2010 PALISADES NUCLEAR PLANT

INITIAL EXAMINATION

PROPOSED EXAM FILES

PROPOSED WRITTEN EXAM

Given the following with the Plant initially at full power:

- The Plant is manually tripped due to a tube rupture in the 'A' Steam Generator (S/G)
- 'A' S/G level is 29% and stable
- 'B' S/G level is 23% and lowering slowly
- T_{AVE} is 535°F and stable
- EOP-1.0, "Standard Post-Trip Actions," Immediate Actions are currently in progress

Which one of the following describes the required action for the above conditions during verbal verification of the Immediate Actions of EOP-1.0?

a. Cooldown the PCS to < 524°F Hot Leg temperature.

b. Restore 'A' and 'B' S/G levels to a band of 60 - 70%.

c. Close CV-0781 and CV-0782, 'A' S/G Atmospheric Dump Valves.

d. Secure Auxiliary Feedwater flow to the 'A' S/G.

Given the following:

- A Loss of Coolant Accident has occurred
- Primary Coolant pressure is 1000 psia
- Containment pressure is 3.0 psig
- Containment temperature is 180°F
- EOP-4.0, "Loss of Coolant Accident Recovery," is the in-use procedure

Which one of the following alarms, if annunciating, provides indication that Safety Injection throttling criteria are <u>not</u> met?

a. EK-0759, "NO PCS PROTECTION CHANNEL A"

b. EK-1126, "CIS INITIATED"

c. EK-0764, "PRESSURIZER LEVEL CH 'B' LO-LO"

d. EK-0962, "STEAM GEN E-50A LO LEVEL"

During a Loss of Coolant Accident with two phase natural circulation (reflux boiling) as the primary method of core heat removal, which one of the following sets of temperature indications must be monitored to determine that heat removal and inventory functions are being satisfied?

a. Loop ΔT and Core Exit Thermocouples.

b. T_H and Core Exit Thermocouples.

c. Loop ΔT and T_C.

d. T_H and T_C.

Given the following with the Plant operating at 35% power:

- A loss of Component Cooling Water event occurs
- The Control Room team enters ONP-6.2, "Loss of Component Cooling"
- Alarm EK-0908, "PRI COOLANT PUMP P-50B HI TEMP OVERLOAD" annunciates

Which one of the following P-50B, Primary Coolant Pump, conditions requires a manual Reactor trip?

a. Thrust Bearing Upward temperature indicates 191 °F.

b. Controlled Bleedoff temperature indicates 178 °F.

c. Pump Motor Stator temperature indicates 142 °C.

d. Lower Seal temperature indicates 177 °F.

With the Plant at 60% power, a loss of all Charging flow occurs. Which one of the following describes the impact on the Plant and the reason Main Steam flow is maintained as stable as possible until Charging flow has been restored?

a. Pressurizer level is now lowering at 4 gpm. Lowering Main Steam flow will accelerate the level reduction.

b. Letdown temperature is high due to loss of cooling to the Regenerative Heat Exchanger. Lowering Main Steam flow may cause letdown to automatically isolate on high temperature.

c. Letdown temperature is high due to loss of cooling to the Regenerative Heat Exchanger. Raising Main Steam flow may cause letdown to automatically isolate on high temperature.

d. Pressurizer level is now lowering at 4 gpm. Raising Main Steam flow will accelerate the level reduction.

The Plant experiences a loss of Shutdown Cooling event due to a tripped Low Pressure Safety Injection (LPSI) Pump. The Control Room team is now ready to start the alternate LPSI Pump.

Which one of the following is the lowest flow rate that, if established, meets the minimum flow requirements for an operating LPSI pump?

a. 150 gpm.

b. 220 gpm.

c. 500 gpm.

d. 1000 gpm.

Given the following with the Plant at full power:

- EK-1172, "COMPONENT CLG SURGE TANK T-3 HI-LO LEVEL" is annunciating
- T-3, Component Cooling Water (CCW) Surge Tank, level is 33% and lowering
- The Control Room team diagnoses a leak in the CCW system and enters ONP-6.2, "Loss of Component Cooling"

Assuming the CCW leak is intersystem, i.e., from the CCW system to another fluid system, which one of the following is a possible location?

a. E-58, CVCS Letdown Heat Exchanger.

b. P-50D, Primary Coolant Pump, Seal Heat Exchanger.

c. E-64, Shield Cooling Heat Exchanger.

d. Control Rod Drive Mechanism seal cooler.

Given the following:

- The Plant is in MODE 3
- Pressurizer level is 42%
- Pressurizer Proportional Heater Control Switches are in the "ON" position
- Pressurizer Backup Heater Control Switches are in the "MANUAL" position
- A loss of offsite power occurs
- Both Diesel Generators start and sequence loads as designed

Following Diesel Generator load sequencing, which one of the following describes which Pressurizer Heaters, if any, are energized? (Assume no operator action occurs.)

a. Pressurizer Heaters will not be energized.

b. Pressurizer Heaters powered from Bus 1D will be energized.

c. Pressurizer Heaters powered from Bus 1E will be energized.

d. Pressurizer Heaters powered from Bus 1D and Bus 1E will be energized.

With the Plant operating at full power, a 230 gpm tube rupture occurs in the 'A' Steam Generator (S/G). The Plant is then manually tripped and all systems operate as designed with the following conditions:

- PZR level is 13%
- PCS pressure is 1545 psia
- T_{AVE} is 532°F and stable
- EOP-1.0, "Standard Post-Trip Actions," are complete

The S/G tube leak rate is now approximately ___(1)___ and Pressurizer level will be ___(2)___.

a. (1) 115 gpm
   (2) rising

b. (1) 160 gpm
   (2) rising

c. (1) 115 gpm
   (2) lowering

d. (1) 160 gpm
   (2) lowering

The following events occur with the Plant initially at full power:

- P-55C, Charging Pump, is out of service for maintenance
- A steam line break occurs causing a Safety Injection Signal to actuate
- EOP-1.0, "Standard Post-Trip Actions," have been completed
- The Control Room team has transitioned to EOP-6.0, "Excess Steam Demand Event"
- 2400 VAC Bus 1D de-energizes and locks out due to a fault on the bus
- As PCS pressure lowers below 1300 psia and stabilizes, the Reactor Operator trips all four Primary Coolant Pumps (PCPs)

Tripping all four PCPs under these conditions will adversely impact the ability to ...

a. detect core parameters.

b. reduce PCS pressure to establish HPSI flow.

c. remove decay heat using Steam Generators.

d. prevent void formation in the Reactor Vessel upper head.

EOP-7.0, "Loss of All Feedwater Recovery," contains the following guidance concerning restoration of feedwater to a dry Steam Generator (S/G):

> **CAUTION**
>
> Limit feed flow to less than 300 gpm for any S/G with level less than -84%

What is the reason for this guidance?

a. Avoid a loss of PCS pressure control due to Pressurizer insurges and outsurges.

b. Prevent a rapid PCS cooldown, avoiding a Pressurized Thermal Shock to the Rx vessel.

c. Prevent uneven cooling of the PCS which may result in a localized reactivity excursion.

d. Minimize the probability of causing significant damage to the S/G tube bundle.

Given the following conditions:

- The Plant is in MODE 3
- Diesel Generator 1-2 is out of service for maintenance
- A loss of all offsite power occurs
- 'F' and 'R' Switchyard buses are de-energized
- Diesel Generator 1-1 will not start automatically or manually

Which one of the following lists the Switchyard 345kV Line and Breaker that must be available to restore offsite power via backfeed to the Main Transformer?

a. Cook #1 Line, Switchyard Breaker 25F7.

b. Cook #1 Line, Switchyard Breaker 25H9.

c. Cook #2 Line, Switchyard Breaker 25F7.

d. Cook #2 Line, Switchyard Breaker 25H9.

Given the following with the Plant at full power:

- A Plant trip occurs due to a loss of all offsite power
- Both Diesel Generators start and sequence loads as designed

Which one of the following indicates that the appropriate sequencers have completed sequencing loads onto 2400 VAC Buses 1C and 1D?

a. The in-service CRHVAC train Main Supply Fan, V-95/V-96, has started.

b. The in-service CRHVAC train Emergency Air Filter Unit Fan, V-26A/V-26B, has started.

c. All Containment Air Cooler 'A' Fans, V-1A, V-2A, V-3A, V-4A, have started.

d. All Charging Pumps, P-55A, P-55B, P-55C, have started.

The Plant is manually tripped while operating at full power due to a loss of Y01, Instrument AC Bus. The Control Room team enters and begins performing EOP-1.0, "Standard Post-Trip Actions."

Which one of the following describes the earliest that the Control Room team can perform subsequent actions of ONP-24.5, "Loss of Instrument AC Bus Y01?" Assume the actions are not associated with personnel safety, plant safety, equipment protection or safety of the public.

a. During EOP-1.0 Immediate Actions.

b. When directed by EOP-1.0 Operator Actions.

c. Immediately after EOP-1.0 Immediate Actions.

d. When directed by EOP-2.0, "Reactor Trip Recovery."

The Plant is operating at full power with Battery Chargers #1 and #2 in service when 72-10, #1 DC Bus Tie Breaker, trips open.

Which one of the following lists all loads that will be de-energized as a result?

a. Preferred AC Bus Y30 only.

b. Preferred AC Bus Y10 only.

c. Preferred AC Bus Y30, DC Buses D11-1 and D11-2.

d. Preferred AC Bus Y10, DC Buses D11-1 and D11-2.

Given the following with the Plant in MODE 3:

- The Control Room team has entered ONP-6.1, "Loss of Service Water," due to a loss of all three Service Water Pumps
- The Fire Protection System is supplying the Service Water System using all three Fire Water Pumps
- It has become necessary to lower flow to specific Service Water components to prevent run-out of the Fire Water Pumps

Which one of the following groups of loads, when isolated, will result in the largest rise in Fire Water Pump discharge pressure?

a. Containment Air Coolers and Component Cooling Water HXs.

b. Containment Air Coolers and Safeguards Room Coolers.

c. Component Cooling Water HXs and Safeguards Room Coolers.

d. CRHVAC Condensers and Steam Generator Blowdown HX.

The Plant has experienced a reactor trip from full power and a concurrent station blackout. The Control Room team has entered EOP-3.0, "Station Blackout Recovery." The CRS has directed you to perform EOP Supplement 36, "Control Valve Tracking Sheet."

Which one of the following requires repositioning a component Handswitch (HS) when completing EOP Supplement 36?

a. The air failure position agrees with HS as-found position.

b. The air failure position does not agree with HS as-found position.

c. The loss of control power failure position agrees with HS as-found position.

d. The loss of control power failure position does not agree with HS as-found position.

Given the following initial conditions:

- The Plant is at full power
- Main Generator Load is 823 MW
- Main Generator Reactive load is zero (0) MVARs

A voltage disturbance occurs on the grid which causes Main Generator reactive load to change to 450 MVARs out. This is a concern because the Main Generator is now _____(1)_____ which leads to _____(2)_____.

a. (1) Under-excited
   (2) Excessive generator field current

b. (1) Under-excited
   (2) Rotor pole slippage

c. (1) Over-excited
   (2) Excessive generator field current

d. (1) Over-excited
   (2) Rotor pole slippage

Consider two separate Uncontrolled Control Rod Withdrawal Events. Event #1 occurs at approximately $1x10^{-4}$% power and Event #2 occurs at approximately 5% power. Each event occurs in the middle of core life (MOL).

Which one of the following describes the difference in Startup Rate (SUR) for these two events? (Assume each event inserts reactivity at an equal rate.)

___(1)___ will have the lower SUR because _____(2)_____ will minimize the rate of power rise.

a. (1) Event #2
   (2) moderator temperature coefficient

b. (1) Event #2
   (2) a rod withdrawal prohibit signal

c. (1) Event #1
   (2) the Doppler coefficient

d. (1) Event #1
   (2) the effect of delayed neutron precursors

Given the following:

- The Plant is at full power
- 'A' Steam Generator Level lowers to 24% due to a Feed Regulating Valve problem
- The Reactor Protective System generates an automatic trip signal from all channels, however, one of the four DC clutch power supplies does not de-energize

Based on the above conditions the Reactor will have ____(1)____ of the control rods dropped into the core and the Main Turbine will ____(2)____. (Assume all other equipment operates as designed).

a. (1) all
   (2) trip

b. (1) half
   (2) not trip

c. (1) half
   (2) trip

d. (1) all
   (2) not trip

During recovery from a Loss of Coolant Accident, which one of the following conditions will allow commencing a cooldown of the Primary Coolant System (PCS) before verifying SHUTDOWN MARGIN requirements?

a. Safety Injection flow is within requirements.

b. Two (2) Primary Coolant Pumps are operating.

c. Emergency boration is in progress.

d. All control rods are fully inserted.

Given the following conditions:

- The Plant is in MODE 3
- T_{AVE} is 532°F
- Pressurizer level is 42%
- LIC-0101B, Pressurizer Level Control Channel 'B', is in service in the 'AUTO' mode
- The 'AUTO' setpoint on LIC-0101B then rises to 52%

Based on the above conditions, _____(1)_____.
The Backup Pressurizer level control program ____(2)____ function to control Pressurizer level.

a. (1) CV-2003, Letdown Orifice Stop Valve, closes
   (2) will <u>not</u>

b. (1) CV-2003, Letdown Orifice Stop Valve, closes
   (2) will

c. (1) P-55B and P-55C, Charging Pumps, start
   (2) will <u>not</u>

d. (1) P-55B and P-55C, Charging Pumps, start
   (2) will

A Reactor startup is in progress with the following initial Nuclear Instrument readings:

Instrument	Reading
Source Range NI-1A	3.0×10^{0} cps
Source Range NI-2A	3.3×10^{0} cps
Wide Range NI-3A	1.2×10^{-7} % power
Wide Range NI-4A	1.0×10^{-7} % power

During performance of the 1/M plot during the Reactor startup per GOP-3, "MODE 3 ≥ 525°F to MODE 2," the following Nuclear Instrument readings are observed:

Instrument	Reading
Source Range NI-1A	2.7×10^{3} cps
Source Range NI-2A	4.2×10^{2} cps
Wide Range NI-3A	1.1×10^{-5} % power
Wide Range NI-4A	9.6×10^{-6} % power

Based on the readings above, which one of the following Nuclear Instruments is not responding properly?

a. Source Range NI-1A.

b. Source Range NI-2A.

c. Wide Range NI-3A.

d. Wide Range NI-4A.

Given the following:

- The Plant is in MODE 6 with refueling operations in progress
- Containment Refueling Monitors, RIA-2316 and RIA-2317, are in service

Which one of the following alarms, if any, will alert the Control Room team that RIA-2316 reached an alarm setpoint due to a fuel handling incident?

a. None, RIA-2316 AND RIA-2317 are both required to alarm.

b. EK-1366, "PLANT MONITORING HI RADIATION."

c. EK-1363, "CONTAINMENT HI RADIATION."

d. EK-1126, "CIS INITIATED."

