

QUESTION # 1

The following conditions exist:

- Reactor has tripped following a low feedwater flow condition.
- All systems have operated as designed following the trip.
- The crew has transitioned to EMG ES-02, REACTOR TRIP RESPONSE.

Which condition would require that you close the Main Steam Isolation Valves (MSIVs)?

- A. Main Condenser is unavailable due to a loss of vacuum.
- B. RCS Cold Leg Temperatures are stable at 562 °F using ARVs.
- C. AFW flow has been reduced to below the minimum allowable
- D. A steam leak is apparent on the secondary side of the plant.

QUESTION # 2

The following plant conditions exist:

- The reactor was tripped due to an RCP seal failure.
- Hot Leg temperature is 420°F
- Cold Leg temperature is 390°F
- Pressurizer pressure is 450 psig
- Natural circulation is in progress
- Containment pressure is 1 psig
- PRT pressure is 55 psig

If a Pressurizer Safety Valve is found open at 10%, what would the temperature indicate on the tailpipe?

- A. 216 °F
- B. 288 °F
- C. 302 °F
- D. 458 °F

QUESTION # 3

The Wolf Creek operating crew has taken all actions required for a small break LOCA. The crew has transitioned to EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT and is evaluating whether ECCS flow should be reduced.

Which of the following is used to determine if adequate core cooling exists?

- A. ECCS Injection flow rate
- B. RCS Narrow Range temperature
- C. RCS Subcooling
- D. RVLIS indication

QUESTION # 4

The following plant conditions exist:

- A Loss of Coolant Accident is in progress with all ECCS pumps in operation.
- The RWST LEV LOLO 1 AUTO XFR alarm has actuated.
- The first 10 steps of EMG ES-12, TRANSFER TO COLD LEG RECIRCULATION, have been completed.

The "B" RHR pump has just tripped.

Which of the following actions should you take?

- A. Stop the "B" Train SI pump to prevent runout of the "A" RHR pump.
- B. Transition to EMG C-11, LOSS OF EMERGENCY COOLANT RECIRCULATION.
- C. Closely monitor system parameters to ensure NPSH is maintained on running pumps.
- D. Close EJ HV-8809A, RHR to Accumulator Injection Loops 1 & 2 valve, to reduce flow.

QUESTION # 5

The plant is in the process of starting up following a refueling outage. The "D" RCP was started with the plant in Mode 5 at 195 °F.

10 seconds after starting the pump you note the current is still high and there is no flow indicated.

This indicates:

- A. Locked Rotor
- B. Pressurizer is solid
- C. Pump Runout
- D. Low Flow Cavitation

QUESTION # 6

The plant has tripped from 100% due to a LOCA and subsequent Loss of Offsite Power.

Operators are working through procedure EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT to address the malfunction.

How will the operations staff address restoring Instrument Air?

- A. Locally restore cooling water to the air compressors from the Aux Building and available air compressors will be started from the control room.
- B. Locally restore cooling water to the air compressors from the Turbine Building and available air compressors will be started locally at the compressor.
- C. Control room operators will manually restore cooling water to air compressors and then available air compressors will be started from the control room.
- D. Locally restore cooling water to the air compressors from the Turbine Building and available air compressors will be started from the control room.

QUESTION # 7

The following plant conditions exist:

- Unit is in Mode 4.
- RCS temperature is 250°F.
- Direction is to maintain RCS pressure between 325 and 350 psig.
- The “A” RHR pump failed causing a loss of RHR and the “B” pump has been placed in service in accordance with OFN EJ-015, LOSS OF RHR COOLING.
- PRT level has started to increase.

You note that RCS pressure indicates 450 psig and Pressurizer level has started to decrease in an uncontrolled manner.

What is causing the loss of inventory and how will it be isolated?

- A. One PZR PORV has opened on high pressure and is now leaking, but will be isolated by closing the associated block valve.
- B. The RHR suction relief valve on the “A” loop has opened due to high pressure and will be isolated by reducing RCS pressure.
- C. The letdown relief valve has lifted due to high pressure and failed to reseal, but will be isolated by initiating a CISA.
- D. The RHR discharge relief valve on the “B” loop has opened due to high pressure and will be isolated by stopping “B” RHR pump.

QUESTION # 8

The plant is at 100% power.

- Annunciator 00-053D, CCW SRG TK B LEV HILO has just come into alarm.
- "B" Component Cooling Water (CCW) train is running supplying the service loop.
- The Operators now observe the "B" CCW surge tank decreasing slowly with Normal Makeup in service.

What action is needed first from OFN EG-004, CCW SYSTEM MALFUNCTIONS, while attempting to identify and isolate the leak?

- A. Align ESW makeup to the CCW surge tank, then direct personnel to locate the leak.
- B. Start a CCW pump in the alternate train, then shift service loop to that train.
- C. Trip the reactor, then isolate CCW service loop supply and return valves.
- D. Isolate CCW to the Spent Fuel Pool Cooling Heat Exchanger.

QUESTION # 9

The following plant conditions exist:

- 50% Reactor power
- Pressurizer Pressure control is in automatic
- One set of Backup heaters are ON
- Actual Pressurizer Pressure is 2250 psia

The Pressurizer Pressure Master Controller malfunctions and the SETPOINT drifts to 2100 psia over a 10-minute period.

Which ONE of the following describes the INITIAL automatic responses of the control elements of the Pressurizer Pressure Control System as a result of this failure?

- A. PORV PCV-456A opens; spray valves throttle open, variable heaters go to minimum output.
- B. PORV PCV-455A opens; spray valves throttle open, variable heaters go to minimum output.
- C. Spray valves throttle open and variable heaters go to minimum output.
- D. Spray valves throttle closed and variable heaters go to maximum output.

QUESTION # 10

The following plant conditions exist:

- Reactor is stable at 6% power with a plant startup in progress.
- All systems are properly aligned for the current plant conditions.

Intermediate range channel N-35 has just failed causing an Intermediate Range High Flux trip, but no trip occurred. The plant remains stable.

Which of the following actions should the Reactor Operator take?

