss of Instrument Air. Instrument Air pressure indicates 10 psig, and is lowering. Several minutes later, it is noted that Station and FW Tie-In Control Valve, CV-1221 indicating RED light is ON. The GREEN light is OFF. The handswitch remains selected to CLOSE. The NCO confirms that NO operator action was taken to operate this control valve handswitch.

Which one of the following accounts for the status of CV-1221?

a. CV-1221 has opened automatically due to the Safety Injection Signal.

b. CV-1221 received an open signal when Instrument Air header pressure dropped to 85 psig.

c. Due to the loss of operating air to CV-1221 operator, the valve failed OPEN.

d. The SIAS caused a shedding of Bus 1E, and a loss of control power to CV-1221, failing it OPEN.

A fire system rupture has occurred which caused Fire Water System pressure to lower to 63#. The rupture was then isolated. Which one of the following lists the Fire Water Pumps that are expected to be in service? Assume no operator action occurs.

a. P-9A and P-9B only.

b. P-9A, P-9B, P-41, and P-13.

c. P-9A, P-9B, and P-13 only.

d. P-9A, P-9B, and P-41 only.

The plant is in Mode 1. During an electrical storm Safeguard Transformer 1-1 was damaged and became de-energized at 03:00 hours today due to a lightning strike. Diesel Generator 1-2 was declared inoperable at 00:00 hours today prior to the lightning strike to conduct preventative maintenance and the applicable LCO was entered. Per the Technical Specifications what are the required actions following the lightning strike assuming the plant electrical system functioned as designed?

a. Verify the operability of the Offsite Source from Start-up Transformer 1-2 ONLY by 04:00 hours today.

b. Verify the operability of the Offsite Sources from BOTH Start-up Transformer 1-2 and Station Power Transformer 1-2 by 04:00 hours today.

c. Verify the operability of the Offsite Source from Station Power Transformer 1-2 ONLY by 04:00 hours today.

d. Enter LCO 3.0.3 Immediately.

The Spent Fuel Pool Cooling System has two design temperature limits, an upper and a lower limit. What is the lower design temperature limit and its purpose?

a. 75°F to preclude criticality.

b. 68°F to prevent boric acid precipitation.

c. 68°F to preclude criticality.

d. 75°F to prevent boric acid precipitation.

Which one of the following would preclude conducting a shift turnover during a critical approach?

a. T_{AVE} is stable at 531°F.

b. Startup rate is at 0.15 dpm.

c. A dilution was completed 20 minutes ago.

d. Rod motion was completed 15 minutes ago.

A Clearance Request has been generated and you have been assigned to develop the clearance order for P-98A, S/G Blowdown Pump. The scope of the work is to align the pump/motor coupling and perform motor resistance checks. Which one of the following tagging sequences is satisfactory for this clearance?

a. Open Pump Supply Breaker, 52-353
   Close Pump Suction Valve, MV-MS177
   Close Pump Discharge Valve, MV-DRW795
   Open Pump Casing Drain, MV-MS812

b. Close Pump Discharge Valve, MV-DRW795
   Close Pump Suction Valve, MV-MS177
   Open Pump Supply Breaker, 52-353
   Open Pump Casing Drain, MV-MS812

c. Close Pump Suction Valve, MV-MS177
   Close Pump Discharge Valve, MV-DRW795
   Open Pump Supply Breaker, 52-353
   Open Pump Casing Drain, MV-MS812

d. Open Pump Supply Breaker, 52-353
   Close Pump Discharge Valve, MV-DRW795
   Close Pump Suction Valve, MV-MS177
   Open Pump Casing Drain, MV-MS812

A Technical Specification Action has the following requirements for completion time:

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3 AND B.2 Be in MODE 5	6 hours 36 hours

This Action is entered at 0735 on Tuesday, and the plant enters MODE 3 at 1115 the same day.