Given the following conditions:

- The Plant is operating at 50% power
- The Turbine Operator reports that Condenser vacuum is indicating 27.1" Hg and lowering
- ONP-14, "Loss of Condenser Vacuum," is entered with Step 2 "Main Condenser Air In-Leakage" applicable

Based on the above conditions, the Reactor must be tripped if ...

a. Either P-39A <u>or</u> P-39B, Cooling Tower Pumps, trip.

b. Gland Seal Steam pressure lowers below 2.0 psig.

c. Condenser vacuum lowers below 21.5" Hg.

d. Condenser vacuum will not stabilize greater than 25" Hg.

Given the following:

- A Reactor trip due to a loss of all offsite power has occurred
- A cooldown using the Atmospheric Steam Dump Valves (ADVs) has commenced
- HIC-0780A, Steam Dump Controller, output is set at 50%
- Natural circulation flow has been established

Which one of the following describes:

(1) an indication that natural circulation flow has stopped and;
(2) the action to be taken to restore natural circulation flow?

a. (1) Reactor core ΔT is greater than 50°F.
   (2) Throttle open the ADVs.

b. (1) Reactor core ΔT is greater than 50°F.
   (2) Throttle closed the ADVs.

c. (1) PCS indicates less than 50°F subcooled.
   (2) Throttle open the ADVs.

d. (1) PCS indicates less than 50°F subcooled.
   (2) Throttle closed the ADVs.

Given the following with the Plant at full power:

- A spurious Containment Isolation occurs due to a fault in the Containment High Radiation circuitry
- ONP-4.1, "Spurious Containment Isolation," is entered
- ONP-4.1 directs closing of CV-2003, CV-2004, and CV-2005, Letdown Orifice Stop Valves

The reason for closing the Letdown Orifice Stop Valves is because there is a ...

a. potential for flashing at the outlet of the Letdown Orifices.

b. loss of cooling to E-58, Letdown Heat Exchanger.

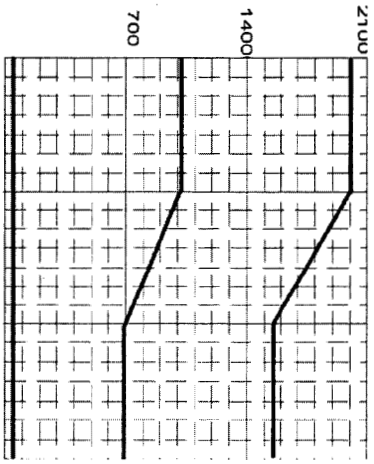
c. loss of cooling to E-56, Regenerative Heat Exchanger.

d. loss of PCS inventory via RV-2006, Letdown HX Inlet Relief Valve

Given the following:

- The Plant is in MODE 3 with all Primary Coolant Pumps (PCPs) in service
- The Reactor Operator is in the process of adjusting PCP Controlled Bleedoff pressure
- Alarm EK-0951, "PRI COOLANT PUMP P-50C SEAL PRESS OFF NORMAL," annunciates

Based on the above conditions and the below drawing of PR-0140A, PCP, P-50C, Seal Pressure Recorder, which one of the following describes the seal stage that has failed and the expected Controlled Bleedoff flow?



a. 1st Stage Failure with 0.0 gpm Controlled bleedoff flow.

b. 2nd Stage Failure with 0.0 gpm Controlled bleedoff flow.

c. 1st Stage Failure with 1.0 gpm Controlled bleedoff flow.

d. 2nd Stage Failure with 1.0 gpm Controlled bleedoff flow.

The Plant is at full power with the following conditions:

- LIC-0101A, Pressurizer Level Control Channel 'A', is in service in Cascade mode
- SS-TAVE, Avg Temperature Display Selector Switch, on Panel C-02 is in the "LOOP 1" position
- The following alarms annunciate:
  - EK-0761, "PRESSURIZER LEVEL HI-LO"
  - EK-0967, "LOOP 1/LOOP 2 T_{AVE} DEVIATION"
  - EK-0968, "LOOP 1 T_{AVE}/T_{REF} GROSS DEVIATION"
- The setpoint meter (blue pointer) on LIC-0101A indicates 51%
- The process meter (red pointer) on LIC-0101A indicates 57%
- TI-0110, T_{AVE} Digital Temperature Indicator, on Panel C-02 indicates 549°F

Which one of the following describes the impact on the Charging System and the correct action?

a. Charging Pumps P-55B and P-55C start.
Swap to LIC-0101B, 'B' Pressurizer Level Controller in Cascade.

b. Charging Pump P-55A goes to minimum speed.
Swap to the LOOP 2 T_{AVE} Controller.

c. Charging Pump P-55A goes to minimum speed.
Swap to LIC-0101B, 'B' Pressurizer Level Controller in Cascade.

d. Charging Pumps P-55B and P-55C start.
Swap to the LOOP 2 T_{AVE} Controller.

Given the following:

- The Plant is in MODE 5 with Shutdown Cooling in service
- A loss of power to 2400 VAC Bus 1C occurs
- The CRS directs you to throttle LPSI Loop Injection Valves

Which one of the following lists the LPSI Loop Injection Valves that can be throttled from the Control Room for these conditions?

a. MO-3008, LPSI to Reactor Coolant Loop 1A.
MO-3010, LPSI to Reactor Coolant Loop 1B.

b. MO-3010, LPSI to Reactor Coolant Loop 1B.
MO-3014, LPSI to Reactor Coolant Loop 2B.

c. MO-3012, LPSI to Reactor Coolant Loop 2A.
MO-3014, LPSI to Reactor Coolant Loop 2B.

d. MO-3008, LPSI to Reactor Coolant Loop 1A.
MO-3012, LPSI to Reactor Coolant Loop 2A.

During normal Shutdown Cooling (SDC) operation with the Plant in MODE 5, the Control Room Supervisor directs the Reactor Operator to adjust total SDC flow from 3250 gpm to 2850 gpm while maintaining Primary Coolant temperature constant.

To perform this evolution, HIC-3025A, Shutdown Cooling HX Outlet Flow Control, will be operated in the ___(1)___ mode and FIC-0306, Shutdown Cooling HX Bypass Flow Control, will be operated in the ___(2)___ mode.

a. (1) manual
   (2) auto

b. (1) auto
   (2) manual

c. (1) manual
   (2) manual

d. (1) auto
   (2) auto

Given the following:

- The Plant has been tripped in response to a Steam Line Rupture inside Containment
- Safety Injection has actuated
- Containment pressure is 1.5 psig
- EOP-1.0, "Standard Post-Trip Actions," immediate actions are in progress

Which one of the following Safety Injection actuated valves, if found closed, require an operator to take a contingency action during the performance of EOP-1.0 immediate actions?

a. MO-2169, Boric Acid Storage Tank, T-53A, Gravity Feed Isolation.

b. CV-0861, Containment Air Cooler, VHX-1, High Capacity Outlet Valve.

c. CV-0938, Shutdown Cooling HX, E-60A/B, Component Cooling Inlet Valve.

d. CV-0944A, Component Cooling to SFP HX, Radwaste Evaps, C-50s/54 & NSSS.

Given the following:

- P-66A, HPSI Pump, is out of service for maintenance
- P-67B, LPSI Pump, is out of service for maintenance
- A Loss of Coolant Accident occurs which causes Primary Coolant System (PCS) pressure to lower to 100 psia
- All available Safety Injection equipment functions as designed

For these conditions P-66B, HPSI Pump, will be injecting into __(1)__ PCS cold leg loops and P-67A, LPSI Pump, will be injecting into __(2)__ PCS cold leg loops.

a. (1) four (4)
   (2) four (4)

b. (1) four (4)
   (2) two (2)

c. (1) two (2)
   (2) four (4)

d. (1) two (2)
   (2) two (2)

With the Plant in MODE 3 and the PCS at normal operating pressure and temperature, a Pressurizer Relief Valve lifts and subsequently re-seats. Which one of the following describes how the steam discharged into T-73, Pressurizer Quench Tank, is cooled and the location to which T-73 is subsequently drained?

a. Steam from the relief valve enters T-73 via a spray nozzle and is cooled by Primary Makeup Water in the tank. T-73 is then drained to the Containment Sump.

b. Steam from the relief valve enters T-73 via a spray nozzle and is cooled by Primary Makeup Water in the tank. T-73 is then drained to T-74, Primary System Drain Tank.

c. Steam from the relief valve enters T-73 via an underwater sparger and is cooled by Primary Makeup Water in the tank. T-73 is then drained to the Containment Sump.

d. Steam from the relief valve enters T-73 via an underwater sparger and is cooled by Primary Makeup Water in the tank. T-73 is then drained to T-74, Primary System Drain Tank.

Given the following with the Plant operating at full power:

- The Main Turbine trips but the Reactor does not trip
- The Reactor is then manually tripped by the Control Room team
- As a result of the transient, RV-1041, Pressurizer T-72 Relief, opens and does not re-seat

Which one of the following sets of alarm conditions indicates that RUD-0162, Quench Tank Rupture Disk, has malfunctioned and actuated earlier than designed?

	EK-1501 PRI SYS DRAIN TANK T-74 HI-LO LEVEL	EK-1362 CONTAINMENT PRESSURE OFF NORMAL	EK-0732 QUENCH TANK HI PRESS
a.	OFF	ON	ON
b.	OFF	ON	OFF
c.	ON	OFF	OFF
d.	ON	OFF	ON

Given the following with the Plant at full power:

- A loss of offsite power occurs
- Diesel Generator 1-1 starts and sequences loads as designed
- Diesel Generator 1-2 will not start

Five minutes later, a leak develops in the Component Cooling Water (CCW) System which causes CCW pressure to lower from 105 psig to 77 psig

For the above conditions, which one of the following describes which CCW Pumps will be operating?

a. P-52B only.

b. P-52A only.

c. P-52B and P-52C.

d. P-52A and P-52C.

Given the following during a Plant cooldown:

- A bubble exists in the Pressurizer
- Pressurizer pressure is 1200 psia
- Quench Tank, T-73, pressure is 5 psig
- Low Temperature Overpressure Protection (LTOP) System is in service
- Then, Power Operated Relief Valve, PRV-1042B, lifts
- The Control Room team isolates PRV-1042B by closing MO-1042A, PRV-1042B isolation

Which one of the following is the approximate temperature downstream of PRV-1042B immediately after closure of MO-1042A?

a. 212°F.

b. 230°F.

c. 282°F.

d. 332°F.

The Plant is performing startup physics testing following a refueling outage with the following conditions:

- Zero Power Mode (ZPM) Bypass has been placed in operation per SOP-36, "Reactor Protective System and Anticipate Transient Without Scram (ATWS) System"
- Reactor power is currently $1x10^{-5}$ % and stable
- Then, NI-03A, Wide Range Nuclear Instrument (NI), fails high

ZPM Bypass for the Reactor Protective System ___(1)___ be removed because ___(2)___.

a. (1) will
   (2) Wide Range NI power will exceed 10^{-4}% on at least one channel

b. (1) will not
   (2) Power Range NI power will not exceed 15% on at least one channel

c. (1) will
   (2) Wide Range NI SUR will rise above 1.5 dpm on at least one channel

d. (1) will not
   (2) Wide Range NI power will not exceed 10^{-4}% on at least three channels

Given the following:

- A manual Plant trip has occurred due to a Loss of Coolant Accident
- EOP-1.0, "Standard Post-Trip Actions," are in progress
- Containment Isolation Radiation Monitors (RIA-1805, RIA-1806, RIA-1807, RIA-1808) are rising

EOP-1.0 immediate actions direct the operator to verify EK-1126, Containment Isolation Signal initiated (CIS INITIATED), is in alarm or push left and right HIGH RADIATION INITIATE pushbuttons on Panel C-13 when ___(1)___ Containment Isolation Radiation Monitor(s) reach the alarm setpoint and to _____(2)_____.

a. (1) at least two
   (2) ensure all Containment Isolation Valves are closed

b. (1) at least two
   (2) corroborate with Containment High Range Gamma monitors, RIA-2321 and RIA-2322, readings

c. (1) any
   (2) ensure all Containment Isolation Valves are closed

d. (1) any
   (2) corroborate with Containment High Range Gamma monitors, RIA-2321 and RIA-2322, readings

Given the following during a Plant cooldown in MODE 3:

- Pressurizer pressure is 1500 psia
- Safety Injection has been blocked
- I&C Maintenance has inadvertantly caused a Containment High Pressure (CHP) signal to be generated for the right channel (2/4 CHP pressure switches reach their setpoint)

Which one of the following describes the impact on P-54A, Containment Spray Pump, and CV-3002, Containment Spray Valve, and the required action?

a. P-54A will start; CV-3002 will open. Reset CHP signal on Panel C-13.

b. P-54A will <u>not</u> start; CV-3002 will open. Reset CHP signal on Panel C-13.

c. P-54A will <u>not</u> start; CV-3002 will open. Close CV-3002.

d. P-54A will start; CV-3002 will open. Stop P-54A and close CV-3002.

The Plant is at full power when the following events occur:

- A manual Plant trip is initiated in response to a Steam Line break from the 'A' Steam Generator
- Containment pressure reaches 6 psig

Which one of the following describes the expected configuration due to the above conditions for the components listed below?

- V-4A, Containment Air Cooling (CAC) Recirc Fan
- CV-0869, VHX-4 Containment Air Cooler Inlet Valve
- CV-0867, VHX-4 Containment Air Cooler Outlet Valve

	V-4A	CV-0869 (Inlet)	CV-0867 (Outlet)
a.	ON	CLOSED	OPEN
b.	OFF	OPEN	CLOSED
c.	ON	OPEN	CLOSED
d.	ON	OPEN	OPEN

Given the following Plant conditions:

- A Loss of Coolant Accident has occurred
- 2400 VAC Bus 1C has tripped on overcurrent and is de-energized
- A Recirculation Actuation Signal (RAS) has been received

Which one of the following alignments will provide the maximum allowable Containment Spray flow and HPSI Subcooling flow for the above conditions?

a. One Containment Spray Valve open and;
One HPSI Subcooling Valve open.

b. One Containment Spray Valve open and;
Both HPSI Subcooling Valves open.

c. Both Containment Spray Valves open and;
One HPSI Subcooling Valve open.

d. Both Containment Spray Valves open and;
Both HPSI Subcooling Valves open.

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.

EOP-1.0, "Standard Post-Trip Actions," direct the Control Room team to ensure tripped both Main Feed Pumps (MFPs) if the Main Steam Isolation Valves (MSIVs) are closed.

What is the reason for this action?

a. Ensures the MFP Aux Oil Pump will automatically start.

b. Prevents air in-leakage to the Condenser from the steam line traps.

c. Prevents MFP Turbine overspeed if steam is re-initiated.

d. Prevents Low Pressure steam from pressurizing the Main Steam lines.