- A. Manually trip the reactor and if that does not work, drive rods in to take the reactor subcritical.
- B. Manually trip the reactor and if that does not work, enter EMG FR-S1, Response to Nuclear Power Generation ATWS.
- C. Maintain stable plant conditions and remove the failed Intermediate Range channel from service.
- D. Commence a normal reactor shutdown using GEN 00-005, Minimum Load to Hot Standby.

QUESTION # 11

The current plant conditions exist:

- Unit power has been reduced for maintenance on the 5B feedwater heater.
- A leak has developed on the 2B feedwater heater.
- The 2B heater will have to be opened for maintenance.

What is the maximum unit power while this maintenance is in progress?
(OFN AF-025, Attachment A, page 3 of 5, provided)

- A. 48%
- B. 62%
- C. 65%
- D. 91%

QUESTION # 12

The following plant conditions exist:

- Reactor trip from 10% of full power due to loss of Off-site power.
- Natural circulation is being established in accordance with EMG ES-04, NATURAL CIRCULATION COOLDOWN.
- RCS pressure 1880 psig
- Tavg 560°F
- Thot 580°F
- Tcold 540°F
- Core Exit TC 575°F

Using the indications that most accurately reflect core conditions, calculate subcooling of the reactor.

- A. 48°F
- B. 53°F
- C. 68°F
- D. 88°F

QUESTION #13

Pressurizer level controller BB LS-459D is selected to the BB L459/460 position. An I&C Surveillance Test has de-energized BB LT-461 and testing is in progress. Vital Instrument bus NN02 now fails.

What actions are required to be taken to control pressurizer level?

- A. Select the alternate channel BB LS-459D.
- B. Go to manual on PZR level controller, BB LK-459.
- C. Take MANUAL control of BG FIC-121 and restore normal letdown.
- D. Reduce charging flow to seals only and establish excess letdown.

QUESTION # 14

Diesel Generator NE01 is running unloaded when 125 VDC Bus NK01 becomes de-energized. How will this affect the Emergency Diesel Generator (EDG)?

- A. The EDG will trip due to the loss of DC control power.
- B. The EDG will overspeed as it tries to increase voltage to no load.
- C. The EDG will continue to run but output voltage will indicate zero.
- D. The EDG will stop as the fuel racks close due to loss of control power.

QUESTION # 15

The plant was at 100% when a trip occurred following an earthquake that exceeded the Safe Shutdown Earthquake (SSE) analysis. All systems responded normally and the only major damage to the plant was a rupture in the Condensate Storage Tank (CST). The transient progresses after the trip until a Low Suction Pressure (LSP) signal is received from ESFAS, indicating an imminent loss of suction to the Aux Feedwater (AFW) System.

What are the automatic actions of the Essential Service Water (ESW) system in response to the LSP signal?

- A. Starts both ESW pumps and isolates all Service Water crossties, opens ESW to AFW supply valves and closes CST to AFW supply valves.
- B. Starts only one ESW pump if only an AFAS-M signal has actuated, opens ESW to AFW supply valves and closes CST to AFW supply valves.
- C. Starts only one ESW pump, opens ESW to AFW supply valves and closes CST to AFW supply valves.
- D. Starts both ESW pumps, opens ESW to AFW supply valves and closes CST to AFW supply valves.

QUESTION # 16

Which of the following locations is the primary concern when addressing a LOCA Outside of Containment.

- A. The RHR Hot Leg Recirc line.
- B. The CVCS Low Pressure Letdown Line.
- C. The Loop Hot Leg to RHR pump suction lines.
- D. The SI pump discharge to the Hot Leg Injection lines.

QUESTION # 17

A Loss of Coolant Accident (LOCA) has occurred and the plant has addressed the problem in EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT, and has now transitioned to EMG C-11, LOSS OF EMERGENCY COOLANT RECIRCULATION, due to a loss of both trains of cold leg recirculation.

Containment pressure is currently 20 psig and increasing slowly.

The crew is at the step to initiate a cooldown to Cold Shutdown conditions.

What method will the crew use to establish this cooldown?

- A. Reduce RCS pressure using the Power Operated Relief Valves (PORVs).
- B. Dump steam using the Atmospheric Relief Valves (ARVs).
- C. Dump steam using the condenser steam dumps.
- D. Feed Steam Generators at maximum rate using turbine driven AFW pump.

QUESTION # 18

Unit operators then transitioned to EMG FR-H1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.

The following conditions exist:

- Both Main Feedwater Pumps (MFPs) are TRIPPED
- Auxiliary Feedwater Pumps are NOT AVAILABLE
- Reactor Coolant Pumps are OFF
- Offsite Power has remained available

A Feedwater Isolation Signal (FWIS) was actuated on Steam Generator LO-LO level and all components repositioned as expected. The FWIS has now been jumpered out to the Feedwater Isolation Valves in preparation to re-start "B" Main Feedwater Pump.

Which of the following actions are completed to enable starting "B" Main Feedwater Pump?

- A. Close all Reactor Trip breakers.
- B. Place both MFP FWIS Trip Block switch in Block position.
- C. Depress both SIS reset pushbuttons to reset the active SIS signal.
- D. Depress both FWIS reset pushbuttons to reset the FWIS signal.

QUESTION # 19

The following plant conditions exist:

- Beginning of life (BOL)
- Reactor Power is at 100% with rod control in AUTOMATIC
- Control Bank "D" is at 218 steps
- A failure in rod control causes to step OUT continuously

Which rod control interlock is expected to be the FIRST to stop outward rod movement assuming NO operator action?

- A. Power Range Rod Stop (C-2)
- B. Overtemperature ΔT Rod Stop (C-3)
- C. Overpower ΔT Rod Stop (C-4)
- D. Control Bank "D" Position Rod Stop (C-11)

QUESTION # 20

A Reactor Trip with a Loss of Secondary Heat Sink has occurred.

- Two rods are stuck out on the trip
- Reactor power is decreasing

Upon Transition to EMG ES-02, REACTOR TRIP RESPONSE, a Red Path is identified for EMG FR-H1, LOSS OF SECONDARY HEAT SINK.