Which ONE of the following is the latest time by which the plant must be in MODE 5?

a. 1715 Wednesday

b. 1935 Wednesday

c. 2315 Wednesday

d. 0135 Thursday

The plant is in MODE 3 at normal operating pressure and temperature. To reduce containment activity levels, it is desired to perform a Purge of the Containment. What actions would have to be taken to Purge the Containment Building?

a. Open the Purge Supply and Exhaust Valves.
Start the Air Room Purge Supply Fan, V-46.
Ensure one of the Main Exhaust Fans, V-6A/B, is operating.

b. Ensure one of the Main Exhaust Fans, V-6A/B, is operating.
Open the Purge Supply and Exhaust Valves.
Start the Air Room Purge Supply Fan, V-46.

c. Open the Purge Supply and Exhaust Valves.
Ensure one of the Main Exhaust Fans, V-6A/B, is operating.
Start the Air Room Purge Supply Fan, V-46.

d. Align Containment Purge through CWRT T-64D Rupture Disk.

All of the following are actions from ONP-23.2 to help limit the spread of contamination following the discovery of a Steam Generator Tube Leak EXCEPT for:

a. Starting a plant heating boiler.

b. Routing after condenser drains to the condenser.

c. Isolating Steam Generator Blowdowns.

d. Isolating the Main Steam Reheaters.

In various places throughout the Emergency Operating Procedures, the term "degraded containment" is used. What is the definition of this term, and its significance to the operating crew?

a. Containment integrity has been lost. The operating crew must now consider this safety function as **jeopardized**, and initiate immediate actions to restore containment integrity.

b. Containment radiation monitors are indicating > 10R **AND** Containment High Radiation signal has NOT automatically initiated. The operating crew must manually initiate CHR.

c. Containment pressure has exceeded 3.0 psig **AND** temperature has exceeded 175° F. The operating crew may resume use of the non-degraded containment operating curves once BOTH containment parameters have restored to normal.

d. Containment pressure has exceeded 3.0 psig **OR** temperature has exceeded 175° F. Use of degraded containment operating curves must continue throughout the remainder of the EOP, even if containment parameters have restored to normal.

A Main Steam Line Break outside of containment and upstream of the MSIV for “A” S/G has occurred and the “A” S/G has blown dry. An Auxiliary Operator has been directed to perform the actions outside the Control Room necessary for isolation of “A” S/G.

What effect, if any, will isolating the "B" S/G (vice the "A" S/G) have on the Control Room’s ability to mitigate this event?

a. No effect due to the cross-tie line between “A” and “B” main steam lines.

b. No effect since the Control Room can use the Turbine Bypass Valve for PCS Heat Removal.

c. The Control Room has lost the ability to control PCS temperature using the ADVs.

d. The Control Room can no longer control PCS pressure.

Control Room alarm “FIRE SYSTEM PANEL C-47, C-47A/B OFF NORMAL” (EK-1148) has annunciated. The cause of the alarm is “CORRIDOR 106 on EL. 590’-0” (Auxiliary Building Main Corridors on panel C-47B). Which one of the following describes the required action for this alarm?

a. Immediately sound the fire alarm and call out Palisades Fire Brigade Team.

b. Immediately sound the fire alarm and call Covert Township Fire Department.

c. Dispatch an Auxiliary Operator to inspect the area. If a fire is discovered, then sound Fire Alarm and call out Fire Brigade.

d. Immediately sound fire alarm. Dispatch an Auxiliary Operator to inspect the area. If fire is present, call out Fire Brigade.

From full power, the following occurs:

- A loss of 4160VAC Bus 1A.
- A Main Steam Line Break has occurred inside containment.
- Containment High Pressure actuates.

What is the expected effect on the stator winding temperatures of the two operating Primary Coolant Pumps (PCP), and what procedural guidance will be used for this condition?

Stator winding temperatures will first begin rising....

a. after Component Cooling Water to containment isolates. The Emergency Operating Procedure requires establishing a temperature trend on the Plant Process Computer (PPC).

b. when the Main Steam Line Break occurs. The Alarm Response Procedure provides guidance to have the System Engineer evaluate the condition if stator temperatures exceed 140° C.

c. when the Main Steam Line Break occurs. ONP-6.2, Loss of CCW, provides guidance to trip a PCP if stator temperatures exceed 185° F.

d. after Component Cooling Water to containment isolates. ONP-6.2, Loss of CCW, provides guidance to trip a PCP if stator temperatures exceed 140° C.