With the Plant at full power, which one of the following will cause T_{AVE} to initially rise?

a. LIA-0702, 'A' Steam Generator (S/G) Level Indicator Alarm (C-12), fails high.

b. LIC-0701, 'A' S/G Level Indicating Controller (C-01), level indication fails low.

c. FT-0701, 'A' S/G Feed Flow Transmitter Indicator (C-01), fails low.

d. FT-0702, 'A' S/G Steam Flow Transmitter Indicator (C-01), fails high.

Given the following with the Plant operating at full power:

- A loss of all offsite power occurs
- Diesel Generator 1-1 will not start automatically or manually

Which Auxiliary Feedwater (AFW) Pump(s) will be operating one-minute after an Auxiliary Feedwater Actuation Signal occurs? (Assume no Operator actions occur.)

a. Only AFW Pump P-8A.

b. Only AFW Pump P-8C.

c. AFW Pumps P-8B and P-8C.

d. Only AFW Pump P-8B.

Given the following:

- The Plant is at full power
- No equipment is out of service
- All 4160V and 2400 VAC Buses are being supplied from the normal source

A fault then occurs on Startup Transformer 1-2. One of the alarms that annunciates is:

EK-0527, START-UP TRANSFORMER NO. 1-2 SUDDEN PRESS

Due to the fault, the Plant ___(1)___ and Switchyard Rear Bus ____(2)____.

a. (1) will trip
   (2) will de-energize

b. (1) will trip
   (2) will <u>not</u> de-energize

c. (1) will <u>not</u> trip
   (2) will de-energize

d. (1) will <u>not</u> trip
   (2) will <u>not</u> de-energize

The Plant has just been synchronized to the grid with power at 10% when a DC Bus ground occurs causing the 250 amp fuses supplying D21-2, 125 VDC Distribution Panel, to actuate and de-energize D21-2.

Which one of the following describes (1) the expected Plant response to this failure and (2) the required action?

a. (1) CV-1359, Non-critical Service Water Isolation, closes.
   (2) Trip the Reactor.

b. (1) CV-1359, Non-critical Service Water Isolation, closes.
   (2) Trip the Turbine.

c. (1) CV-2099, PCP Controlled Bleedoff Containment Isolation, closes.
   (2) Trip the Reactor and all Primary Coolant Pumps.

d. (1) CV-2099, PCP Controlled Bleedoff Containment Isolation, closes.
   (2) Verify Controlled Bleedoff pressure is < 140 psig.

The Plant has tripped from full power due to a loss of all offsite power. Neither Diesel Generator will start. For these conditions, which one of the following describes the importance of performing EOP Supplements 7 and 8, "Station Battery Load Stripping?"

Station Battery Load Stripping is designed to ...

a. extend battery capacity from 30 minutes to two hours while maintaining DC bus voltage at greater than 105 volts.

b. ensure that the emergency loads are supplied by DC voltage at greater than 125 volts for a minimum of two hours.

c. prevent generating an explosive mixture of Hydrogen and Oxygen by limiting output current to less than 150 amps.

d. extend battery capacity from two hours to four hours while maintaining DC bus voltage at greater than 105 volts.

Given the following Diesel Generator (D/G) conditions with the Plant in MODE 1:

	D/G 1-1 (operating)	D/G 1-2 (standby)
Hot Jacket Water Temperature	160°F	95°F
Hot Lube Oil Temperature	185°F	90°F
Starting Air Train Pressure	135 psig	145 psig
Starting Air Tank Pressure	225 psig	205 psig
Parallel/Unit Selector Switch	PARALLEL	UNIT

Which one of the following describes the D/G(s), if any, that is(are) INOPERABLE due to the above conditions?

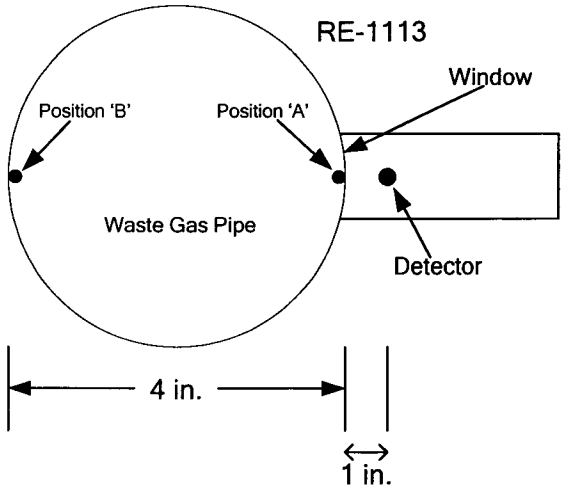
a. Only D/G 1-1.

b. Only D/G 1-2.

c. Both D/G 1-1 and D/G 1-2.

d. Neither D/G 1-1 or D/G 1-2.

RE-1113, Waste Gas Process Monitor radiation element, consists of a detector mounted on one side of the Waste Gas discharge pipe with a window through the pipe wall, with the pipe four inches in diameter (see below). The detector is a point detector located one-inch from the inner diameter of the pipe.



Compare the differences in radiation readings for a hot particle that passes along the side of the pipe closest to the detector (Position 'A' above) to the same hot particle that passes along the side of the pipe farthest away from the detector (Position 'B' above).

The reading for Position 'A' will be _____ times greater than the reading for Position 'B'.

a. 4

b. 5

c. 16

d. 25

With the Plant operating at full power, which one of the following valves does not re-position if a Containment High Pressure (CHP) signal actuation occurs?

a. CV-1359, Non-critical Service Water Header Isolation Valve.

b. CV-0823, CCW Heat Exchanger E-54A High Capacity SW Outlet Valve.

c. CV-0977B, CCW Return from Rad Waste Evaps and C-54, Waste Gas Compressor.

d. CV-0911, CCW from Containment Isolation Valve.

Given the following:

- Instrument Air Compressor, C-2A, is in operation in HAND
- Instrument Air Compressor, C-2C, is in AUTO
- Instrument Air Compressor, C-2B, is removed from service for maintenance
- An air leak develops on the discharge of C-2A causing air pressure to lower to 85 psig
- C-2A subsequently trips
- The air leak is then isolated by closing the discharge of C-2A

How will C-2C respond to this instrument air pressure transient?

C-2C will ...

a. auto start but will <u>not</u> load unless air pressure lowers to 80 psig.

b. auto-start and load. Will unload when pressure reaches 105 psig, will load again if pressure lowers to 92 psig.

c. auto-start and load. Will unload when pressure reaches 105 psig, will load again if pressure lowers to 95 psig.

d. auto-start and load. Will run fully loaded regardless of air pressure until placed in OFF and returned to AUTO.

Given the following:

- The Plant is in MODE 5 with Shutdown Cooling in service
- The Equipment Hatch is open
- Then, a loss of Shutdown Cooling occurs
- The Control Room team enters ONP-17, "Loss of Shutdown Cooling"

Which one of the following describes the strategy for closing the Equipment Hatch in accordance with ONP-17?

The Equipment Hatch shall be closed within ...

a. ONE hour only.

b. FOUR hours only.

c. the approximate time for PCS temperature to reach 200°F only.

d. the approximate time for PCS temperature to reach 200°F or FOUR hours, whichever occurs first.

Which one of the following combinations of Containment conditions will cause the Control Room team to perform a contingency action for the Containment Isolation safety function during the performance of EOP-1.0, "Standard Post-Trip Actions," immediate actions?

	Temperature	Pressure	Radiation
a.	175°F	0.4 psig	0.6×10^1 R/Hr
b.	135°F	0.9 psig	0.8×10^1 R/Hr
c.	120°F	3.1 psig	0.6×10^1 R/Hr
d.	120°F	0.4 psig	1.1×10^1 R/Hr

The Plant is at full power when a loss of Instrument Air occurs. As a result, Pressurizer pressure will ...

a. rise because the Spray valves fail closed.

b. lower because the Spray valves fail open.

c. remain steady because the Spray valves fail as-is.

d. remain steady because the Spray valves have backup Nitrogen.

With the Plant at full power, Load Control Center 11 (LCC-11) de-energizes due to a ground over-current fault. Which one of the following describes available Charging Pumps (P-55A, P-55B, P-55C) that can be operated from the Control Room for the above condition? (Assume no Operator action is taken.)

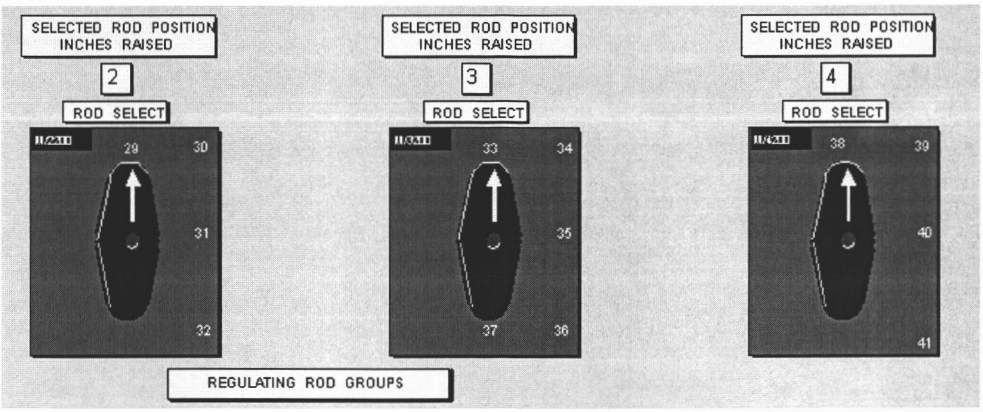
a. P-55C only.

b. P-55A and P-55B.

c. P-55A and P-55C.

d. P-55B only.

A rapid power reduction is commenced from full power per ONP-26, "Rapid Power Reduction." While control rods are being inserted, Control Rod #38 becomes mechanically bound at 80 inches and does not move with the rest of the group. If this condition were to go unnoticed by the Control Room team, which one of the following describes the sequence of alarms to warn of this condition? (Assume switch positions are as shown below.)



a. EK-0916, "CONTROL RODS OUT OF SEQUENCE," then EK-0911, "ROD POSITION 4 INCHES DEVIATION."

b. EK-0911, "ROD POSITION 4 INCHES DEVIATION," then EK-0916, "CONTROL RODS OUT OF SEQUENCE."

c. EK-0911, "ROD POSITION 4 INCHES DEVIATION," then EK-0912, "ROD POSITION 8 INCHES DEVIATION."

d. EK-0911, "ROD POSITION 4 INCHES DEVIATION," then EK-0941, "GROUP 4 PREPWR DEPENDENT INSERTION LIMIT."

Given the following conditions:

- The Plant is at full power
- LIC-0101B, Pressurizer Level Control Channel 'B', is in service in CASCADE mode
- LT-0101B, Level Input to LIC-0101B, diaphram ruptures causing pressure on both sides to equalize

Due to this failure, LIC-0101B will indicate ___(1)___ which will cause _____(2)_____.

a. (1) HIGH
   (2) P-55A, Charging Pump, speed to be minimum

b. (1) LOW
   (2) P-55B and P-55C, Charging Pumps to start

c. (1) HIGH
   (2) P-55A, Charging Pump, to trip

d. (1) LOW
   (2) Pressurizer Heaters to trip

For accident conditions with no Primary Coolant Pumps operating, which one of the following is the preferred instrument for monitoring temperature in the Reactor core and why?

a. Core Exit Thermocouples because they do not rely on forced flow.

b. Hot Leg Temperatures because they are more accurate at higher temperatures.

c. Core Exit Thermocouples because they are more accurate at higher temperatures.

d. Hot Leg Temperatures because the detectors are located directly in the flow of natural circulation.

Given the following:

- A leak develops in E-53A/B, Spent Fuel Pool Cooling Heat Exchanger, and is isolated
- ONP-23.4, "Loss of Spent Fuel Pool Cooling," is entered
- The Spent Fuel Pool is heating up at 3°F per hour
- Initial Spent Fuel Pool Temperature is 94°F

Assuming Spent Fuel Pool cooling is not restored, approximately how long will it take to reach the maximum allowable Spent Fuel Pool temperature per SOP-27, "Fuel Pool System?"
Do not consider instrument inaccuracies or operating margin.

a. 5 hours.

b. 10 hours.

c. 19 hours.

d. 35 hours.

Given the following:

- The Plant tripped from full power ten minutes ago
- 386/AST, Turbine Trip Lockout Relay, did not actuate when the turbine tripped
- Both Main Steam Isolation Valves are closed
- All other equipment functioned as designed

Assuming no other Operator actions, what is the approximate PCS cold leg temperature for the above event?

a. 535°F.

b. 540°F.

c. 545°F.

d. 550°F.

During a Plant startup, GOP-5, "Power Escalation in MODE 1," requires that Reactor power be maintained between 15% and 28.5% to perform a heat balance calculation and corresponding instrument adjustments (NIs and ΔT power).

Performing the heat balance calculation above 15% power ensures _____(1)_____ and performing the heat balance calculation below 28.5% power ensures _____(2)_____.

a. (1) the heat balance calculation is accurate.
   (2) ASI and AXIAL OFFSET track within 1.5% at higher powers.

b. (1) the heat balance calculation is accurate.
   (2) the VHPT function meets the requirements of the safety analysis at higher powers.

c. (1) the Thermal Margin Monitor bias is within the required adjustment range.
   (2) ASI and AXIAL OFFSET track within 1.5% at higher powers.

d. (1) the Thermal Margin Monitor bias is within the required adjustment range.
   (2) the VHPT function meets the requirements of the safety analysis at higher powers.

Which one of the following Area Radiation Monitors will cause an automatic equipment actuation due to a valid high radiation condition?

a. RIA-2300, Engineered Safeguards Room Monitor.

b. RIA-2314, Air Room Monitor.

c. RIA-5709, Spent Fuel Pool Criticality Monitor.

d. RIA-5710, Penetration and Fan Room Monitor.

Given the following:

- The Plant is at full power
- C-2C, Instrument Air Compressor, is in HAND
- C-2A, Instrument Air Compressor, is in AUTO
- C-2B, Instrument Air Compressor, is out of service for maintenance
- 480 VAC Bus 11 (LCC-11) de-energizes due an overcurrent condition
- The following alarms annunciate:
  - EK-1101, "CONTAINMENT INSTR AIR LO PRESS"
  - EK-1102, "INSTRUMENT AIR LO PRESS"
  - EK-1103, "SERVICE AIR LO PRESS"

Which one of the following describes the impact on the Plant and the action that will restore Instrument Air pressure?

a. Track Alley Sprinkler System actuates.
Manually start C-2A, Instrument Air Compressor.

b. Track Alley Sprinkler System actuates.
Open CV-1221, Plant Air Cross-tie from Feedwater Purity Air.

c. Cooling Tower Deluge System actuates.
Manually start C-2A, Instrument Air Compressor.

d. Cooling Tower Deluge System actuates.
Open CV-1221, Plant Air Cross-tie from Feedwater Purity Air.

In ONP-25.2, "Alternate Safe Shutdown Procedure," the following step exists:

☐ 16. **VERIFY** Bus 1C OR Bus 1D is energized.
☼

The symbol "☼" indicates this step:

a. must be performed in the Control Room.

b. must be performed locally.

c. is continuously applicable.

d. has emergency lighting provided.