What is the procedural priority on how to deal with the two stuck rods in this situation?

- A. Enter OFN BG-009, EMERGENCY BORATION and perform in parallel with EMG FR-H1.
- B. Immediately transition to EMG FR-H1 since the actions contained in it have the higher priority.
- C. Immediately transition to EMG FR-S1, RESPONSE TO NUCLEAR POWER GENERATION / ATWT to establish required shutdown margin.
- D. Enter EMG FR-H1 and perform EMG ES-02 in parallel to deal with the two stuck rods.

QUESTION # 21

The following plant conditions exist:

Plant is in Mode 6, Reactor vessel head removed, control rod unlatching in progress.

Which of the following Radiation Monitors would alert control room personnel to a loss of refueling pool level if it was the only alarm to actuate? (Assume all monitors are operable.)

- A. SD RE-41, 2047' CNTMT BLDG., RX. MANIPULATOR BRIDGE CRANE AREA
- B. SD RE-39, 2026' CNTMT BLDG., REACTOR SEAL TABLE AREA
- C. GT RE-60, CNTMT HIGH RANGE AREA, 2047' CNT, 180 DEGREES FROM NORTH
- D. GT RE-22, CNTMT PURGE EXHAUST 2047' AUX. BLDG., BY THE PERSONNEL ENTRY HATCH

QUESTION # 22

The following plant conditions exist:

- Unit shutdown has started from 100% due to a S/G tube leak greater than 150 gpd.
- Charging flow prior to the shutdown was 132 gpm.
- Letdown flow prior to the shutdown was 120 gpm.
- Seal injection and return flows were at design flow rates.
- Pressurizer level is being maintained at program level.
- GE RE-92, Condenser Air Removal is showing the corresponding activity.

Conditions after the shutdown has commenced:

- Unit power 35% and decreasing due to the controlled shutdown.
- Charging flow is 140 gpm.
- Letdown flow is 120 gpm.
- Seal injection and return flows remain unchanged.
- Pressurizer level is being maintained at program level.
- GE RE-92 activity level is constant.

What action should you take based on the above indications?

- A. Continue the unit shutdown as planned.
- B. Increase the rate of load decrease due to the increased S/G leakrate.
- C. Stop the load decrease and perform STS BB-004, RCS Water Inventory Balance.
- D. Trip the Reactor and enter EMG E-0, Reactor Trip of Safety Injection.

QUESTION # 23

Annunciator 00-116B, COND A VAC LO, has just come into alarm.

Based on OFN AF-025, UNIT LIMITATIONS, Figure 2 (provided), which of the following conditions would require that you manually trip the turbine?

- A. LP Turbine A exhaust pressure is 5 inches HgA for greater than 15 minutes and turbine power is 90%.
- B. LP Turbine A exhaust pressure is 5 inches HgA and decreasing slowly and turbine power is 25%.
- C. LP Turbine B exhaust pressure is 5 inches HgA and increasing slowly and turbine power is 70%.
- D. LP Turbine C exhaust pressure is 5 inches HgA for greater than 15 minutes and turbine power is 50%.

QUESTION # 24

You have entered OFN SP-010, Accidental Radioactive Release, due to a high radiation alarm.

Which of the following radiation monitors in alarm would require that you "Direct Chemistry to perform dose calculations to determine if 10CFR20 release limits have been exceeded"?

- A. BM RE-025, Steam Generator Blowdown
- B. GE RE-92, Condenser Air Removal
- C. GG RE-27, Fuel Bldg. Exhaust
- D. GH RE-10, Radwaste Building

QUESTION # 25

The following plant conditions exist:

- Unit is at 100% power in a steady state condition.
- All systems aligned properly.
- Annunciator 00-134E, MN XFMR TROUBLE has come into alarm.
- KC-008, Control Room fire protection panel, has alarmed

The Nuclear Station Operator (NSO) dispatched to investigate reports that the fire protection water deluge system for the "B" Main Transformer has actuated. The NSO reports apparent damage and the fire is still in progress.

Which of the following actions should you now take?

- A. Have the NSO isolate control power to trip the transformer, preventing further damage.
- B. Trip the reactor and turbine and enter EMG E-0, Reactor Trip or Safety Injection.
- C. Commence a rapid unit shutdown using OFN MA-038 Rapid Plant Shutdown.
- D. Start both EDGs in anticipation of a loss of all AC power when the transformer trips.

QUESTION # 26

If RCS gross specific activity exceeds the limits established by Technical Specification 3.4.16, "RCS Specific Activity", the plant must be placed in Mode 3 with Tavg less than 500 degrees F within 6 hours.

Which of the following is the reason for this cooldown to less than 500 degrees F?

- A. To maintain doses to the public within limits following a steam generator tube rupture.
- B. To minimize containment hydrogen production in the event of a LOCA.
- C. To limit containment radiation levels in the event of a LOCA.
- D. To reduce the radiological consequences of a faulted steam generator.

QUESTION # 27

A steam line break has occurred in the plant. Given the following plant conditions at the transition from EMG E-2, FAULTED STEAM GENERATOR ISOLATION:

- Pressurizer pressure – 1800 psig and stable
- Pressurizer level – 24%
- RCS temperature (Tave) – 538 °F
- Containment pressure – 0.1 psig
- Steam Generator levels: “A” - 32%NR; “B” – 23%NR; “C” 30%NR; “D” 30% NR
- Steam Generator pressures: “A” – 970 psig; “B” 885 psig; “C” 960 psig; “D” 960 psig and ALL stable
- The leak has been isolated
- ALL ECCS pumps are running in the injection mode

The control room staff has entered EMG ES-03, SI TERMINATION from EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT.

What is the sequence for stopping the ECCS pumps?

- A. Stop all running charging pumps, SI pumps and RHR pumps
- B. Stop one charging pump, both SI pumps, and both RHR pumps
- C. Stop both RHR pumps and one charging pump, but keep both SI pumps running
- D. Stop both RHR pumps, but keep all charging pumps and both SI pumps running

QUESTION # 28

The following plant conditions exist:

- Unit is in Mode 5
- 4160 volt bus SL41 was de-energized momentarily and has been re-energized.
- Service Water (SW) Pumps "A" and "C" were running when the bus was de-energized.