At 0948, a Loss of Shutdown Cooling event occurs. The plant is in MODE 6 with Reactor Cavity Water Level at 648 feet. Time for the PCS to reach 200°F is 3 hours. Operators are dispatched to close the equipment hatch and to verify containment closure. Which one of the following lists the latest time by which the containment must be closed?

a. 1048

b. 1148

c. 1248

d. 1348

With the plant in MODE 1, the shell side of E-54A, Component Cooling Water (CCW) Heat Exchanger developed a leak and had to be isolated from the header to stop the leak. How does this affect the CCW System's ability to perform its design function, and which guidance applies?

100% of CCW post accident cooling capability is...

a. still available. SOP-16, Component Cooling Water requires starting an additional CCW pump to maintain E-54B CCW Hx differential pressure within required limits.

b. NOT available. ONP-6.2 Attachment 1, CCW Leak Isolation, is performed to restore required post accident cooling capability.

c. still available. Technical Specification 3.7.7, CCW System, requires that E-54A CCW Heat Exchanger be restored to service within 72 hours.

d. NOT available. Technical Specification 3.0.3 requires initiating actions for plant shutdown within one hour.

A Surveillance Requirement in the Technical Specifications requires the alternate power supply for Pressurizer heaters to be capable of powering the affected heaters within five (5) hours. What is the basis for these five (5) hours?

a. Ensures that a 20° F subcooling margin, due to pressure decay, is not exceeded.

b. Allows the operating crew to evaluate stripping unneeded Bus 1C loads to prevent overloading D/G 1-1.

c. Prevents exceeding 375 kW on the remaining heaters which have power from Bus 1D.

d. Ensures full restoration of pressure control capability in order to preclude reactor head voiding.

With the plant at full power a loss of all offsite power occurs. D/G 1-1 FAILS to start automatically, or manually. Which one of the following describes an effect on the noted Component Cooling Water Pump, and what procedure will be used to address the concern?

a. P-52B discharge pressure may be less than required. Per SOP-16, Component Cooling Water, stop P-52B if CCW heat exchanger deltaP limits are exceeded.

b. P-52A discharge pressure may be less than required. Per ONP-6.2, Loss of CCW, start all available CCW pumps.

c. P-52B discharge pressure may be less than required. Per ONP-2.1, Loss of AC Power, isolate selected radwaste loads if needed to restore discharge pressure.

d. P-52C discharge pressure may be less than required. Per SOP-16, Component Cooling Water, isolate selected radwaste loads to restore discharge pressure.

A manual reactor trip has occurred due to a loss of DC Bus D21-2. Per 10CFR50.72, the NRC must be notified...

a. immediately after notifying the county and state but no longer than 1 hour from classification.

b. immediately after notifying the county and state but no longer than 15 minutes from classification.

c. within 4 hours if an Alert or higher is declared.

d. within 8 hours if an Unusual Event is declared.

During a startup, the plant is at 13% power. A review of post-maintenance documentation indicates that there is NO reasonable assurance that control rod 34 is trippable.

What is the Technical Specification requirement, including the basis, for this condition?

a. Reactor power cannot exceed 50%. This is based on preventing excessive reactivity in the core due to TWO stuck rods.

b. Restore the untrippable rod to operable status within 2 hours. This ensures ASI is within limits prior to exceeding 15% power.

c. Place the plant in MODE 3 within 6 hours. This is based on preventing excessive reactivity in the core due to TWO stuck rods.

d. Immediately trip the reactor. This is based on placing the plant in a condition where the untrippable rod specification does not apply.

With the plant shutdown in MODE 5 alarm EK-0608C “NI CHANNEL TROUBLE” annunciates. It is determined that the cause of the alarm is Wide Range Nuclear Instrument 4A channel failing low. Which one of the following accurately describes the operability of the Source Range/Wide Range Neutron Flux Monitoring Channels?

a. Declare one channel inoperable. Enter LCO 3.3.9, “Neutron Flux Monitoring Channels,” Condition A.

b. Both channels remain operable if Source Range NI-2 is capable of detecting the existing neutron flux and is in reasonable agreement with Source Range NI-1.

c. Declare one channel inoperable. No LCO action statement should be entered because only one channel is required to be operable in the current MODE.

d. Both channels remain operable if Wide Range Nuclear Instrument 4A detector voltage remains above 45VDC.