Given the following conditions:

- The Plant is operating at full power
- T-2, Condensate Storage Tank, temperature is 100°F
- T-81, Primary System Makeup Storage Tank, temperature is 80°F
- Auxiliary Feedwater (AFW) flow will be initiated to the 'B' Steam Generator only at the programmed value for an Auxiliary Feedwater Actuation Signal (AFAS)

Prior to initiation of AFW flow, Heat Balance power must be lowered to a maximum of ...

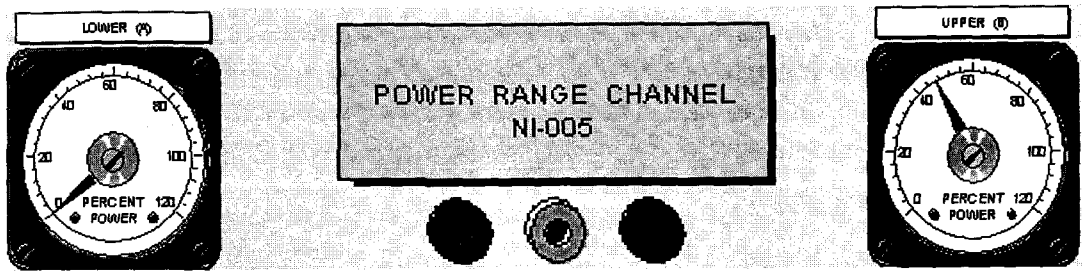
a. 99.5%.

b. 99.4%.

c. 99.3%.

d. 99.1%.

With the Plant operating at full power, NI-5, Power Range Nuclear Instrument, subchannel 'A' fails low due to a faulty amplifier (see picture below showing C-06, Reactor Protective System Panel, indications).



Which one of the following alarms is not expected for this condition?

a. EK-0601A, "VARIABLE HIGH POWER LEVEL CHANNEL TRIP."

b. EK-0606A, "HIGH POWER RATE CHANNEL PRE-TRIP/ASI."

c. EK-0604C, "CHANNEL DEVIATION LEVEL 2 - 10%."

d. EK-0601C, "TM/LO PRESSURE CHANNEL TRIP."

Which one of the following is an example of a work activity that does not require protective tagging in accordance with EN-OP-102, "Protective and Caution Tagging?"

a. Alignment of motors, generators, or pumps that are electrically disconnected from their remote power source.

b. Lifting of electrical leads that can be performed safely while energized.

c. Opening a fluid system that has a working pressure of 25 psig or less.

d. Working inside a tank that has been drained and the atmosphere deemed safe for occupancy.

The Plant experiences a loss of load event from full power. The Control Room team then stabilizes power at 90%. The following parameters are observed:

- Pressurizer level is 61%
- Pressurizer pressure is 2115 psia
- All Control Rods are full out
- T_C is 541°F (all cold legs)

Which one of the following LCOs is not met due to the above conditions?

a. LCO 3.4.9 for Pressurizer Level.

b. LCO 3.4.1 for PCS Cold Leg Temperature.

c. LCO 3.1.6 for Rod Insertion Limits.

d. LCO 3.4.1 for PCS Pressure.

Given the following parameters during preparations to synchronize the Turbine Generator with the Grid:

- T_{AVE} is 538°F and stable
- Reactor power is 11% and stable
- PIC-0511, Turbine Bypass Valve Controller, output is 55% and stable

Which one of the following actions must be taken to meet the requirements for synchronizing the Turbine Generator with the Grid per SOP-8, "Main Turbine and Generator Systems?"

a. Place PIC-0511 in "MANUAL" and raise output.

b. Place PIC-0511 in "MANUAL" and lower output.

c. Insert Control Rods to lower T_{AVE}.

d. Withdraw Control Rods to raise PIC-0511 output.

The Plant is being cooled down in MODE 4 following a Steam Generator Tube Rupture event. An RP Technician performing a survey in the Component Cooling Water room measures a dose rate of 120 mrem/hr one-foot away from the 'B' Steam Generator Main Steam line. Which one of the following postings is required for this dose rate at this location?

a. Radiation Area.

b. High Radiation Area.

c. Very High Radiation Area.

d. Locked High Radiation Area.

An Operator has been assigned to work on the Reactor head assisting the fuel handling team in preparation for refueling operations. Given the following radiation exposure history for the Operator:

- No undocumented quarters for the current year
- Lifetime exposure to date is 2.712 rem
- Annual exposure to date is 890 mrem

The Operator will not be wearing respiratory protection. The dose rate on the head is 250 mrem/hr and 20 DAC (Derived Air Concentration). How long must the Operator work on the head until reaching the Entergy routine annual administrative exposure limit?

a. 3.7 hours.

b. 4.1 hours.

c. 5.4 hours.

d. 7.0 hours.

During an accident the instruments most likely to be representative of actual Plant conditions have labels with a background color of ...

a. black.

b. white.

c. brown.

d. blue.

Given the following during a Loss of Offsite power event:

- EOP-1.0, "Standard Post-Trip Actions," are in progress
- Diesel Generator (D/G) 1-1 is supplying 2400 VAC Bus 1C loads
- D/G 1-1 load is 2790 kW

For D/G 1-1 to be below the continuous operational load limit, which one of the following is the least amount of load that must be reduced?

a. 100 kW.

b. 200 kW.

c. 300 kW.