What action is required to restore the normal service water alignment?

- A. Dispatch an operator to reset the lockout for "A" SW pump and then restart pump from the control board.
- B. Dispatch an operator to reset the lockout for "C" SW pump and then restart pump from the control board.
- C. Re-start the "A" SW pump from the control board.
- D. Re-start the "C" SW pump from the control board.

QUESTION # 29

The following plant conditions exist:

- Reactor power is currently 10%
- "A" Reactor Coolant Pump (RCP) motor readings are as follows:

Time	<u>1700</u>	<u>1800</u>	<u>1900</u>
Shaft vibration	5 mils	7 mils	10 mils
Frame vibration	3.0 mils	3.1 mils	3.4 mils
Upper motor bearing	175°F	180°F	190°F
Stator temperature	195°F	220°F	250°F

What action(s) are required at 1900 based on the above parameters?

- A. Immediately trip the reactor and trip RCP "A" due to upper motor bearing temperature.
- B. Reduce reactor power to < 5%, and then trip RCP "A" due to excessive stator temperature.
- C. A controlled shutdown of RCP "A" due to excessive motor frame vibration.
- D. No action is required at this time, continue monitoring RCP "A".

QUESTION # 30

While in Mode 3, the operator is restoring letdown following maintenance, with the following conditions present:

- Pressurizer level channels LT-459 and LT-460 selected for control.
- Letdown isolation valves BG LCV-459 and 460 are **closed**.
- Letdown orifice isolation valves BG HV-8149 A/B/C **closed**.
- Pressurizer level channels indicate as follows:

BB LI-459	20%
BB LI-460	18%
BB LI-461	19%

The Operator depresses the OPEN pushbutton for BG HV-8149A and it does not open, why?

- A. Interlock from LCV-459 and 460 are preventing it from opening.
- B. No motive force to open the valve without upstream pressure.
- C. Interlock from level channel LT-460 is preventing it from opening.
- D. Hydraulic lock between the orifice isolation and letdown isolation valves.

QUESTION # 31

Given the following:

- Containment pressure 30 psig
- RWST Level 30%
- All Automatic actions have occurred as required
- One Containment Spray Pump running

Using the table in Step 12 (provided) from EMG C-11, "Loss of Emergency Coolant Recirculation," which actions are needed?

- A. Secure four (4) containment fan coolers and secure NO containment spray pumps.
- B. Secure two (2) containment fan coolers and start (1) containment spray pump.
- C. Secure two (2) containment fan coolers and secure one (1) containment spray pump.
- D. Secure NO containment fan coolers and secure one (1) containment spray pump.

QUESTION # 32

The following has occurred at the plant:

- LOCA in progress resulting in a Safety Injection on Containment High Pressure
- All ECCS equipment and loads have operated and sequenced on properly
- Safety Injection signal has just been reset in accordance with step 4 of EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT

What will be the status of ECCS components in the event the Startup Transformer is NOW lost?

- A. NE01 will continue to run unloaded, NE02 will re-energize NB02, and the Shutdown Sequencer will actuate all "B" train ECCS components
- B. NE01 will continue to run unloaded, NE02 will re-energize NB02, and the crew will have to manually restart Train B ECCS components as necessary.
- C. NE01 will NOW automatically start and the Shutdown Sequencer will actuate all "A" train ECCS components.
- D. NE02 will NOW automatically start and the Shutdown Sequencer will actuate all "B" train ECCS components.

QUESTION # 33

During normal full power operation, what is the condition of the Safety Injection Accumulator Discharge Isolation valves?

- A. Valves are fully closed with power removed.
- B. Valves are fully closed with power available.
- C. Valves are fully open with power available.
- D. Valves are fully open with power removed.

QUESTION # 34

Given the following:

- The plant was operating at 100% power when the turbine tripped.
- The reactor failed to automatically trip, but was manually tripped.
- All other systems operated as expected.
- The Emergency procedures have been performed and the plant has been stabilized.
- It was noted that on the transient RCS pressure reached 2370 psig.

Which one of the following represents the expected status of the Pressurizer Relief Tank (PRT) and the actions that must be taken in accordance with SYS BB-202, PRESSURIZER RELIEF TANK OPERATIONS, to restore it to normal limits?

- A. PRT Temperature – 140 °F, Level – 89%, and Pressure – 12 psig
Reduce level and recirculate water through the RCDT heat exchanger.
- B. PRT Temperature – 100 °F, Level – 15%, and Pressure – 14 psig
Open the vent to depressurize and add water to cool the tank.
- C. PRT Temperature – 280 °F, Level – 82%, and Pressure – 34 psig
Open the vent to depressurize and add water to cool the tank.
- D. PRT Temperature – 240 °F, Level – 95%, and Pressure – 5 psig
Reduce level and recirculate water through the RCDT heat exchanger.

QUESTION # 35

Which of the following lists the control interlock signals that will cause Radwaste Component Cooling Water Isolation Valves EG HV-70A and 70B to automatically close?

- A. SIS, low-low level in CCW Train "A" surge tank, or High flow
- B. SIS, low-low level in CCW Train "B" surge tank, or High flow
- C. CISA, low-low level in CCW Train "B" surge tank, or High flow
- D. CISA, low-low level in CCW Train "A" surge tank, or Low flow

QUESTION # 36

Given the following:

- BB PT-456, PZR Pressure, has failed High
- Bistables have been tripped per OFN SB-008, INSTRUMENT MALFUNCTIONS

Which one of the following automatic actions will occur if power is lost to NN03?

- A. A safety injection signal is initiated by the LOW PZR pressure bistables.
- B. The OP delta T turbine runback is bypassed.
- C. A reactor trip is initiated by the OP delta T bistables.
- D. A HIGH PZR level reactor trip actuates if letdown is NOT restored.

QUESTION # 37

Which of the following reactor trip signals provides protection against a Departure from Nucleate Boiling (DNB) event only as long as RCS pressure is between the high and low pressure reactor trip setpoints?