The plant is currently in action level 3 for high dose equivalent Iodine-131 due to fuel cladding leaks. A Steam Generator tube rupture event then occurs. To confirm proper event diagnosis, Chemistry technicians will be directed to sample:

a. Steam Generators for boron and activity.

b. Blowdown Demineralizers effluent for boron and activity.

c. Steam Generators for lithium and activity.

d. Blowdown Demineralizers effluent for lithium and activity.

Given the following conditions:

- Reactor Protective system has initiated a trip from a valid Containment High Pressure (CHP) signal
- PCS Pressure is 1190 psia
- PZR Level is 12%
- 'A' S/G Pressure is 850 psig, 'B' S/G Pressure is 520 psig
- T_C in both loops are lowering
- PCS subcooling is 95°F
- EOP-1.0 "Standard Post Trip Actions" has been completed

Which one of the following describes (1) the appropriate procedure to enter, (2) the actions that need to be taken, and (3) the reason for the actions?

a. (1) EOP-6.0, "Excess Steam Demand Event"
   (2) Isolate the 'B' Steam Generator per EOP supplement 18 AND maintain 'A' S/G pressure within 50 psi of 'B" S/G.
   (3) This will isolate the affected S/G and maintain heat removal to avoid a pressurized thermal shock condition.

b. (1) EOP-6.0, "Excess Steam Demand Event"
   (2) Isolate the 'B' Steam Generator per EOP supplement 18 AND maintain 'A' S/G pressure within 50 psi of 'B' S/G after 'B' S/G indicates it has boiled dry.
   (3) This will prevent overcooling the PCS to avoid a pressurized thermal shock condition.

c. (1) EOP-9.0, "Functional Recovery Procedure"
   (2) Isolate the 'B' Steam Generator per EOP supplement 18 when level reaches -84% AND stabilize PCS temperature with 'A' Steam Generator per EOP-6.0
   (3) This allows maximum safety injection flow for Pressurizer level recovery

d. (1) EOP-9.0, "Functional Recovery Procedure"
   (2) Isolate BOTH Steam Generators per EOP supplement 17 and 18 AND establish once-through cooling per EOP-9.0.
   (3) This prevents challenging the Containment design pressure limit of 55 psig.

A reactor startup is in progress. The reactor is critical with power stabilized at 1 E-3% power. Alarm EK-0910, "PRI COOLANT PUMP P-50D HI TEMP OVERLOAD" annunciates. PCP, P-50D, upper guide bearing temperature is indicating 200°F on panel C-11 and rising. Which one of the following describes the actions necessary?

a. Allow P-50D to continue to operate. Check P-50D amps are normal and breaker overload relay is reset per ARP-5, "Primary Coolant Pump Steam Generator and Rod Drives Scheme."

b. Trip the reactor. Secure P-50D. Perform EOP-1.0, "Standard Post Trip Actions."

c. Allow P-50D to continue to operate. Verify CCW flow normal to P-50D and check oil reservoir levels normal per ARP-5, "Primary Coolant Pump Steam Generator and Rod Drives Scheme."

d. Trip the reactor. Secure P-50D. Perform EOP-8.0, "Loss of Forced Circulation Recovery."

Which one of the following instrumentation indications that are used during Shutdown Cooling operations is also identified as post-accident monitoring instrumentation per Technical Specifications?

a. FIC-0306, SDC HX Bypass Flow

b. PIA-0306, LPSI Pump Discharge Pressure

c. TI-0912, SDC HX CCW Outlet Temperature

d. Cold Leg Temperature (wide range)

During a LOCA with all Safety Injection pumps and Containment Spray pumps operating, SIRWT level reaches 2% and a RAS initiates. All equipment has been verified aligned per RAS with the exception of CV-3029, East ESG Containment Sump Isolation, which does not open. How does this impact operation of the Containment Spray and Safety Injection systems and what action(s) need(s) to be taken?

a. Left channel Containment Spray and HPSI Pumps have lost suction from containment sump. Initiate post-RAS injection from Spent Fuel Pool per EOP Supplement 44.

b. Right channel Containment Spray and HPSI Pumps have lost suction from containment sump. STOP Containment Spray Pump P-54A AND ensure OPEN CV-3071, P-66A subcooling valve per EOP Supplement 42.

c. Left channel Containment Spray and HPSI Pumps have lost suction from containment sump. Initiate post-RAS refill of SIRW Tank per EOP Supplement 43.

d. Right channel Containment Spray and HPSI Pumps have lost suction from containment sump. STOP Containment Spray Pump P-54A AND P-66A, HPSI Pump per EOP-4.0 Operator Actions.