d. 400 kW.

```
  ####  #####   ### ###    #
    #    #   #   #   #   ###
    #    #   #   #  #      #
    #    #   #   # #       #
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```

Job : 36
Date: 5/19/2011
Time: 7:31:44 AM

Given the following with the Plant initially at full power:

- The Plant is manually tripped due to a tube rupture in the 'A' Steam Generator (S/G)
- 'A' S/G level is 29% and stable
- 'B' S/G level is 23% and lowering slowly
- T_{AVE} is 535°F and stable
- EOP-1.0, "Standard Post-Trip Actions," Immediate Actions are currently in progress

Which one of the following describes the required action for the above conditions during verbal verification of the Immediate Actions of EOP-1.0?

a. Cooldown the PCS to < 524°F Hot Leg temperature.

b. Restore 'A' and 'B' S/G levels to a band of 60 - 70%.

c. Close CV-0781 and CV-0782, 'A' S/G Atmospheric Dump Valves.

d. Secure Auxiliary Feedwater flow to the 'A' S/G.

Given the following:

- A Loss of Coolant Accident has occurred
- Primary Coolant pressure is 1000 psia
- Containment pressure is 3.0 psig
- Containment temperature is 180°F
- EOP-4.0, "Loss of Coolant Accident Recovery," is the in-use procedure

Which one of the following alarms, if annunciating, provides indication that Safety Injection throttling criteria are not met?

a. EK-0759, "NO PCS PROTECTION CHANNEL A"

b. EK-1126, "CIS INITIATED"

c. EK-0764, "PRESSURIZER LEVEL CH 'B' LO-LO"

d. EK-0962, "STEAM GEN E-50A LO LEVEL"

During a Loss of Coolant Accident with two phase natural circulation (reflux boiling) as the primary method of core heat removal, which one of the following sets of temperature indications must be monitored to determine that heat removal and inventory functions are being satisfied?

a. Loop ΔT and Core Exit Thermocouples.

b. T_H and Core Exit Thermocouples.

c. Loop ΔT and T_C.

d. T_H and T_C.

Given the following with the Plant operating at 35% power:

- A loss of Component Cooling Water event occurs
- The Control Room team enters ONP-6.2, "Loss of Component Cooling"
- Alarm EK-0908, "PRI COOLANT PUMP P-50B HI TEMP OVERLOAD" annunciates

Which one of the following P-50B, Primary Coolant Pump, conditions requires a manual Reactor trip?

a. Thrust Bearing Upward temperature indicates 191 °F.

b. Controlled Bleedoff temperature indicates 178 °F.

c. Pump Motor Stator temperature indicates 142 °C.

d. Lower Seal temperature indicates 177 °F.

With the Plant at 60% power, a loss of all Charging flow occurs. Which one of the following describes the impact on the Plant and the reason Main Steam flow is maintained as stable as possible until Charging flow has been restored?

a. Pressurizer level is now lowering at 4 gpm. Lowering Main Steam flow will accelerate the level reduction.

b. Letdown temperature is high due to loss of cooling to the Regenerative Heat Exchanger. Lowering Main Steam flow may cause letdown to automatically isolate on high temperature.

c. Letdown temperature is high due to loss of cooling to the Regenerative Heat Exchanger. Raising Main Steam flow may cause letdown to automatically isolate on high temperature.

d. Pressurizer level is now lowering at 4 gpm. Raising Main Steam flow will accelerate the level reduction.

The Plant experiences a loss of Shutdown Cooling event due to a tripped Low Pressure Safety Injection (LPSI) Pump. The Control Room team is now ready to start the alternate LPSI Pump.

Which one of the following is the lowest flow rate that, if established, meets the minimum flow requirements for an operating LPSI pump?

a. 150 gpm.

b. 220 gpm.

c. 500 gpm.

d. 1000 gpm.

Given the following with the Plant at full power:

- EK-1172, "COMPONENT CLG SURGE TANK T-3 HI-LO LEVEL" is annunciating
- T-3, Component Cooling Water (CCW) Surge Tank, level is 33% and lowering
- The Control Room team diagnoses a leak in the CCW system and enters ONP-6.2, "Loss of Component Cooling"

Assuming the CCW leak is intersystem, i.e., from the CCW system to another fluid system, which one of the following is a possible location?

a. E-58, CVCS Letdown Heat Exchanger.

b. P-50D, Primary Coolant Pump, Seal Heat Exchanger.

c. E-64, Shield Cooling Heat Exchanger.

d. Control Rod Drive Mechanism seal cooler.

Given the following:

- The Plant is in MODE 3
- Pressurizer level is 42%
- Pressurizer Proportional Heater Control Switches are in the "ON" position
- Pressurizer Backup Heater Control Switches are in the "MANUAL" position
- A loss of offsite power occurs
- Both Diesel Generators start and sequence loads as designed

Following Diesel Generator load sequencing, which one of the following describes which Pressurizer Heaters, if any, are energized? (Assume no operator action occurs.)

a. Pressurizer Heaters will not be energized.

b. Pressurizer Heaters powered from Bus 1D will be energized.

c. Pressurizer Heaters powered from Bus 1E will be energized.

d. Pressurizer Heaters powered from Bus 1D and Bus 1E will be energized.

With the Plant operating at full power, a 230 gpm tube rupture occurs in the 'A' Steam Generator (S/G). The Plant is then manually tripped and all systems operate as designed with the following conditions:

- PZR level is 13%
- PCS pressure is 1545 psia
- T_{AVE} is 532°F and stable
- EOP-1.0, "Standard Post-Trip Actions," are complete

The S/G tube leak rate is now approximately ___(1)___ and Pressurizer level will be ___(2)___.

a. (1) 115 gpm
   (2) rising

b. (1) 160 gpm
   (2) rising

c. (1) 115 gpm
   (2) lowering

d. (1) 160 gpm
   (2) lowering

The following events occur with the Plant initially at full power:

- P-55C, Charging Pump, is out of service for maintenance
- A steam line break occurs causing a Safety Injection Signal to actuate
- EOP-1.0, "Standard Post-Trip Actions," have been completed
- The Control Room team has transitioned to EOP-6.0, "Excess Steam Demand Event"
- 2400 VAC Bus 1D de-energizes and locks out due to a fault on the bus
- As PCS pressure lowers below 1300 psia and stabilizes, the Reactor Operator trips all four Primary Coolant Pumps (PCPs)

Tripping all four PCPs under these conditions will adversely impact the ability to ...

a. detect core parameters.

b. reduce PCS pressure to establish HPSI flow.

c. remove decay heat using Steam Generators.

d. prevent void formation in the Reactor Vessel upper head.

EOP-7.0, "Loss of All Feedwater Recovery," contains the following guidance concerning restoration of feedwater to a dry Steam Generator (S/G):

> **CAUTION**
>
> Limit feed flow to less than 300 gpm for any S/G with level less than -84%

What is the reason for this guidance?

a. Avoid a loss of PCS pressure control due to Pressurizer insurges and outsurges.

b. Prevent a rapid PCS cooldown, avoiding a Pressurized Thermal Shock to the Rx vessel.

c. Prevent uneven cooling of the PCS which may result in a localized reactivity excursion.

d. Minimize the probability of causing significant damage to the S/G tube bundle.

Given the following conditions:

- The Plant is in MODE 3
- Diesel Generator 1-2 is out of service for maintenance
- A loss of all offsite power occurs
- 'F' and 'R' Switchyard buses are de-energized
- Diesel Generator 1-1 will not start automatically or manually

Which one of the following lists the Switchyard 345kV Line and Breaker that must be available to restore offsite power via backfeed to the Main Transformer?

a. Cook #1 Line, Switchyard Breaker 25F7.

b. Cook #1 Line, Switchyard Breaker 25H9.

c. Cook #2 Line, Switchyard Breaker 25F7.

d. Cook #2 Line, Switchyard Breaker 25H9.

Given the following with the Plant at full power:

- A Plant trip occurs due to a loss of all offsite power
- Both Diesel Generators start and sequence loads as designed

Which one of the following indicates that the appropriate sequencers have completed sequencing loads onto 2400 VAC Buses 1C and 1D?

a. The in-service CRHVAC train Main Supply Fan, V-95/V-96, has started.

b. The in-service CRHVAC train Emergency Air Filter Unit Fan, V-26A/V-26B, has started.

c. All Containment Air Cooler 'A' Fans, V-1A, V-2A, V-3A, V-4A, have started.

d. All Charging Pumps, P-55A, P-55B, P-55C, have started.

The Plant is manually tripped while operating at full power due to a loss of Y01, Instrument AC Bus. The Control Room team enters and begins performing EOP-1.0, "Standard Post-Trip Actions."

Which one of the following describes the earliest that the Control Room team can perform subsequent actions of ONP-24.5, "Loss of Instrument AC Bus Y01?" Assume the actions are not associated with personnel safety, plant safety, equipment protection or safety of the public.

a. During EOP-1.0 Immediate Actions.

b. When directed by EOP-1.0 Operator Actions.

c. Immediately after EOP-1.0 Immediate Actions.

d. When directed by EOP-2.0, "Reactor Trip Recovery."

The Plant is operating at full power with Battery Chargers #1 and #2 in service when 72-10, #1 DC Bus Tie Breaker, trips open.

Which one of the following lists all loads that will be de-energized as a result?

a. Preferred AC Bus Y30 only.

b. Preferred AC Bus Y10 only.

c. Preferred AC Bus Y30, DC Buses D11-1 and D11-2.

d. Preferred AC Bus Y10, DC Buses D11-1 and D11-2.

Given the following with the Plant in MODE 3:

- The Control Room team has entered ONP-6.1, "Loss of Service Water," due to a loss of all three Service Water Pumps
- The Fire Protection System is supplying the Service Water System using all three Fire Water Pumps
- It has become necessary to lower flow to specific Service Water components to prevent run-out of the Fire Water Pumps

Which one of the following groups of loads, when isolated, will result in the largest rise in Fire Water Pump discharge pressure?

a. Containment Air Coolers and Component Cooling Water HXs.

b. Containment Air Coolers and Safeguards Room Coolers.

c. Component Cooling Water HXs and Safeguards Room Coolers.

d. CRHVAC Condensers and Steam Generator Blowdown HX.

The Plant has experienced a reactor trip from full power and a concurrent station blackout. The Control Room team has entered EOP-3.0, "Station Blackout Recovery." The CRS has directed you to perform EOP Supplement 36, "Control Valve Tracking Sheet."

Which one of the following requires repositioning a component Handswitch (HS) when completing EOP Supplement 36?

a. The air failure position agrees with HS as-found position.

b. The air failure position does not agree with HS as-found position.

c. The loss of control power failure position agrees with HS as-found position.

d. The loss of control power failure position does not agree with HS as-found position.

Given the following initial conditions:

- The Plant is at full power
- Main Generator Load is 823 MW
- Main Generator Reactive load is zero (0) MVARs

A voltage disturbance occurs on the grid which causes Main Generator reactive load to change to 450 MVARs out. This is a concern because the Main Generator is now _____(1)_____ which leads to _____(2)_____.

a. (1) Under-excited
   (2) Excessive generator field current

b. (1) Under-excited
   (2) Rotor pole slippage

c. (1) Over-excited
   (2) Excessive generator field current

d. (1) Over-excited
   (2) Rotor pole slippage

Consider two separate Uncontrolled Control Rod Withdrawal Events. Event #1 occurs at approximately 1×10^{-4}% power and Event #2 occurs at approximately 5% power. Each event occurs in the middle of core life (MOL).

Which one of the following describes the difference in Startup Rate (SUR) for these two events? (Assume each event inserts reactivity at an equal rate.)

___(1)___ will have the lower SUR because _____(2)_____ will minimize the rate of power rise.

a. (1) Event #2
   (2) moderator temperature coefficient

b. (1) Event #2
   (2) a rod withdrawal prohibit signal

c. (1) Event #1
   (2) the Doppler coefficient

d. (1) Event #1
   (2) the effect of delayed neutron precursors

Given the following:

- The Plant is at full power
- 'A' Steam Generator Level lowers to 24% due to a Feed Regulating Valve problem
- The Reactor Protective System generates an automatic trip signal from all channels, however, one of the four DC clutch power supplies does not de-energize

Based on the above conditions the Reactor will have _____(1)_____ of the control rods dropped into the core and the Main Turbine will _____(2)_____. (Assume all other equipment operates as designed).

a. (1) all
   (2) trip

b. (1) half
   (2) not trip

c. (1) half
   (2) trip

d. (1) all
   (2) not trip

During recovery from a Loss of Coolant Accident, which one of the following conditions will allow commencing a cooldown of the Primary Coolant System (PCS) before verifying SHUTDOWN MARGIN requirements?

a. Safety Injection flow is within requirements.

b. Two (2) Primary Coolant Pumps are operating.

c. Emergency boration is in progress.

d. All control rods are fully inserted.

Given the following conditions:

- The Plant is in MODE 3
- T_{AVE} is 532°F
- Pressurizer level is 42%
- LIC-0101B, Pressurizer Level Control Channel 'B', is in service in the 'AUTO' mode
- The 'AUTO' setpoint on LIC-0101B then rises to 52%

Based on the above conditions, _____(1)_____.
The Backup Pressurizer level control program ____(2)____ function to control Pressurizer level.

a. (1) CV-2003, Letdown Orifice Stop Valve, closes
   (2) will <u>not</u>

b. (1) CV-2003, Letdown Orifice Stop Valve, closes
   (2) will

c. (1) P-55B and P-55C, Charging Pumps, start
   (2) will <u>not</u>

d. (1) P-55B and P-55C, Charging Pumps, start
   (2) will

A Reactor startup is in progress with the following initial Nuclear Instrument readings:

Instrument	Reading
Source Range NI-1A	3.0×10^{0} cps
Source Range NI-2A	3.3×10^{0} cps
Wide Range NI-3A	1.2×10^{-7} % power
Wide Range NI-4A	1.0×10^{-7} % power

During performance of the 1/M plot during the Reactor startup per GOP-3, "MODE 3 ≥ 525°F to MODE 2," the following Nuclear Instrument readings are observed:

Instrument	Reading
Source Range NI-1A	2.7×10^{3} cps
Source Range NI-2A	4.2×10^{2} cps
Wide Range NI-3A	1.1×10^{-5} % power
Wide Range NI-4A	9.6×10^{-6} % power

Based on the readings above, which one of the following Nuclear Instruments is not responding properly?

a. Source Range NI-1A.

b. Source Range NI-2A.

c. Wide Range NI-3A.

d. Wide Range NI-4A.

Given the following:

- The Plant is in MODE 6 with refueling operations in progress
- Containment Refueling Monitors, RIA-2316 and RIA-2317, are in service

Which one of the following alarms, if any, will alert the Control Room team that RIA-2316 reached an alarm setpoint due to a fuel handling incident?

a. None, RIA-2316 AND RIA-2317 are both required to alarm.

b. EK-1366, "PLANT MONITORING HI RADIATION."

c. EK-1363, "CONTAINMENT HI RADIATION."

d. EK-1126, "CIS INITIATED."

Given the following conditions:

- The Plant is operating at 50% power
- The Turbine Operator reports that Condenser vacuum is indicating 27.1" Hg and lowering
- ONP-14, "Loss of Condenser Vacuum," is entered with Step 2 "Main Condenser Air In-Leakage" applicable

Based on the above conditions, the Reactor must be tripped if ...

a. Either P-39A <u>or</u> P-39B, Cooling Tower Pumps, trip.

b. Gland Seal Steam pressure lowers below 2.0 psig.

c. Condenser vacuum lowers below 21.5" Hg.

d. Condenser vacuum will not stabilize greater than 25" Hg.

Given the following:

- A Reactor trip due to a loss of all offsite power has occurred
- A cooldown using the Atmospheric Steam Dump Valves (ADVs) has commenced
- HIC-0780A, Steam Dump Controller, output is set at 50%
- Natural circulation flow has been established

Which one of the following describes:

(1) an indication that natural circulation flow has stopped and;
(2) the action to be taken to restore natural circulation flow?

a. (1) Reactor core ΔT is greater than 50°F.