- A. Overtemperature ΔT
- B. Overpower ΔT
- C. Power range neutron flux high setpoint trip
- D. Power range neutron flux high negative trip

QUESTION # 38

The unit is in MODE 3 preparing to withdraw rods to enter MODE 2.

If the control power fuses blow on a source range channel, the source range high flux trip will:

- A. Not actuate; the trip will not be able to be bypassed at the source range drawer.
- B. Actuate; the trip will be able to be bypassed at the source range drawer.
- C. Actuate; the trip will not be able to be bypassed at the source range drawer.
- D. Not actuate; the trip will be able to be bypassed at the source range drawer.

QUESTION # 39

You have entered EMG E-1, following a Loss of Coolant Accident.

- Safety Injection has been reset and off-site power has been lost.
- Both Emergency Diesel Generators have assumed their load.

How will the above actions affect the automatic switch over from the RWST to the Containment Recirculation Sump suction?

- A. The automatic signal will still work unless it has been manually reset.
- B. The automatic signal will not work and switch over will be done manually.
- C. The automatic signal should be reset to prevent inadvertent operation.
- D. SI will have to be initiated and reset to restore the automatic signal.

QUESTION # 40

Given the following plant conditions:

- The plant is at 100% power.
- Two Containment Cooling Fan Coolers are operating in fast speed.
- Two Containment Cooling Fan Coolers are operating in slow speed.
- A Loss of Offsite Power occurs.
- Emergency Diesels Generators have started and are supplying the ESF buses.
- A Safety Injection signal is received.

What is the response of the Containment Fan Cooling units?

- A. All fans remain running in speed originally selected.
- B. All fans started in slow speed by the Sequencer.
- C. All fans stop and must be manually started.
- D. All fans shifted to fast speed by the Sequencer.

QUESTION # 41

The plant is being restarted following a refueling outage.

Current plant conditions are as follows:

- Mode 3
- Normal Operating Pressure of 2250 psia
- Normal Operating Temperature of 557°F
- Containment Cooling Fans "A" and "B" are running in SLOW speed
- Containment Temperature is currently at 102°F

How many cooling fans inside containment should be running at this time?

- A. Four containment coolers and four hydrogen mixing fans running in slow speed.
- B. Four containment coolers running in fast speed and three CRDM cooling fans running.
- C. Four containment coolers and four hydrogen mixing fans running in fast speed.
- D. Three containment coolers and four hydrogen mixing fans running in fast speed.

QUESTION # 42

The plant has tripped from 100% from an apparent Main Steam Line Break.

EMG E-0, REACTOR TRIP OR SAFETY INJECTION has been entered and a Safety Injection has been manually actuated due to lowering Reactor Coolant System pressure. No other manual actions have been performed at this time.

You have been given Attachment F of EMG E-0 and have completed steps F1 through F10 satisfactorily. At step F11 you discover containment pressure is currently reading 32 psig the following annunciators indicate as shown:

- 00-059A, CSAS – NOT LIT
- 00-059B, CISB – NOT LIT

What action should be performed in accordance with the procedure?

- A. Immediately actuate CSAS and CISB
- B. Stop all RCPs then manually actuate CSAS
- C. Manually isolate CISA and CISB valves
- D. Manually align and/or start CSAS components

QUESTION # 43

A Reactor Trip and Safety Injection has occurred from 100% power.

The following conditions exist:

	<u>S/G Levels</u>	<u>S/G Pressures</u>
A	27% NR	1050 psig
B	28% NR	1040 psig
C	19% NR	1040 psig
D	17% NR	1055 psig

- All Main Steam Isolation Valves (MSIVs) are closed.
- RCS temperature $\cong 555^{\circ}\text{F}$ and slowly increasing.
- All systems have responded normally during the transient.

The Balance of Plant Operator notices some steam flow exists on "B" & "C" steam lines.

Which of the following explains the reason for the steam flow on the "B" & "C" steam lines?

- A. Steam Dumps are cycling open.
- B. The RCS temperature T_{cold} Loops "B" & "C" are lower than the other RCS Loops.
- C. The Turbine Driven Auxiliary Feedwater Pump is running and supplying all S/Gs.
- D. The Atmospheric Relief Valves for "B" & "C" S/Gs are cycling open due to normal operation.

QUESTION # 44

The following plant conditions exist:

- 60% reactor power
- All 3 condensate pumps running
- All controls are in automatic
- Condensate pump 'B' trips

What automatic action occurs due to 'B' condensate pump tripping?

- A. Both Main Feedwater Pumps will speed up to restore feed flow.
- B. Both Main Feedwater Pumps will trip on Low Suction pressure.
- C. Condensate Polishing Demineralizer Bypass Valve opens on High D/P.
- D. Feedwater Regulating Valves will close down to maintain required pump D/P.

QUESTION # 45

The plant is at 100% power when the "B" S/G controlling steam flow channel FAILS TO ZERO.

ASSUMING NO operator action and all controllers selected in automatic, which of the following will be the immediate plant system(s) response to this failure?

- A. "B" S/G level increases, Main Feedwater Pump speed increases.
- B. "B" S/G level increases, Main Feedwater Pump speed decreases.
- C. "B" S/G level decreases, Main Feedwater Pump speed increases.
- D. "B" S/G level decreases, Main Feedwater Pump speed decreases.

QUESTION # 46

A spurious reactor trip with no Safety Injection has just occurred from 30% power. The following conditions exist:

- Steam Generator "A" is 60% NR
- Steam Generator "B" is 44% NR
- Steam Generator "C" is 75% NR
- Steam Generator "D" is 50% NR
- Tavg has stabilized at 560 °F

What is the expected status of the Main Feedwater Regulating Valves and the Main Feedwater Regulating Bypass Valves?

	<u>Main FW Reg Valves</u>	<u>Main FW Reg Bypass</u>
A.	CLOSED	OPEN
B.	OPEN	CLOSED
C.	CLOSED	CLOSED
D.	OPEN	OPEN

QUESTION # 47

A reactor trip occurs from 100% power due to a loss of main feedwater.