During a Steam Generator Tube Rupture, why do we use the turbine bypass valve (TBV) instead of the atmospheric dump valves (ADVs)?

a. Minimizes the release of radioactivity.

b. Ensures availability of Steam Driven Aux. Feedwater P-8B.

c. Minimizes PCS shrinkage due to excess cooldown.

d. Ensures finer control over PCS temperature and pressure.

Given the following conditions:

- The plant is at full power.
- "A" Train of Control Room HVAC is in service in Normal Mode.
- The following alarm annunciates:
  - EK-0239, "CRHVAC TRAIN 'A' RIA-1818A HI RAD/FAIL"
- It is determined that RIA-1818A has failed and is inoperable.

What are the consequences of continuing to operate the 'A' Train Control Room HVAC system and what actions will be taken to mitigate this condition?

a. If radiation entered the Control Room envelope, the 'A' train would not be able to automatically swap to Emergency Mode. The affected CRHVAC Train (A) shall be placed in Emergency Mode within 1 hour, OR the opposite CRHVAC train (B) must be started within 1 hour, AND the affected train must be Caution Tagged to only run in Purge Mode.

b. If radiation entered the Control Room envelope, the 'A' train would not be able to automatically swap to Emergency Mode. The affected CRHVAC Train (A) shall be placed in Emergency Mode immediately, OR the opposite CRHVAC train (B) must be started immediately, AND the affected train must be Caution Tagged to only run in Emergency Mode.

c. Any radioactive contamination entering the Control Room envelope from the outside will not be detected. The affected CRHVAC Train (A) shall be placed in Emergency Mode immediately, OR the opposite CRHVAC train (B) must be started immediately, AND the affected train must be Caution Tagged to only run in Emergency Mode.

d. Any radioactive contamination entering the Control Room envelope from the outside will not be detected. The affected CRHVAC Train (A) shall be placed in Emergency Mode within 1 hour, OR the opposite CRHVAC train (B) must be started within 1 hour, AND the affected train must be Caution Tagged to only run in Purge Mode.

Given the following:

- The plant is at 100% power.
- NI-05, Power Range Nuclear Instrument, experienced a failed power supply and has been removed from service for corrective maintenance.
- NI-08, Power Range Nuclear Instrument power indication becomes erratic and is oscillating between 80% and 100%.

Which one of the following LCO action statements should be entered and why?

a. LCO 3.3.1 for RPS Instrumentation action "E".
Place Variable High Power Trip for RPS channel A or D in trip within 1 hour to prevent operating in two-out-of-two logic for the Reactor Protective System.

b. LCO 3.3.1 for RPS Instrumentation action "F".
Restrict power to ≤ 70% rated thermal power within 2 hours because of increased uncertainty associated with TM/LP and Variable High Power Trips with two inoperable power range channels.

c. LCO 3.2.3 for Quadrant Power Tilt (T_q) action "C".
Restrict power to ≤ 25% rated thermal power within 2 hours because Quadrant Power Tilt (T_q) cannot be determined from ex-core detector readings with two inoperable power range channels.

d. LCO 3.2.1 for Linear Heat Rate action "B".
Restrict power to ≤ 85% rated thermal power within 2 hours to ensure ample thermal margin is maintained because the ex-core monitoring system is inoperable for monitoring Linear Heat Rate.

During a secondary plant startup, the following conditions exist:

- Condensate Pump, P-2A, is in service.
- Both Cooling Tower Pumps, P-39A/B, are in service.

All of the following are required to be available for the startup except:

a. Hogging jet and/or Condenser Vacuum Pump (P-910)

b. One Primary and one Secondary Air Ejector Jet

c. One Gland Condenser Exhauster (C-1A/B)

d. One Circ Water Priming Pump (C-16A/B)

A liquid radwaste batch release of Utility Water Storage Tank T-91 is in progress via CV-1049, 3" Discharge Isolation. RIA-1049 reaches its high alarm setpoint and EK-1365, “Process Liquid Monitoring Hi Radiation” alarms, but CV-1049 does NOT automatically close.