   (2) Throttle open the ADVs.

b. (1) Reactor core ΔT is greater than 50°F.
   (2) Throttle closed the ADVs.

c. (1) PCS indicates less than 50°F subcooled.
   (2) Throttle open the ADVs.

d. (1) PCS indicates less than 50°F subcooled.
   (2) Throttle closed the ADVs.

Given the following with the Plant at full power:

- A spurious Containment Isolation occurs due to a fault in the Containment High Radiation circuitry
- ONP-4.1, "Spurious Containment Isolation," is entered
- ONP-4.1 directs closing of CV-2003, CV-2004, and CV-2005, Letdown Orifice Stop Valves

The reason for closing the Letdown Orifice Stop Valves is because there is a ...

a. potential for flashing at the outlet of the Letdown Orifices.

b. loss of cooling to E-58, Letdown Heat Exchanger.

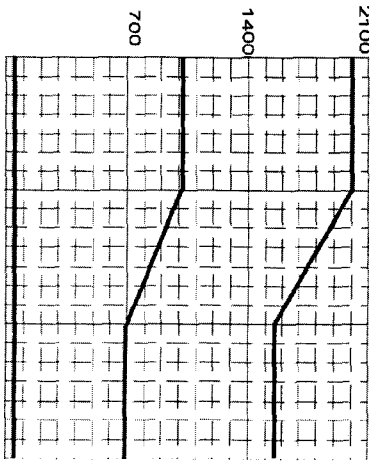
c. loss of cooling to E-56, Regenerative Heat Exchanger.

d. loss of PCS inventory via RV-2006, Letdown HX Inlet Relief Valve

Given the following:

- The Plant is in MODE 3 with all Primary Coolant Pumps (PCPs) in service
- The Reactor Operator is in the process of adjusting PCP Controlled Bleedoff pressure
- Alarm EK-0951, "PRI COOLANT PUMP P-50C SEAL PRESS OFF NORMAL," annunciates

Based on the above conditions and the below drawing of PR-0140A, PCP, P-50C, Seal Pressure Recorder, which one of the following describes the seal stage that has failed and the expected Controlled Bleedoff flow?



a. 1st Stage Failure with 0.0 gpm Controlled bleedoff flow.

b. 2nd Stage Failure with 0.0 gpm Controlled bleedoff flow.

c. 1st Stage Failure with 1.0 gpm Controlled bleedoff flow.

d. 2nd Stage Failure with 1.0 gpm Controlled bleedoff flow.

The Plant is at full power with the following conditions:

- LIC-0101A, Pressurizer Level Control Channel 'A', is in service in Cascade mode
- SS-TAVE, Avg Temperature Display Selector Switch, on Panel C-02 is in the "LOOP 1" position
- The following alarms annunciate:
  - EK-0761, "PRESSURIZER LEVEL HI-LO"
  - EK-0967, "LOOP 1/LOOP 2 T_{AVE} DEVIATION"
  - EK-0968, "LOOP 1 T_{AVE}/T_{REF} GROSS DEVIATION"
- The setpoint meter (blue pointer) on LIC-0101A indicates 51%
- The process meter (red pointer) on LIC-0101A indicates 57%
- TI-0110, T_{AVE} Digital Temperature Indicator, on Panel C-02 indicates 549°F

Which one of the following describes the impact on the Charging System and the correct action?

a. Charging Pumps P-55B and P-55C start.
Swap to LIC-0101B, 'B' Pressurizer Level Controller in Cascade.

b. Charging Pump P-55A goes to minimum speed.
Swap to the LOOP 2 T_{AVE} Controller.

c. Charging Pump P-55A goes to minimum speed.
Swap to LIC-0101B, 'B' Pressurizer Level Controller in Cascade.

d. Charging Pumps P-55B and P-55C start.
Swap to the LOOP 2 T_{AVE} Controller.

Given the following:

- The Plant is in MODE 5 with Shutdown Cooling in service
- A loss of power to 2400 VAC Bus 1C occurs
- The CRS directs you to throttle LPSI Loop Injection Valves

Which one of the following lists the LPSI Loop Injection Valves that can be throttled from the Control Room for these conditions?

a. MO-3008, LPSI to Reactor Coolant Loop 1A.
MO-3010, LPSI to Reactor Coolant Loop 1B.

b. MO-3010, LPSI to Reactor Coolant Loop 1B.
MO-3014, LPSI to Reactor Coolant Loop 2B.

c. MO-3012, LPSI to Reactor Coolant Loop 2A.
MO-3014, LPSI to Reactor Coolant Loop 2B.

d. MO-3008, LPSI to Reactor Coolant Loop 1A.
MO-3012, LPSI to Reactor Coolant Loop 2A.

During normal Shutdown Cooling (SDC) operation with the Plant in MODE 5, the Control Room Supervisor directs the Reactor Operator to adjust total SDC flow from 3250 gpm to 2850 gpm while maintaining Primary Coolant temperature constant.

To perform this evolution, HIC-3025A, Shutdown Cooling HX Outlet Flow Control, will be operated in the ___(1)___ mode and FIC-0306, Shutdown Cooling HX Bypass Flow Control, will be operated in the ___(2)___ mode.

a. (1) manual
   (2) auto

b. (1) auto
   (2) manual

c. (1) manual
   (2) manual

d. (1) auto
   (2) auto

Given the following:

- The Plant has been tripped in response to a Steam Line Rupture inside Containment
- Safety Injection has actuated
- Containment pressure is 1.5 psig
- EOP-1.0, "Standard Post-Trip Actions," immediate actions are in progress

Which one of the following Safety Injection actuated valves, if found closed, require an operator to take a contingency action during the performance of EOP-1.0 immediate actions?

a. MO-2169, Boric Acid Storage Tank, T-53A, Gravity Feed Isolation.

b. CV-0861, Containment Air Cooler, VHX-1, High Capacity Outlet Valve.

c. CV-0938, Shutdown Cooling HX, E-60A/B, Component Cooling Inlet Valve.

d. CV-0944A, Component Cooling to SFP HX, Radwaste Evaps, C-50s/54 & NSSS.

Given the following:

- P-66A, HPSI Pump, is out of service for maintenance
- P-67B, LPSI Pump, is out of service for maintenance
- A Loss of Coolant Accident occurs which causes Primary Coolant System (PCS) pressure to lower to 100 psia
- All available Safety Injection equipment functions as designed

For these conditions P-66B, HPSI Pump, will be injecting into __(1)__ PCS cold leg loops and P-67A, LPSI Pump, will be injecting into __(2)__ PCS cold leg loops.

a. (1) four (4)
   (2) four (4)

b. (1) four (4)
   (2) two (2)

c. (1) two (2)
   (2) four (4)

d. (1) two (2)
   (2) two (2)

With the Plant in MODE 3 and the PCS at normal operating pressure and temperature, a Pressurizer Relief Valve lifts and subsequently re-seats. Which one of the following describes how the steam discharged into T-73, Pressurizer Quench Tank, is cooled and the location to which T-73 is subsequently drained?

a. Steam from the relief valve enters T-73 via a spray nozzle and is cooled by Primary Makeup Water in the tank. T-73 is then drained to the Containment Sump.

b. Steam from the relief valve enters T-73 via a spray nozzle and is cooled by Primary Makeup Water in the tank. T-73 is then drained to T-74, Primary System Drain Tank.

c. Steam from the relief valve enters T-73 via an underwater sparger and is cooled by Primary Makeup Water in the tank. T-73 is then drained to the Containment Sump.

d. Steam from the relief valve enters T-73 via an underwater sparger and is cooled by Primary Makeup Water in the tank. T-73 is then drained to T-74, Primary System Drain Tank.

Given the following with the Plant operating at full power:

- The Main Turbine trips but the Reactor does not trip
- The Reactor is then manually tripped by the Control Room team
- As a result of the transient, RV-1041, Pressurizer T-72 Relief, opens and does not re-seat

Which one of the following sets of alarm conditions indicates that RUD-0162, Quench Tank Rupture Disk, has malfunctioned and actuated earlier than designed?

	EK-1501 PRI SYS DRAIN TANK T-74 HI-LO LEVEL	EK-1362 CONTAINMENT PRESSURE OFF NORMAL	EK-0732 QUENCH TANK HI PRESS
a.	OFF	ON	ON
b.	OFF	ON	OFF
c.	ON	OFF	OFF
d.	ON	OFF	ON

Given the following with the Plant at full power:

- A loss of offsite power occurs
- Diesel Generator 1-1 starts and sequences loads as designed
- Diesel Generator 1-2 will not start

Five minutes later, a leak develops in the Component Cooling Water (CCW) System which causes CCW pressure to lower from 105 psig to 77 psig

For the above conditions, which one of the following describes which CCW Pumps will be operating?

a. P-52B only.

b. P-52A only.

c. P-52B and P-52C.

d. P-52A and P-52C.

Given the following during a Plant cooldown:

- A bubble exists in the Pressurizer
- Pressurizer pressure is 1200 psia
- Quench Tank, T-73, pressure is 5 psig
- Low Temperature Overpressure Protection (LTOP) System is in service
- Then, Power Operated Relief Valve, PRV-1042B, lifts
- The Control Room team isolates PRV-1042B by closing MO-1042A, PRV-1042B isolation

Which one of the following is the approximate temperature downstream of PRV-1042B immediately after closure of MO-1042A?

a. 212°F.

b. 230°F.

c. 282°F.

d. 332°F.

The Plant is performing startup physics testing following a refueling outage with the following conditions:

- Zero Power Mode (ZPM) Bypass has been placed in operation per SOP-36, "Reactor Protective System and Anticipate Transient Without Scram (ATWS) System"
- Reactor power is currently $1x10^{-5}$ % and stable
- Then, NI-03A, Wide Range Nuclear Instrument (NI), fails high

ZPM Bypass for the Reactor Protective System ___(1)___ be removed because ___(2)___.

a. (1) will
   (2) Wide Range NI power will exceed 10^{-4}% on at least one channel

b. (1) will not
   (2) Power Range NI power will not exceed 15% on at least one channel

c. (1) will
   (2) Wide Range NI SUR will rise above 1.5 dpm on at least one channel

d. (1) will not
   (2) Wide Range NI power will not exceed 10^{-4}% on at least three channels

Given the following:

- A manual Plant trip has occurred due to a Loss of Coolant Accident
- EOP-1.0, "Standard Post-Trip Actions," are in progress
- Containment Isolation Radiation Monitors (RIA-1805, RIA-1806, RIA-1807, RIA-1808) are rising

EOP-1.0 immediate actions direct the operator to verify EK-1126, Containment Isolation Signal initiated (CIS INITIATED), is in alarm or push left and right HIGH RADIATION INITIATE pushbuttons on Panel C-13 when __(1)__ Containment Isolation Radiation Monitor(s) reach the alarm setpoint and to _____(2)_____.

a. (1) at least two
   (2) ensure all Containment Isolation Valves are closed

b. (1) at least two
   (2) corroborate with Containment High Range Gamma monitors, RIA-2321 and RIA-2322, readings

c. (1) any
   (2) ensure all Containment Isolation Valves are closed

d. (1) any
   (2) corroborate with Containment High Range Gamma monitors, RIA-2321 and RIA-2322, readings

Given the following during a Plant cooldown in MODE 3:

- Pressurizer pressure is 1500 psia
- Safety Injection has been blocked
- I&C Maintenance has inadvertantly caused a Containment High Pressure (CHP) signal to be generated for the right channel (2/4 CHP pressure switches reach their setpoint)

Which one of the following describes the impact on P-54A, Containment Spray Pump, and CV-3002, Containment Spray Valve, and the required action?

a. P-54A will start; CV-3002 will open. Reset CHP signal on Panel C-13.

b. P-54A will <u>not</u> start; CV-3002 will open. Reset CHP signal on Panel C-13.

c. P-54A will <u>not</u> start; CV-3002 will open. Close CV-3002.

d. P-54A will start; CV-3002 will open. Stop P-54A and close CV-3002.

The Plant is at full power when the following events occur:

- A manual Plant trip is initiated in response to a Steam Line break from the 'A' Steam Generator
- Containment pressure reaches 6 psig

Which one of the following describes the expected configuration due to the above conditions for the components listed below?

- V-4A, Containment Air Cooling (CAC) Recirc Fan
- CV-0869, VHX-4 Containment Air Cooler Inlet Valve
- CV-0867, VHX-4 Containment Air Cooler Outlet Valve

	V-4A	CV-0869 (Inlet)	CV-0867 (Outlet)
a.	ON	CLOSED	OPEN
b.	OFF	OPEN	CLOSED
c.	ON	OPEN	CLOSED
d.	ON	OPEN	OPEN

Given the following Plant conditions:

- A Loss of Coolant Accident has occurred
- 2400 VAC Bus 1C has tripped on overcurrent and is de-energized
- A Recirculation Actuation Signal (RAS) has been received

Which one of the following alignments will provide the maximum allowable Containment Spray flow and HPSI Subcooling flow for the above conditions?

a. One Containment Spray Valve open and;
One HPSI Subcooling Valve open.

b. One Containment Spray Valve open and;
Both HPSI Subcooling Valves open.

c. Both Containment Spray Valves open and;
One HPSI Subcooling Valve open.

d. Both Containment Spray Valves open and;
Both HPSI Subcooling Valves open.

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.

EOP-1.0, "Standard Post-Trip Actions," direct the Control Room team to ensure tripped both Main Feed Pumps (MFPs) if the Main Steam Isolation Valves (MSIVs) are closed.

What is the reason for this action?

a. Ensures the MFP Aux Oil Pump will automatically start.

b. Prevents air in-leakage to the Condenser from the steam line traps.

c. Prevents MFP Turbine overspeed if steam is re-initiated.

d. Prevents Low Pressure steam from pressurizing the Main Steam lines.

With the Plant at full power, which one of the following will cause T_{AVE} to initially rise?

a. LIA-0702, 'A' Steam Generator (S/G) Level Indicator Alarm (C-12), fails high.

b. LIC-0701, 'A' S/G Level Indicating Controller (C-01), level indication fails low.

c. FT-0701, 'A' S/G Feed Flow Transmitter Indicator (C-01), fails low.

d. FT-0702, 'A' S/G Steam Flow Transmitter Indicator (C-01), fails high.

Given the following with the Plant operating at full power:

- A loss of all offsite power occurs
- Diesel Generator 1-1 will not start automatically or manually

Which Auxiliary Feedwater (AFW) Pump(s) will be operating one-minute after an Auxiliary Feedwater Actuation Signal occurs? (Assume no Operator actions occur.)

a. Only AFW Pump P-8A.

b. Only AFW Pump P-8C.

c. AFW Pumps P-8B and P-8C.

d. Only AFW Pump P-8B.

Given the following:

- The Plant is at full power
- No equipment is out of service
- All 4160V and 2400 VAC Buses are being supplied from the normal source

A fault then occurs on Startup Transformer 1-2. One of the alarms that annunciates is:

EK-0527, START-UP TRANSFORMER NO. 1-2 SUDDEN PRESS

Due to the fault, the Plant ___(1)___ and Switchyard Rear Bus ____(2)____.

a. (1) will trip
   (2) will de-energize

b. (1) will trip
   (2) will <u>not</u> de-energize

c. (1) will <u>not</u> trip
   (2) will de-energize

d. (1) will <u>not</u> trip
   (2) will <u>not</u> de-energize

The Plant has just been synchronized to the grid with power at 10% when a DC Bus ground occurs causing the 250 amp fuses supplying D21-2, 125 VDC Distribution Panel, to actuate and de-energize D21-2.

Which one of the following describes (1) the expected Plant response to this failure and (2) the required action?

a. (1) CV-1359, Non-critical Service Water Isolation, closes.
   (2) Trip the Reactor.

b. (1) CV-1359, Non-critical Service Water Isolation, closes.
   (2) Trip the Turbine.

c. (1) CV-2099, PCP Controlled Bleedoff Containment Isolation, closes.
   (2) Trip the Reactor and all Primary Coolant Pumps.

d. (1) CV-2099, PCP Controlled Bleedoff Containment Isolation, closes.
   (2) Verify Controlled Bleedoff pressure is < 140 psig.

The Plant has tripped from full power due to a loss of all offsite power. Neither Diesel Generator will start. For these conditions, which one of the following describes the importance of performing EOP Supplements 7 and 8, "Station Battery Load Stripping?"

Station Battery Load Stripping is designed to ...

a. extend battery capacity from 30 minutes to two hours while maintaining DC bus voltage at greater than 105 volts.

b. ensure that the emergency loads are supplied by DC voltage at greater than 125 volts for a minimum of two hours.

c. prevent generating an explosive mixture of Hydrogen and Oxygen by limiting output current to less than 150 amps.

d. extend battery capacity from two hours to four hours while maintaining DC bus voltage at greater than 105 volts.

Given the following Diesel Generator (D/G) conditions with the Plant in MODE 1:

	D/G 1-1 (operating)	D/G 1-2 (standby)
Hot Jacket Water Temperature	160°F	95°F
Hot Lube Oil Temperature	185°F	90°F
Starting Air Train Pressure	135 psig	145 psig
Starting Air Tank Pressure	225 psig	205 psig
Parallel/Unit Selector Switch	PARALLEL	UNIT

Which one of the following describes the D/G(s), if any, that is(are) INOPERABLE due to the above conditions?

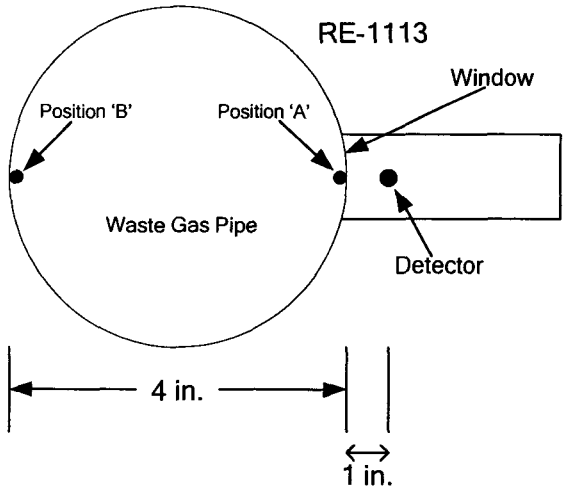
a. Only D/G 1-1.

b. Only D/G 1-2.

c. Both D/G 1-1 and D/G 1-2.

d. Neither D/G 1-1 or D/G 1-2.