The following conditions exist:

- All Reactor Coolant Pumps are running
- Plant is at 551°F
- Main Steam Isolation Valves and ARVs are closed
- The turbine driven Auxiliary Feedwater pump is in service feeding all 4 Steam Generators
- Both motor driven Auxiliary Feedwater pumps tripped upon startup and remain unavailable.
- The BOP operator lowers turbine driven Auxiliary Feedwater pump speed.

What effect will this have on the unit?

- A. Pressurizer level rises due to decreased primary to secondary heat transfer.
- B. Pressurizer level rises due to increased primary to secondary heat transfer.
- C. Steam Generator levels begin decreasing due to the decrease in steam flow.
- D. Steam Generator levels begin decreasing due to the decrease in feed flow.

QUESTION # 48

Given the following conditions:

- The plant is at steady state 100% power.
- Thunderstorms are currently moving through the Wolf Creek area.
- 13.8 KV bus PA02 trips on a bus fault due to a lightening strike.

Which of the following plant equipment is affected by this power loss?

- A. Reactor Coolant Pump "B", Circulating Water Pump "B"
- B. Circulating Water Pump "C", Service Water Pump "A"
- C. Reactor Coolant Pump "A", Service Water Pump "C"
- D. Essential Service Water Pump "B", Service Water Pump "B"

QUESTION # 49

Which of the following actions would be required to connect Swing Charger NK 25, powered from PG19, to Vital DC Bus NK01?

- A. Obtain transfer key from Security, NG0109 breaker to NK 25 must be open.
- B. Obtain transfer key from Security, NG0411 breaker to NK 25 must be open.
- C. Obtain transfer key from Shift Manager, NG0109 breaker to NK 25 must be open.
- D. Obtain transfer key from Shift Manager, NG0411 breaker to NK 25 must be open.

QUESTION # 50

The Turbine Building Watch, while performing his rounds, finds the following conditions at the "B" Emergency Diesel Generator (EDG):

- Starting Air Receiver Tank, TKJ02C, indicates 620 psig
- Starting Air Receiver Tank. TKJ02D, indicates 260 psig

What is the condition of the "B" Emergency Diesel Generator (EDG) and why?

- A. Inoperable, because one Starting Air Receiver Tank is < 300 psig.
- B. Operable, because one Starting Air Receiver Tanks is > 610 psig.
- C. Inoperable, because the average pressure between the two Starting Air Receiver Tanks is < 450 psig.
- D. Operable, because the Starting Air Compressors are capable of increasing the tank to > 610 psig.

QUESTION # 51

The plant has tripped due to a Loss of Offsite Power.

The "B" Emergency Diesel Generator (EDG) is running supplying its emergency loads, when alarm window 00-090A, DG FUEL TK B LEV LOLO, comes into alarm and Emergency Fuel Oil Transfer Pump "B" trips.

If the "B" EDG Day Tank was at 90% prior to the trip, approximately how long will the "B" EDG remain running without operator action?

- A. Trips immediately
- B. 1 hour
- C. 4 hours
- D. 7 days

QUESTION # 52

While performing a containment purge, GT RE-22, Containment Purge Exhaust Monitor, high level alarms, causing a Containment Purge Isolation Signal. When you check the monitor reading on a NPIS time trend, you see that an instantaneous large increase in the monitor reading had occurred followed by an immediate return to previous levels due to an electronic spike.

What actions are taken concerning the Containment Purge?

- A. Chemistry must sample and recalculate the release permit before restarting the purge.
- B. Terminate the purge permit and refer to OFN SP-010, Accidental Radioactive Release.
- C. The purge may be re-started on the current permit without re-sampling the waste gas stream.
- D. Declare GT RE-22 inoperable and restart the release after removing it from service.

QUESTION # 53

The following plant conditions exist:

- "B" CCP is running providing charging and RCP seal injection.
- "B" ESW pump is out of service in a 36 hour Tech Spec Equipment Outage.
- A loss of transformer XNB01 occurs, "A" ESW pump starts and then trips on high current.
- The pressure transient causes a rupture in the Service Water header at the Circ Water Screenhouse resulting in a loss of all service water.

What actions would be taken to compensate for the loss of cooling to "B" CCP?

- A. Align fire protection system to "B" CCP if CCW temperatures increase.
- B. No actions required, CCW would continue to cool the "B" CCP.
- C. Secure "B" CCP and start the NCP, which is cooled by the chilled water system
- D. All charging pumps will have to be secured.

QUESTION # 54

With the unit at 100% power a loss of Instrument Air pressure occurs.

As Instrument Air pressure decreases which of the following is expected to happen?

- A. At pressure of 85 - 90 psig, Pressurizer spray valves fail closed.
- B. At pressure of 80 - 85 psig, Condenser steam dump valves fail closed.
- C. At pressure of 75 - 80 psig, the main feed regulating valves fail closed.
- D. At pressure of 65 - 70 psig, Letdown orifice isolation valves fail closed.

QUESTION # 55

A reactor trip and a safety injection signal (SIS) from low RCS pressure occurs at 100% power. After the required time delay, safety injection is reset in the Control Room and RHR pumps are placed in STANDBY. Five (5) minutes later, a steam line break occurs causing containment pressure to INCREASE to 25 psig and main steamline pressure to DECREASE to 600 psig.

Which one of the following describes the actions that now occur in response to the steam line break?

	<u>MSIVs Isolate</u>	<u>CIS-A Actuates</u>	<u>Contmt Spray Pumps Start</u>	<u>RHR Pumps Start</u>
A.	NO	NO	YES	YES
B.	YES	YES	NO	YES
C.	NO	YES	YES	YES
D.	YES	NO	NO	NO

QUESTION # 56

The following plant conditions exist:

- Unit is at 50% power and stable.
- All systems are properly aligned for the current plant conditions.

One Main Turbine Control valve fails closed causing an instantaneous 10% power decrease. Automatic rod control inserts control rods due to Tave/Tref mismatch.

How will this malfunction affect the pressurizer if no operator action is taken?