Based on these conditions, you must...

a. have the release terminated by selecting handswitch for CV-1049 to close, and refer to EI-8, “Onsite Radiological Monitoring” for further Emergency Plan guidance.

b. have the release terminated by closing MV-CRW172, Discharge to Lake, and refer to EI-1, “Emergency Classification and Actions” for guidance on required notifications.

c. refer to EI-8, “Onsite Radiological Monitoring” for determining compensatory sampling requirements and immediately notify the Radioactive Materials Control Supervisor.

d. refer to Technical Specification 5.6, “Reporting Requirements” for notification requirements and immediately establish manual sampling frequency of once per hour.

What is the Safety Limit for PCS pressure when the plant is in MODE 3?

a. 2235 psia

b. 2375 psia

c. 2650 psia

d. 2750 psia

For the following conditions:

- The reactor is not critical.
- T_{AVE} is at 532ºF

Which one of the following describes the resulting mode change, including who must approve the action, when withdrawing the FIRST regulating rod?

This is a mode change from...

a. MODE 3 to MODE 2 and requires authorization from the Plant Manager.

b. MODE 3 to MODE 2 and requires authorization from the Site Vice-President.

c. MODE 2 to MODE 1 and requires authorization from the Plant Manager.

d. MODE 2 to MODE 1 and requires authorization from the Site Vice President.

To maintain the plant at power operations, a fuse replacement is required for a non-safety related component. A comparable fuse is available; however an identical fuse is NOT available. The design change process has NOT been completed. A Work Order has been created for use of the comparable fuse.

The comparable fuse may...

a. not be used for this application, since the design change process has not been implemented.

b. be used since it will be controlled by the Work Order.

c. be used since it involves maintaining power operations.

d. not be used since the plant is above Mode 4.

A LOCA inside containment has occurred and a Site Area Emergency has been declared. The Technical Support Center and EOF have been activated. To prevent core damage it is recommended that an entry be made into East Safeguards. The projected dose rate in this room is 124 R/hr. Duration of the exposure is expected to be 3 minutes. Who must authorize this exposure?

a. Plant Manager

b. Site Vice President

c. Site Emergency Director

d. Health Physics Supervisor

A waste gas release is being planned for Waste Gas Decay Tanks, T-101C and T-68A. Samples have been completed and analyzed per HP-6.5 "Sampling Waste Gas Decay Tank" and HP-6.6 "Evaluation and Release of Waste Gas Decay Tank. The following information is contained on the batch release forms for T-101C and T-68A: **NOTE: Today's date/time is 7/14/2007@1800**

T-101C	T-68A
Sample date/time - 7/11/2007@1400	Sample date/time - 7/13/2007@1500
Isolation pressure – 93 psig	Isolation Pressure – 92 psig
Current pressure – 89 psig	Current Pressure – 99 psig

Which one of the following describes which tank(s), if any, should be disapproved for release and why?

a. T-101C and T-68A. Pressure at the start of release cannot be > 3 psig different than isolation pressure.

b. T-101C only. More than 72 hours have passed since the sample analysis.

c. T-68A only. Pressure at the start of the release cannot be > 5 psig different than isolation pressure.

d. Neither tank. There are no requirements for sample time or tank pressure.

Which one of the following sets of Off Normal Procedures both contains Safety Function Status checks?

a. ONP-17, LOSS OF SHUTDOWN COOLING and ONP-23.1, PRIMARY COOLANT LEAK

b. ONP-17, LOSS OF SHUTDOWN COOLING and ONP-25.2, ALTERNATE SAFE SHUTDOWN PROCEDURE

c. ONP-25.1, FIRE WHICH THREATENS SAFETY-RELATED EQUIPMENT and ONP-25.2, ALTERNATE SAFE SHUTDOWN PROCEDURE

d. ONP-11.2, FUEL HANDLING ACCIDENT and ONP-23.3, LOSS OF REFUELING WATER ACCIDENT

If the Shift Manager becomes incapacitated and you assume his/her duties during an emergency, which one of the following responsibilities as the Site Emergency Director can you delegate?

a. Approving Protective Action Recommendations

b. Approving decisions regarding site evacuation.

c. Declaring the appropriate classification for the incident

d. Authorizing Potassium Iodine (KI) distribution