RE-1113, Waste Gas Process Monitor radiation element, consists of a detector mounted on one side of the Waste Gas discharge pipe with a window through the pipe wall, with the pipe four inches in diameter (see below). The detector is a point detector located one-inch from the inner diameter of the pipe.



Compare the differences in radiation readings for a hot particle that passes along the side of the pipe closest to the detector (Position 'A' above) to the same hot particle that passes along the side of the pipe farthest away from the detector (Position 'B' above).

The reading for Position 'A' will be _____ times greater than the reading for Position 'B'.

a. 4

b. 5

c. 16

d. 25

With the Plant operating at full power, which one of the following valves does not re-position if a Containment High Pressure (CHP) signal actuation occurs?

a. CV-1359, Non-critical Service Water Header Isolation Valve.

b. CV-0823, CCW Heat Exchanger E-54A High Capacity SW Outlet Valve.

c. CV-0977B, CCW Return from Rad Waste Evaps and C-54, Waste Gas Compressor.

d. CV-0911, CCW from Containment Isolation Valve.

Given the following:

- Instrument Air Compressor, C-2A, is in operation in HAND
- Instrument Air Compressor, C-2C, is in AUTO
- Instrument Air Compressor, C-2B, is removed from service for maintenance
- An air leak develops on the discharge of C-2A causing air pressure to lower to 85 psig
- C-2A subsequently trips
- The air leak is then isolated by closing the discharge of C-2A

How will C-2C respond to this instrument air pressure transient?

C-2C will ...

a. auto start but will <u>not</u> load unless air pressure lowers to 80 psig.

b. auto-start and load. Will unload when pressure reaches 105 psig, will load again if pressure lowers to 92 psig.

c. auto-start and load. Will unload when pressure reaches 105 psig, will load again if pressure lowers to 95 psig.

d. auto-start and load. Will run fully loaded regardless of air pressure until placed in OFF and returned to AUTO.

Given the following:

- The Plant is in MODE 5 with Shutdown Cooling in service
- The Equipment Hatch is open
- Then, a loss of Shutdown Cooling occurs
- The Control Room team enters ONP-17, "Loss of Shutdown Cooling"

Which one of the following describes the strategy for closing the Equipment Hatch in accordance with ONP-17?

The Equipment Hatch shall be closed within ...

a. ONE hour only.

b. FOUR hours only.

c. the approximate time for PCS temperature to reach 200°F only.

d. the approximate time for PCS temperature to reach 200°F or FOUR hours, whichever occurs first.

Which one of the following combinations of Containment conditions will cause the Control Room team to perform a contingency action for the Containment Isolation safety function during the performance of EOP-1.0, "Standard Post-Trip Actions," immediate actions?

	Temperature	Pressure	Radiation
a.	175°F	0.4 psig	0.6×10^1 R/Hr
b.	135°F	0.9 psig	0.8×10^1 R/Hr
c.	120°F	3.1 psig	0.6×10^1 R/Hr
d.	120°F	0.4 psig	1.1×10^1 R/Hr

The Plant is at full power when a loss of Instrument Air occurs. As a result, Pressurizer pressure will ...

a. rise because the Spray valves fail closed.

b. lower because the Spray valves fail open.

c. remain steady because the Spray valves fail as-is.

d. remain steady because the Spray valves have backup Nitrogen.

With the Plant at full power, Load Control Center 11 (LCC-11) de-energizes due to a ground over-current fault. Which one of the following describes available Charging Pumps (P-55A, P-55B, P-55C) that can be operated from the Control Room for the above condition? (Assume no Operator action is taken.)

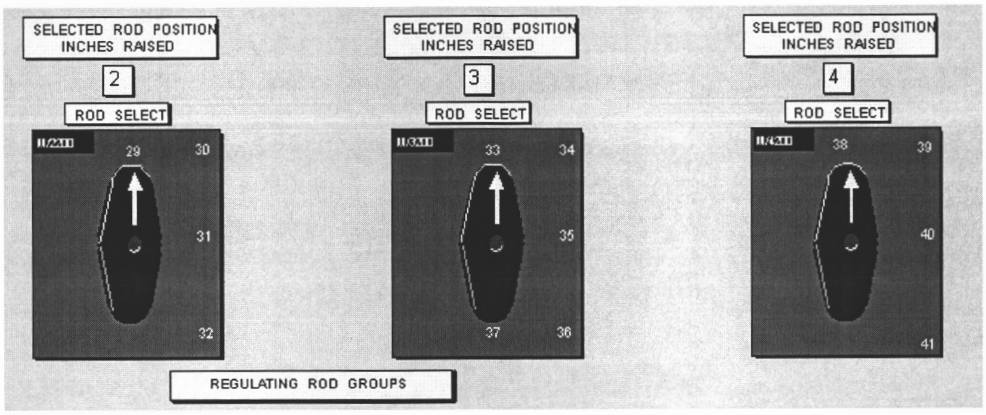
a. P-55C only.

b. P-55A and P-55B.

c. P-55A and P-55C.

d. P-55B only.

A rapid power reduction is commenced from full power per ONP-26, "Rapid Power Reduction." While control rods are being inserted, Control Rod #38 becomes mechanically bound at 80 inches and does not move with the rest of the group. If this condition were to go unnoticed by the Control Room team, which one of the following describes the sequence of alarms to warn of this condition? (Assume switch positions are as shown below.)



a. EK-0916, "CONTROL RODS OUT OF SEQUENCE," then EK-0911, "ROD POSITION 4 INCHES DEVIATION."

b. EK-0911, "ROD POSITION 4 INCHES DEVIATION," then EK-0916, "CONTROL RODS OUT OF SEQUENCE."

c. EK-0911, "ROD POSITION 4 INCHES DEVIATION," then EK-0912, "ROD POSITION 8 INCHES DEVIATION."

d. EK-0911, "ROD POSITION 4 INCHES DEVIATION," then EK-0941, "GROUP 4 PREPWR DEPENDENT INSERTION LIMIT."

Given the following conditions:

- The Plant is at full power
- LIC-0101B, Pressurizer Level Control Channel 'B', is in service in CASCADE mode
- LT-0101B, Level Input to LIC-0101B, diaphram ruptures causing pressure on both sides to equalize

Due to this failure, LIC-0101B will indicate ___(1)___ which will cause _____(2)_____.

a. (1) HIGH
   (2) P-55A, Charging Pump, speed to be minimum

b. (1) LOW
   (2) P-55B and P-55C, Charging Pumps to start

c. (1) HIGH
   (2) P-55A, Charging Pump, to trip

d. (1) LOW
   (2) Pressurizer Heaters to trip

For accident conditions with no Primary Coolant Pumps operating, which one of the following is the preferred instrument for monitoring temperature in the Reactor core and why?

a. Core Exit Thermocouples because they do not rely on forced flow.

b. Hot Leg Temperatures because they are more accurate at higher temperatures.

c. Core Exit Thermocouples because they are more accurate at higher temperatures.

d. Hot Leg Temperatures because the detectors are located directly in the flow of natural circulation.

Given the following:

- A leak develops in E-53A/B, Spent Fuel Pool Cooling Heat Exchanger, and is isolated
- ONP-23.4, "Loss of Spent Fuel Pool Cooling," is entered
- The Spent Fuel Pool is heating up at 3°F per hour
- Initial Spent Fuel Pool Temperature is 94°F

Assuming Spent Fuel Pool cooling is not restored, approximately how long will it take to reach the maximum allowable Spent Fuel Pool temperature per SOP-27, "Fuel Pool System?"
Do not consider instrument inaccuracies or operating margin.

a. 5 hours.

b. 10 hours.

c. 19 hours.

d. 35 hours.

Given the following:

- The Plant tripped from full power ten minutes ago
- 386/AST, Turbine Trip Lockout Relay, did not actuate when the turbine tripped
- Both Main Steam Isolation Valves are closed
- All other equipment functioned as designed

Assuming no other Operator actions, what is the approximate PCS cold leg temperature for the above event?

a. 535°F.

b. 540°F.

c. 545°F.

d. 550°F.

During a Plant startup, GOP-5, "Power Escalation in MODE 1," requires that Reactor power be maintained between 15% and 28.5% to perform a heat balance calculation and corresponding instrument adjustments (NIs and ΔT power).

Performing the heat balance calculation above 15% power ensures _____(1)_____ and performing the heat balance calculation below 28.5% power ensures _____(2)_____.

a. (1) the heat balance calculation is accurate.
   (2) ASI and AXIAL OFFSET track within 1.5% at higher powers.

b. (1) the heat balance calculation is accurate.
   (2) the VHPT function meets the requirements of the safety analysis at higher powers.

c. (1) the Thermal Margin Monitor bias is within the required adjustment range.
   (2) ASI and AXIAL OFFSET track within 1.5% at higher powers.

d. (1) the Thermal Margin Monitor bias is within the required adjustment range.
   (2) the VHPT function meets the requirements of the safety analysis at higher powers.

Which one of the following Area Radiation Monitors will cause an automatic equipment actuation due to a valid high radiation condition?

a. RIA-2300, Engineered Safeguards Room Monitor.

b. RIA-2314, Air Room Monitor.

c. RIA-5709, Spent Fuel Pool Criticality Monitor.

d. RIA-5710, Penetration and Fan Room Monitor.

Given the following:

- The Plant is at full power
- C-2C, Instrument Air Compressor, is in HAND
- C-2A, Instrument Air Compressor, is in AUTO
- C-2B, Instrument Air Compressor, is out of service for maintenance
- 480 VAC Bus 11 (LCC-11) de-energizes due an overcurrent condition
- The following alarms annunciate:
  - EK-1101, "CONTAINMENT INSTR AIR LO PRESS"
  - EK-1102, "INSTRUMENT AIR LO PRESS"
  - EK-1103, "SERVICE AIR LO PRESS"

Which one of the following describes the impact on the Plant and the action that will restore Instrument Air pressure?

a. Track Alley Sprinkler System actuates.
Manually start C-2A, Instrument Air Compressor.

b. Track Alley Sprinkler System actuates.
Open CV-1221, Plant Air Cross-tie from Feedwater Purity Air.

c. Cooling Tower Deluge System actuates.
Manually start C-2A, Instrument Air Compressor.

d. Cooling Tower Deluge System actuates.
Open CV-1221, Plant Air Cross-tie from Feedwater Purity Air.

In ONP-25.2, "Alternate Safe Shutdown Procedure," the following step exists:

☐ 16. **VERIFY** Bus 1C OR Bus 1D is energized.
☼

The symbol "☼" indicates this step:

a. must be performed in the Control Room.

b. must be performed locally.

c. is continuously applicable.

d. has emergency lighting provided.

Given the following conditions:

- The Plant is operating at full power
- T-2, Condensate Storage Tank, temperature is 100°F
- T-81, Primary System Makeup Storage Tank, temperature is 80°F
- Auxiliary Feedwater (AFW) flow will be initiated to the 'B' Steam Generator only at the programmed value for an Auxiliary Feedwater Actuation Signal (AFAS)

Prior to initiation of AFW flow, Heat Balance power must be lowered to a maximum of ...

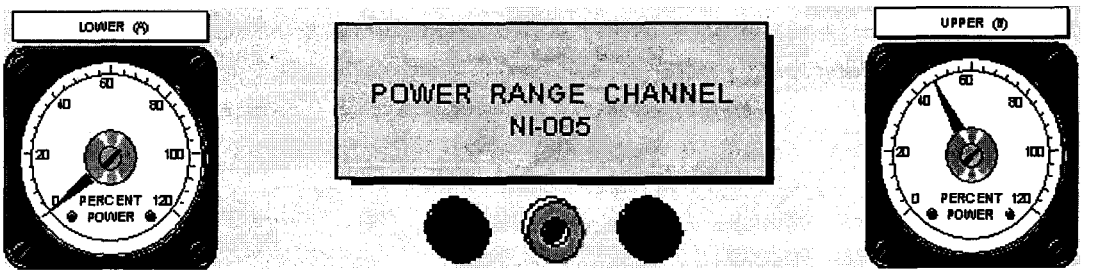
a. 99.5%.

b. 99.4%.

c. 99.3%.

d. 99.1%.

With the Plant operating at full power, NI-5, Power Range Nuclear Instrument, subchannel 'A' fails low due to a faulty amplifier (see picture below showing C-06, Reactor Protective System Panel, indications).



Which one of the following alarms is not expected for this condition?

a. EK-0601A, "VARIABLE HIGH POWER LEVEL CHANNEL TRIP."

b. EK-0606A, "HIGH POWER RATE CHANNEL PRE-TRIP/ASI."

c. EK-0604C, "CHANNEL DEVIATION LEVEL 2 - 10%."

d. EK-0601C, "TM/LO PRESSURE CHANNEL TRIP."

Which one of the following is an example of a work activity that does not require protective tagging in accordance with EN-OP-102, "Protective and Caution Tagging?"

a. Alignment of motors, generators, or pumps that are electrically disconnected from their remote power source.

b. Lifting of electrical leads that can be performed safely while energized.

c. Opening a fluid system that has a working pressure of 25 psig or less.

d. Working inside a tank that has been drained and the atmosphere deemed safe for occupancy.

The Plant experiences a loss of load event from full power. The Control Room team then stabilizes power at 90%. The following parameters are observed:

- Pressurizer level is 61%
- Pressurizer pressure is 2115 psia
- All Control Rods are full out
- T_C is 541°F (all cold legs)

Which one of the following LCOs is <u>not</u> met due to the above conditions?

a. LCO 3.4.9 for Pressurizer Level.

b. LCO 3.4.1 for PCS Cold Leg Temperature.

c. LCO 3.1.6 for Rod Insertion Limits.

d. LCO 3.4.1 for PCS Pressure.

Given the following parameters during preparations to synchronize the Turbine Generator with the Grid:

- T_{AVE} is 538°F and stable
- Reactor power is 11% and stable
- PIC-0511, Turbine Bypass Valve Controller, output is 55% and stable

Which one of the following actions must be taken to meet the requirements for synchronizing the Turbine Generator with the Grid per SOP-8, "Main Turbine and Generator Systems?"

a. Place PIC-0511 in "MANUAL" and raise output.

b. Place PIC-0511 in "MANUAL" and lower output.

c. Insert Control Rods to lower T_{AVE}.

d. Withdraw Control Rods to raise PIC-0511 output.

The Plant is being cooled down in MODE 4 following a Steam Generator Tube Rupture event. An RP Technician performing a survey in the Component Cooling Water room measures a dose rate of 120 mrem/hr one-foot away from the 'B' Steam Generator Main Steam line. Which one of the following postings is required for this dose rate at this location?

a. Radiation Area.

b. High Radiation Area.

c. Very High Radiation Area.

d. Locked High Radiation Area.

An Operator has been assigned to work on the Reactor head assisting the fuel handling team in preparation for refueling operations. Given the following radiation exposure history for the Operator:

- No undocumented quarters for the current year
- Lifetime exposure to date is 2.712 rem
- Annual exposure to date is 890 mrem

The Operator will not be wearing respiratory protection. The dose rate on the head is 250 mrem/hr and 20 DAC (Derived Air Concentration). How long must the Operator work on the head until reaching the Entergy routine annual administrative exposure limit?

a. 3.7 hours.

b. 4.1 hours.

c. 5.4 hours.

d. 7.0 hours.

During an accident the instruments most likely to be representative of actual Plant conditions have labels with a background color of ...

a. black.

b. white.

c. brown.

d. blue.

Given the following during a Loss of Offsite power event:

- EOP-1.0, "Standard Post-Trip Actions," are in progress
- Diesel Generator (D/G) 1-1 is supplying 2400 VAC Bus 1C loads
- D/G 1-1 load is 2790 kW

For D/G 1-1 to be below the continuous operational load limit, which one of the following is the least amount of load that must be reduced?

a. 100 kW.

b. 200 kW.

c. 300 kW.

d. 400 kW.

Given the following:

- The Plant trips due to a loss of all offsite power
- 2400 VAC Bus 1C is de-energized due to Diesel Generator (D/G) 1-1 failing to start
- An attempt to manually start D/G 1-1 was not successful
- 2400 VAC Bus 1D is energized from D/G 1-2
- During the transient, Y10, Preferred AC Bus, de-energizes
- The Control Room team is performing actions of EOP-1.0, "Standard Post Trip Actions"

Which one of the following procedures does EOP-1.0, Attachment 1, "Event Diagnostic Flow Chart," direct the Control Room team to use for this event?

a. EOP-2.0, "Reactor Trip Recovery."

b. EOP-3.0, "Station Blackout Recovery."

c. EOP-8.0, "Loss of Offsite Power/Forced Circulation Recovery."

d. EOP-9.0, "Functional Recovery Procedure."

Given the following with the Plant operating at full power:

- P-50A, Primary Coolant Pump (PCP) ammeter lowers to approximately 100 amps
- The reactor automatically trips approximately two seconds later
- All other PCPs remain operating normally

Which one of the following describes the cause of the P-50A failure and the procedure the Control Room team will transition to after EOP-1.0, "Standard Post Trip Actions," are complete?

a. P-50A shaft seized. EOP-8.0, "Loss of Offsite Power/Forced Circulation Recovery."

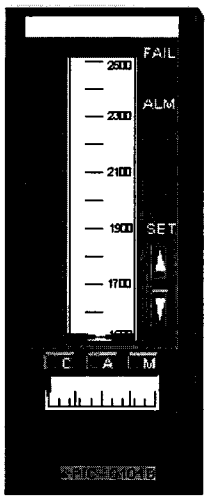
b. P-50A shaft seized. EOP-2.0, "Reactor Trip Recovery."

c. P-50A shaft sheared. EOP-8.0, "Loss of Offsite Power/Forced Circulation Recovery."

d. P-50A shaft sheared. EOP-2.0, "Reactor Trip Recovery."

Given the following during a Plant heatup in MODE 3:

- The PCS is at normal operating pressure with T_{AVE} at 500°F
- PIC-0101A, 'A' Pressurizer Pressure Controller, is out of service due to a controller failure
- EK-0754, "PRESSURIZER PRESSURE OFF NORMAL HI-LO," annunciates
- The Reactor Operator observes the following for PIC-0101B, 'B' Pressurizer Pressure Controller:



Which one of the following procedures will the Control Room team use to control Pressurizer pressure for this event?

a. ONP-24.4, "Loss of Preferred AC Bus Y40."

b. ONP-18, "Pressurizer Pressure Control Malfunctions."

c. ONP-2.3, "Loss of DC Power."

d. SOP-1C, "Primary Coolant System - Heatup."

Given the following:

- The Plant has entered EOP-7.0, "Loss of All Feedwater Recovery"
- The Plant is also experiencing a loss of all instrument air
- P-8A and P-8B, Auxiliary Feedwater Pumps, are not available