- A. Pressurizer pressure will be limited by the operation of the PORVs.
- B. Pressurizer pressure will be limited by the operation of the rod control system.
- C. Pressurizer level will decrease and return to normal after charging increases.
- D. Pressurizer level will increase and return to initial level after the plant stabilizes.

QUESTION # 57

The plant is operating at full power when a RCS Loop 1 wide range T_{COLD} Resistance Temperature Detector (RTD) fails HIGH.

What effect will this event have on indicated subcooling on the "B" Train Core Subcooling Monitor?

- A. Large decrease since the Subcooling Monitor uses the highest reading wide range RTD or core exit thermocouple.
- B. Small decrease since the Subcooling Monitor uses the average of the wide range RTD's and the core exit thermocouples.
- C. No effect since only core exit thermocouples provide input.
- D. No effect since the Subcooling Monitor is bypassed with the reactor trip breakers closed.

QUESTION # 58

Pressurizer (PZR) level transmitter, BB LT-459 is selected for control.

What will be the plant response if BB LT-459 develops a slow leak on its reference leg?

- A. PZR level decreasing; VCT level increasing
- B. PZR level decreasing; VCT level decreasing
- C. PZR level increasing; VCT level decreasing
- D. PZR level increasing; VCT level increasing

QUESTION # 59

Rod control has been selected to the Shutdown Bank A position to realign a rod in this bank using OFN SF-011, REALIGNMENT OF DROPPED, MISALIGNED ROD(S) AND ROD CONTROL MALFUNCTIONS.

How will moving the misaligned rod affect the Rod Position Indication System?

- A. The Individual Rod Position Indication system will go to half accuracy.
- B. The Step Counter will have to be reset after rod movement is complete.
- C. The P/A Converter will have to be reset after rod movement is complete.
- D. The Rod Insertion Limit computer will have to be reset after movement is complete.

QUESTION # 60

Following a LOCA, both Hydrogen Recombiners were placed in service. For the next 4 hours, containment hydrogen concentration continued to rise, but at a slower rate.

Now, procedure EMG ES-11, POST LOCA COOLDOWN AND DEPRESSURIZATION, is being used. Containment hydrogen concentration is 0.9%, but the Train "B" hydrogen recombiner has lost power. The electricians believe there is a cable fault inside the containment such that the recombiner can NOT be returned to service.

What action, if any, is required due to this increasing hydrogen concentration trend in containment?

- A. Containment Spray must be restored in order to prevent hydrogen concentration from exceeding the 6% flammability limit.
- B. The hydrogen mixing fans must be placed in service when hydrogen levels exceed 4% to prevent exceeding the 6% flammability limit.
- C. Hydrogen concentration will peak above the 4% level, but remain below the 6% flammability limit, using the "A" Train hydrogen recombiner.
- D. Hydrogen concentration will remain below the 4% level using only the "A" Train hydrogen recombiner, never reaching the 6% flammability limit.

QUESTION # 61

The Control Room Staff is starting up the plant following a refueling outage and preparations are being made to enter Mode 4.

The Control Room Supervisor has you ensure that Containment Shutdown Purge system is shutdown and that the supply and exhaust dampers are closed and blind flanged.

What is the reason for requiring these dampers to be closed and blind flanged during power operations?

- A. The connecting ductwork outside containment is not seismically qualified.
- B. The valves are not seismically qualified to operate during a design basis earthquake.
- C. The valves may not close against pressures generated following a LOCA.
- D. The valve actuators do not have class 1E penetration conductor over current protection devices.

QUESTION # 62

The Control Room Staff has performed a full stroke valve test on AB PV-1, SG "A" Atmospheric Relief Valve (ARV). The valve will not stroke and is confirmed to be mechanically bound closed. A loss of offsite power occurs resulting in a unit trip from full power.

What is the effect on the "A" Steam Generator?

- A. Pressure will stabilize at approximately 1092 psig on the steam dumps.
- B. Pressure will stabilize at approximately 1125 psig on the remaining ARV's.
- C. Pressure will stabilize at approximately 1185 psig on the first S/G safety.
- D. Pressure will stabilize at approximately 1185 to 1234 psig on the S/G safeties.

QUESTION # 63

Following a Turbine and Reactor trip from full power, which of the following prevent an RCS overpressure event, assuming that all systems work as designed?

- A. Pressurizer Power Operated Relief Valves
- B. Steam Generator Atmospheric Relief Valves
- C. Steam Generator Safety Valves
- D. Steam Dump Valves

QUESTION # 64

Control room operators determine RCDT level is rising unexpectedly during operation in Mode 3. An investigation is begun to determine the source of in-leakage.

What are potential in-leakage sources?

- A. Excess Letdown and Reactor Vessel flange leak-off.
- B. SIS Accumulator drains and Pressurizer Relief Tank.
- C. RCS Loop drains and Reactor Make-up Water.
- D. Refueling Canal drains and RCP seal standpipe overflows.

QUESTION # 65

The plant is currently in Mode 4.

The Radwaste Operator is releasing the contents of Waste Monitor Tank "A" to the cooling lake per SYS HB-130, "Waste Monitor Tank A Discharge to the Environs."

The only running Circulating Water Pump trips. The Radwaste Operator informs the Control Room that the release has been automatically terminated closing the discharge valve.

What is the most probable cause of valve closure given these conditions?

- A. Low Circulating Water dilution flow.
- B. High Radiation on HB RE-018, Liquid Radwaste Discharge Monitor.
- C. Low level in Waste Monitor Tank "A".
- D. High Waste Monitor Tank Pump Discharge flow on HB FT-10858.

QUESTION # 66

AP 21-003, "Operations", describes the "Departure From License Condition" which can be invoked to protect the health and safety of the public.

Which of the following conditions must ALWAYS be met when departing from a license condition or technical specification in accordance with 10 CFR 50.54 (x) and (y)?

- A. The action must be necessary to prevent equipment damage.
- B. The action must be approved by a licensed SRO prior to taking the action.
- C. The NRC must be notified prior to the action and must concur with the action to be taken.
- D. The action must be approved by the Plant Manager when the action is necessary to protect plant personnel.

QUESTION # 67

The plant has experienced an event and entered the EMG procedure network. The Control Room Supervisor (CRS) has assigned you as the Reactor Operator two Continuous Action steps from EMG E-1, LOSS OF REACTOR OR SECONDARY COOLANT. The crew now transitions to EMG FR-C1, RESPONSE TO INADEQUATE CORE COOLING

The Continuous Actions from EMG E-1:

- A. remain applicable until superceded by EMG FR-C1.
- B. remain applicable throughout the EMG network.
- C. are not applicable once you transition out of EMG E-1.
- D. are not applicable after entering EMG FR-C1.

QUESTION # 68

A Middle of Life plant start-up using GEN 00-003, "Hot Standby to Minimum Load", is in progress. The generator has just been synchronized to the grid.

Turbine load is increased and steam dumps are closing.

Control rods should be:

- A. placed in Automatic to respond to changes in turbine load.
- B. adjusted in Manual to maintain Tavg within 1.5 degrees of Tref.
- C. inserted in Manual to maintain a no-load Tavg of 557 degrees.
- D. adjusted in Manual to maintain steam dumps open while increasing load.

QUESTION # 69

Greater than 23 feet of water must be maintained over the top of the reactor pressure vessel flange during movement of irradiated fuel assemblies within containment.

What is the basis for maintaining this level?

- A. Maintains sufficient water above the top of the fuel assemblies to ensure that the radiation levels at the operating elevation for fuel handling equipment remains below 4 mr/hr.
- B. Provides sufficient water volume to allow time for the operator to recognize the indications of a dilution accident before K_{eff} can exceed $.95 \Delta k/k$.
- C. Maintains sufficient water volume as a heat sink for core cooling in the event the operating RHR loop fails to provide long term decay heat removal.
- D. Provides a sufficient water depth to remove 99% of the assumed 10% iodine gas activity released from the rupture of an irradiated fuel assembly.

QUESTION # 70

The shift manager has directed you to determine the best way to flush a piping system in the area of a radiological hot spot that is located in a Locked High Radiation Area.

How can you determine which component is the cause of the hot spot?

- A. Enter the area and locate the hot spot sign.
- B. Request Health Physics to resurvey the area to confirm location.
- C. The Shift Manager's log will identify the component.
- D. Refer to the Hot Spot Tracking Log at Access Control.

QUESTION # 71

The unit was operating at 100% power when a tube rupture occurred on "B" S/G
The crew has transitioned from EMG E-3, STEAM GENERATOR TUBE RUPTURE, to a Post
SGTR Cooldown procedure.

Which ONE (1) of the following describes the preferred method of cooling down the RCS?

Dump steam:

- A. to the condenser using the Intact S/G's to minimize radiological releases.
- B. through the Intact S/G's ARVs to minimize contamination of the secondary system for ALARA reasons.
- C. through the TDAFW from "B" S/G to reduce the contamination in the secondary system.
- D. to the condenser using the "B" S/G to minimize radiological releases.

QUESTION # 72

A Unit startup is in progress per GEN 00-003, MINIMUM LOAD TO HOT STANDBY, when a loss of instrument air occurs. The operators are performing OFN KA-019, LOSS OF INSTRUMENT AIR, when the main feedwater regulating valves close and a reactor trip occurs.

Which one of the following describes the procedure transitions for this event?

- A. GEN 00-003 is suspended. OFN KA-019 is completed followed by entry to EMG E-0, REACTOR TRIP OR SAFETY INJECTION.
- B. GEN 00-003 and OFN KA-019 must be exited and enter EMG E-0, REACTOR TRIP OR SAFETY INJECTION.
- C. EMG E-0, REACTOR TRIP OR SAFETY INJECTION is entered and exited when directed to another specific procedure. OFN KA-019 may be performed in parallel.
- D. Continue with OFN KA-019 and transition to GEN 00-005, MINIMUM LOAD TO HOT STANDBY, Attachment "A", Entry into Mode 3 due to a Reactor Trip.

QUESTION # 73

A design bases accident has occurred. The Reactor has tripped and SI has actuated. The crew is progressing through the EMG network. The following conditions are noted:

- Narrow range S/G levels are 0% indicated
- AFW flow is currently 120,000 lbm/hr

In which of the following procedures would you transition to EMG FR-H1, LOSS OF SECONDARY HEAT SINK and perform the procedure?

- A. You are currently in EMG C-21, UNCONTROLLED DEPRESSURIZATION OF ALL STEAM GENERATORS, at step 6.
- B. You are currently in EMG ES-12, TRANSFER TO COLD LEG RECIRCULATION, at step 12.
- C. You are currently in EMG FR-P1, RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK, at step 10.
- D. You are currently in EMG E-0, REACTOR TRIP OR SAFETY INJECTION, at step 4.

QUESTION # 74

The plant is shutdown in a forced outage. A loss of off-site power occurs and all equipment operates as required. The following conditions exist at the time power was lost:

- RCS temp – 225 degrees F
- RCS pressure - 300 psig
- RHR Train A - IN service
- RHR Train B - IN service
- S/G pressures - 5 psig (ALL)
- S/G NR level - 55% - 60%

What procedure should the crew use to stabilize the plant?

- A. OFN EJ-015, LOSS OF RHR COOLING
- B. OFN NB-030, LOSS OF AC EMERGENCY BUS NB01 (NB02)
- C. OFN NB-034, LOSS OF ALL AC POWER - SHUTDOWN CONDITIONS
- D. OFN BB-031, SHUTDOWN LOCA

QUESTION # 75

You are the Reactor Operator. OFN RP-017, "Control Room Evacuation", is in progress and you are on station at the NB02 switchgear room. All phase A through C actions have been completed. The "B" AFW pump was stopped momentarily and now needs to be restarted.

How will AFW "B" be started?

- A. At the Aux S/D Panel by using the "B" AFW Hand Indicating Switch.
- B. At the Main Control Boards since access would be regained by now.
- C. At the NB02 Switchgear Room using the pushbutton on the AFW pump breaker, after manually charging the closing springs.
- D. At the NB02 Switchgear Room using the Handswitch on the front of the AFW pump breaker door, after manually charging the closing springs.