Which one of the following procedures will the Control Room Supervisor use to feed the Steam Generators using P-8C, Auxiliary Feedwater Pump, for the above conditions?

a. EOP Supplement 19, "Alternate Auxiliary Feedwater Methods."

b. ONP-7.1, "Loss of Instrument Air."

c. SOP-12, "Feedwater System."

d. EOP Supplement 31, "Supply AFW Pumps From Alternate Sources."

With the Plant in MODE 5 the following indications are received in the Control Room simultaneously:

- CV-0510, Main Steam Isolation Valve, position indicating lights are OUT
- CV-3001, Containment Spray Valve, position indicating lights are OUT
- 25F7 and 25H9, Main Generator Breakers, position indicating lights are OUT

Based on these conditions, which one of the following describes (1) the DC Bus that is affected and (2) the action, if taken, that will satisfy the REQUIRED ACTIONS of CONDITION A of LCO 3.8.10, "Distribution Systems - Shutdown?" Assume the affected DC bus is a required bus to support equipment required to be OPERABLE.

a. (1) D11-1.
   (2) Action A.1.

b. (1) D11-1.
   (2) Action A.2.1.

c. (1) D11A.
   (2) Action A.1.

d. (1) D11A.
   (2) Action A.2.1.

Given the following conditions with the Plant in MODE 3:

- P-7A, Service Water Pump, is out of service for repairs
- P-7B and P-7C, Service Water Pumps, are in service
- MO-0501 and MO-0510, Main Steam Isolation Valve Bypass Valves, are open for warm-up of the Main Steam System
- Alarm EK-1163, "CRITICAL SERV WATER HEADER 'B' LO PRESSURE," annunciates
- Alarm EK-1347, "CONTAINMENT AIR COOLERS SERV WATER LEAK," annunciates
- The leak is isolated by closing CV-0824, Service Water from Containment, and CV-0847, Service Water to Containment

After isolating the leak, 100% post accident cooling capability ___(1)___ provided for the Containment Cooling System and ___(2)___ provided for the Service Water System.

a. (1) is
   (2) is

b. (1) is
   (2) is <u>not</u>

c. (1) is <u>not</u>
   (2) is

d. (1) is <u>not</u>
   (2) is <u>not</u>

A Plant startup is in progress at 13% power. A review of post-maintenance documentation indicates that there is no reasonable assurance that Control Rod 17 is trippable. Which one of the following describes the Limiting Condition for Operation (LCO) that contains the actions which are required to be performed and the reason for those actions?

a. LCO 3.1.4, "Control Rod Alignment." Plant is outside of the safety analysis because all shutdown rods are assumed to insert on a reactor trip to achieve a 3.5% shutdown margin.

b. LCO 3.1.4, "Control Rod Alignment." Plant is outside of the safety analysis because one additional rod is assumed to stick on a reactor trip.

c. LCO 3.1.5, "Shutdown and Part-Length Control Rod Group Insertion Limits." Plant is outside of the safety analysis because all shutdown rods are assumed to insert on a reactor trip to achieve a 3.5% shutdown margin.

d. LCO 3.1.5, "Shutdown and Part-Length Control Rod Group Insertion Limits." Plant is outside of the safety analysis because one additional rod is assumed to stick on a reactor trip.

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

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

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

a. RC-1, "CRD Insertion."

b. RC-2, "Boration using CVCS."

c. RC-3, "Boration using SIS."

d. RC-2 and RC-3.

Given the following with the Plant at full power:

- An Auxiliary Operator reports that there is a fire in MCC-7 and EC-40, "Radwaste Panel"
- The Control Room team de-energizes MCC-7 by opening breaker 52-1103, MCC-7 Supply Breaker, on Panel C-04
- EK-1118, "HIGH PRESSURE CONTROL AIR COMPRESSORS LO PRESS," annunciates on Panel C-13
- An Auxiliary Operator reports:
    - T-9B, HP Control Air Compressor Receiver Tank, pressure indicates 245 psig
    - There is significant damage to the MCC-7 switchgear panel and EC-33, Redundant Safety Injection Panel

Based on the above conditions, 100% of the required Safety Injection flow ___(1)___ available and Emergency Plan entry ___(2)___ required.

a. is
   is

b. is <u>not</u>
   is

c. is
   is <u>not</u>

d. is <u>not</u>
   is <u>not</u>

A manual reactor trip occurred 20 minutes ago due to a loss of D21-2, DC Bus. EOP-9.0, "Functional Recovery Procedure," is entered. Due to this event, the NRC must be notified ...

a. after notifying the county and state but no longer than one-hour from event classification per EI-3, "Communications and Notifications."

b. after notifying the county and state but no longer than 15 minutes from event classification per EI-3, "Communications and Notifications."

c. of a non-emergency event within one-hour per ADMIN 4.00, "Operations Organization, Responsibilities and Conduct."

d. within one-hour per 10CFR50.72, "Immediate notification requirements for operating nuclear power reactors," via the Emergency Response Data System (ERDS).

Given the following conditions:

- The Plant is in MODE 5 when a loss of Shutdown Cooling occurs
- Neither LPSI Pump can be started
- PCS temperature is 175°F
- The Reactor Vessel Head is fully tensioned
- The Pressurizer Manway is removed

Which one of the following sections of ONP-17, "Loss of Shutdown Cooling," will the Control Room Supervisor implement to restore Primary Coolant heat removal?

a. Attachment 6, "S/G Heat Removal."

b. Attachment 5, "Option 3: PCS Boil Off and Makeup."

c. Attachment 5, "Option 2: Spent Fuel Pool Cooling."

d. Attachment 5, "Option 1: Containment Spray."

Given the following conditions:

- The Plant is operating at full power
- At 0800 on Monday, P-54B, Containment Spray Pump, is determined to be INOPERABLE
- At 1500 on the same day, P-54C, Containment Spray Pump, is determined to be INOPERABLE
- On Tuesday at 1500, P-54B is repaired, tested, and declared OPERABLE

If P-54C remains INOPERABLE, which one of the following is the latest allowable day and time that the Plant must be in MODE 3?

a. Thursday, 1400.

b. Thursday, 2100.

c. Friday, 0800.

d. Friday, 1400.

The Plant is at 50% power with the following conditions:

- P-8C, Auxiliary Feedwater (AFW) Pump, testing is currently in progress
- FIC-0737A, P-8C AFW Pump to 'A' S/G, is in AUTO with it's associated valve closed
- FIC-0736A, P-8C AFW Pump to 'B' S/G, is in PF mode supplying 80 gpm to 'B' S/G
- Then, the Nitrogen line to CV-0727, P-8A/B AFW Pumps to 'B' S/G, develops a severe leak and is isolated
    - Instrument air to CV-0727 is still lined-up

Given these conditions, which one of the following identifies whether LCO 3.7.5, "Auxiliary Feedwater System," is currently satisfied and, if not, also identifies the minimum actions required to satisfy the LCO without reliance on any action statement?

a. LCO 3.7.5 is met.
No action statements are required to be entered.

b. LCO 3.7.5 is not met.
Placing FIC-0737A to CASCADE will allow all action statements to be exited.

c. LCO 3.7.5 is not met.
Repairing and testing the Nitrogen line to CV-0727 and will allow all action statements to be exited.

d. LCO 3.7.5 is not met.
Placing FIC-0736A to CASCADE or AUTO will allow all action statements to be exited.

Given the following:

- The Plant is in MODE 5
- Bus 1C is removed from service for maintenance
- Bus 1D is being supplied by Safeguards Transformer 1-1
- Switchyard 'R' Bus is removed from service for maintenance

Which one of the following will cause LCO 3.8.2, "AC Sources - Shutdown," to be not met for the above conditions?

a. Y20, Preferred AC Bus, de-energizes.

b. Bus 1D voltage is 2485VAC as read on temporary voltmeters installed in Panel C-04.

c. Y30, Preferred AC Bus, de-energizes.

d. 152-402, Station Power Transformer 1-2 Breaker, is racked to the DISCONNECT position.

The Plant is at full power during the month of January. Then, the following occurs:

- EK-1124, "TRAVELING SCREEN HI dp" alarms due to ice buildup on the traveling water screens
- The North Bay level has begun lowering rapidly
- The South Bay level is stable

Which one of the following will the CRS direct the crew to perform first to address these conditions?

a. Align P-5, Warm Water Recirculation Pump for siphon operation per SOP-14, "Circulating Water and Chlorination Systems."

b. Trip Dilution Water Pumps P-40A and P-40B per ONP-6.1, "Loss of Service Water."

c. Trip Dilution Water Pump P-40A only per ONP-6.1, "Loss of Service Water."

d. Lineup F-4B and F-4C, Traveling Water Screens, for continuous backwash per SOP-15, "Service Water System."

Given the following:

- The Plant is at full power
- At 0800 a loss of Y40, Preferred AC Bus, occurs due to a failure of ED-09, Inverter #4
- No other equipment is out of service

Based on these conditions, which one of the following identifies whether LCO 3.2.1, "Linear Heat Rate," is currently met and, if not, also identifies the minimum action(s) required to meet the LCO without performing any LCO 3.2.1 REQUIRED ACTIONS?

a. LCO 3.2.1 is met.
No action statements are required to be entered.

b. LCO 3.2.1 is not met.
Repair Inverter #4 and verify unloaded output voltage and frequency are within limits by 1500.

c. LCO 3.2.1 is not met.
Repair Inverter #4 and re-energize Y40 by 2200.

d. LCO 3.2.1 is not met.
Place Y40 on the Bypass Regulator by 0900.

Given the following conditions:

- The Plant is in MODE 3 with a Primary Coolant System (PCS) temperature of 532°F and pressure of 2060 psia
- The PCS is being diluted in preparation for critical approach tomorrow
- The Wide Range flux level plasma indication for Source/Wide Range NI-1/3 on Panel C-06 begins to act erratically and is determined to be unreliable
- The NI-1/3 analog count rates on Panel C-02 are indicating normal
- NI-1/3 indications on Panel C-02 channel check to NI-2/4 indications

Given these conditions, which one of the following identifies (1) if LCO 3.3.9, Neutron Flux Monitoring Channels, and LCO 3.3.7, Post Accident Monitoring Instrumentation, are satisfied and (2) identifies the minimum REQUIRED ACTIONS, if any, that are required?

a. (1) LCO 3.3.9 is met, LCO 3.3.7 is met.
   (2) No actions are required.

b. (1) LCO 3.3.9 is not met, LCO 3.3.7 is met.
   (2) Immediately stop dilution of the PCS and perform a SDM verification within 4 hours.

c. (1) LCO 3.3.9 is met, LCO 3.3.7 is not met.
   (2) Restore NI-1/3 plasma indication to OPERABLE status within 7 days.

d. (1) LCO 3.3.9 is met, LCO 3.3.7 is not met.
   (2) Restore NI-1/3 plasma indication to OPERABLE status within 30 days.

The Plant is in MODE 5 with the secondary system tagged out for a Turbine replacement and the following conditions:

- Both Primary Coolant System (PCS) loops are filled
- 'A' Shutdown Cooling Train is OPERABLE and in operation with 3000 gpm flow through the Reactor core
- PCS is solid and pressurized at 250 psia and 120°F
- Primary Coolant Pumps (PCPs), P-50B and P-50C, are operating
- P-8A, AFW Pump, is removed from service for repairs
- P-67B, LPSI Pump, is removed from service for repairs

For the above conditions, which one of the following events will cause LCO 3.4.7, "PCS Loops - MODE 5, Loops Filled," to be <u>not</u> met? (See excerpt from LCO 3.4.7 below)

LCO 3.4.7	One Shutdown Cooling (SDC) train shall be OPERABLE and in operation with ≥ 2810 gpm flow through the reactor core, and either: a. one additional SDC train shall be OPERABLE; or b. The secondary side water level of each Steam Generator (SG) shall be ≥ -84%

a T-58, Safety Injection Refueling Water Tank, level is lowered from 97% to 75%.

b. P-50B, Primary Coolant Pump, supply breaker trips due to overcurrent.

c. The Primary Coolant System is diluted by 50 ppm Boron.

d. P-8C, AFW Pump, motor-pump coupling separates during starting.

Federal law requires Operators to work within prescribed work hour control limits. If it is desired to grant waivers for an Operator to exceed these limits, who, as a minimum, must (1) determine that the waivers are necessary and (2) approve the waivers?

a. Shift Manager.
   Operations Manager.

b. Shift Manager.
   Plant Manager.

c. Assistant Operations Manager-Shift.
   Operations Manager.

d. Assistant Operations Manager-Shift.
   Plant Manager.

Given the following conditions:

- The Plant is in MODE 6
- GCL 11.2, "Refueling Handling Operation Shift Checklist," is in progress in preparation for refueling operations
- NI-1/2, Source Range Nuclear Instruments, are in operation
- NI-3, Wide Range Nuclear Instrument, is in operation
- NI-4, Wide Range Nuclear Instrument, is out of service
- The Audible Count Rate Drawer at Panel C-27 is de-energized

Based on these conditions, which one of the following describes the status of conditions being met to perform CORE ALTERATIONS and the reason?

a. Conditions are not met because both channels of Source Range and Wide Range Instruments are required to be in operation.

b. Conditions are met because both channels of Source Range Instruments are in operation.

c. Conditions are met because both channels of Source Range are in operation and at least one Wide Range channel is in operation.

d. Conditions are not met because the Audible Count Rate Drawer is de-energized.

Given the following conditions:

- The Plant is in MODE 5
- A severe thunderstorm warning is in effect
- Irradiated fuel moves are in progress in the Spent Fuel Pool
- Y30, Preferred AC Bus, is planned to be removed from service on the next shift

Which one of the following procedures will be used to perform a risk assessment for removing Y30 from service?

a. Admin 4.02, "Control of Equipment."

b. Admin 4.11, "Safety Function Determination Program."

c. GOP-14, "Shutdown Cooling Operations."

d. GOP-11, "Refueling Operations and Fuel Handling."

Given the following with the Plant in MODE 1:

- On October 1st at 0815, a Limiting Condition for Operation (LCO) that is applicable in MODES 1-3 is discovered to be not met
- All associated Conditions of the LCO are not met
- The Control Room team implements the actions required by LCO 3.0.3

Per LCO 3.0.3, if the LCO continues to be not met then the Plant must be placed, at a minimum, in ___(1)___ by ___(2)___ on October 2nd.

a. (1) MODE 5
   (2) 2115

b. (1) MODE 5
   (2) 2015

c. (1) MODE 4
   (2) 1515

d. (1) MODE 4
   (2) 1415

Given the following conditions:

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

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

a. Any on-shift SRO may authorize the rescue.

b. The Shift Manager may authorize the rescue.

c. Site Vice President permission is required to authorize the rescue.

d. The Radiation Protection Manager and Shift Manager are required to authorize the rescue.

Given the following with the Plant at full power:

- New fuel bundles are being placed in the Spent Fuel Pool (SFP) in preparation for a refueling outage
- EK-1309, "SPENT FUEL POOL HI/LO LEVEL," annunciates on Panel C-13
- The Control Room team observes SFP level lowering on the remote monitor
- An Auxiliary Operator reports that Nitrogen pressure to the SFP South Tilt Pit Gate is reading abnormally low

Which one of the following describes the procedure that the Control Room team will implement to mitigate this event?

a. ONP-23.3, "Loss of Refueling Water Accident."

b. ONP-23.4, "Loss of Spent Fuel Pool Cooling."

c. SOP-27, "Fuel Pool System," Attachment 2, "Addition of Water to the Spent Fuel Pool."

d. ONP-11.2, "Fuel Handling Accident."

Given the following with the Plant initially at full power:

- A Steam Generator (S/G) Code Safety Valve on the 'A' S/G begins to leak
- A Plant shutdown is commenced per ONP-9, "Excessive Load"
- Shortly after the Plant reaches MODE 3, a tube leak in the 'A' S/G is detected

Which one of the following is the lowest Primary to Secondary leak rate in the 'A' S/G that requires the declaration of an Unusual Event for these conditions per the Emergency Implementing Procedures?

a. 0.3 gpm.

b. 1.0 gpm.

c. 12 gpm.

d. 26 gpm.