1. Given the following conditions:
   - Unit 1 is completing a refueling outage.
   - Preparations are being made to start the FIRST Reactor Coolant Pump.
   - The following indications are recorded:
     - 12413, 11 SG Skin TI = 142°F
     - 12414, 12 SG Skin TI = 147°F
     - 1T0406A, U1 RCS Loop A Cold Leg Temp = 95°F
     - 1T0426A, U1 RCS Loop B Cold Leg Temp = 99°F

A Reactor Coolant Pump _____ be started because _____.

a. CAN
The highest SG Skin T – Lowest RCS Cold Leg T is less than 50°F.

b. CAN
BOTH loop specific SG / RCS temperature differences are less than 50°F.

c. CANNOT
The highest SG Skin T – Lowest RCS Cold Leg T is greater than 50°F.

d. CANNOT
The highest loop specific SG/RCS temperature difference is greater than 50°F.

2. Given the following conditions:
   - Unit 1 is at 100% power.
   - The plant is in a normal two charging pump, one orifice lineup.
   - VCT Level Transmitter 1LT-141 fails HIGH.

With NO operator action, ACTUAL Unit 1 VCT level will……..

a. decrease to 17% THEN auto makeup will begin and increase level to 28%.

b. decrease to 4%. MV-32060, RWST SPLY TO CHG PMP SUCT, will open <u>AND</u> MV-32061, VC TNK OUTL, will CLOSE.

c. remain the same.

d. lower until the tank is completely drained.

3. Given the following conditions:
   - Unit 1 is shutting down per 1C1.3, Unit 1 Shutdown.
   - RCS temperature is 335°F and stable.
   - RCS pressure is 375 psig and stable.
   - The crew is preparing to place the RHR System in operation per 1C15, Residual Heat Removal System.
   - The RHR system is valved in, but NO RHR Pump is running yet.
   - RCS pressure begins increasing rapidly.

   Which one of the following will act FIRST to prevent overpressurizing the RHR System?

   a. RHR Suction Relief Valve will OPEN.

   b. RHR Hot Leg Isolation Valves will CLOSE.

   c. ONLY Pressurizer PORV PCV-430 will OPEN.

   d. RHR Discharge Relief Valve will OPEN.

4. Given the following conditions:
   - A small break LOCA is in progress on Unit 2.
   - 21 SI pump FAILED to start.
   - RCS pressure is 1700 psig and stable.
   - Pressurizer level is 5% and stable.
   - RCS average temperature is slowly lowering about 5°F/hour.
   - 21 SI pump is now available for operation.

   IF 21 SI pump is started, THEN the new equilibrium RCS pressure will be _____ AND break flow will be _____ than before.

   a. higher higher

   b. higher the same

   c. the same the same

   d. the same higher

5. Given the following conditions:
   - Unit 1 is at 100% power.
   - SP1088A, Train A Safety Injection Quarterly Test, is in progress.
   - 11 Safety Injection Pump is running.
   - A Safety Injection signal is received.

   The Reactor Operator monitoring 11 Safety Injection Pump in the Control Room will see:

   a. the green and white lights LIT and the red light OFF. These indications remain the same.

   b. the red light LIT, and the green light OFF. These indications remain the same.

   c. the green and white lights LIT, and the red light OFF. Approximately 10 seconds later, the red light will LIGHT and the green and white lights will be OFF.

   d. the green and white lights LIT, and the red light OFF. Approximately 15 seconds later, the red light will LIGHT and the green and white lights will be OFF.

6. Given the following conditions:
   - Unit 2 has had a Reactor Trip and Safety Injection due to a faulted Steam Generator.
   - RCS pressure is 1800 psig and increasing.
   - 47512-0406, PRZR RELIEF TANK HI TEMP/LVL/PRESS OR LO LVL, is in alarm.
   - PRT pressure and level are slowly increasing.

   Which of the following potential causes is the source of PRT in-leakage, and what will occur with NO operator action?

   a. RCP Seal leakoff is diverted to the PRT. The PRT Rupture Disk will break at approximately 100 psig.

   b. RCP Seal leakoff is diverted to the PRT. Seal leakoff flow will stop when PRT pressure equalizes with #1 seal leakoff pressure.

   c. A Pressurizer PORV is leaking by. The PRT spray header will automatically start to reduce pressure within limits.

   d. A Pressurizer PORV is open. The PRT rupture disk will break at approximately 100 psig.

7. Given the following conditions:
   - Unit 1 is at 40% power.
   - 47012-0406, PRZR RELIEF TANK HI TEMP/LVL/PRESS OR LO LVL, alarms.
   - PRT Pressure is 9 psig and stable.
   - PRT Level is 78% and stable.
   - PRT Temperature is 115°F and stable.

   What caused the alarm <u>AND</u> what action will be required per the Annunciator Response Procedure?

a. Pressure is too high.
Instruct I&C to adjust the PRT Nitrogen Pressure Regulator to lower pressure in the PRT.

b. Level is too low.
OPEN CV-31322, 1 RX M-U WTR to 11 PRT ISOL.

c. Temperature is too high.
Add makeup water via CV-31322, 1RX M-U WTR TO 11 PRT ISOL, UNTIL the alarm clears.

d. Level is too high.
Open CV-31323, PRZR RELIEF TNK DRN, and verify 11 RCDT Pump automatically STARTS.

8. Given the following conditions:
   - Unit 1 is at 100% power.
   - The air supply to CV-31202, 11 Letdown Heat Exchanger Temperature Control Valve, has broken in half.

What is the plant response AND what actions should be taken?

a. CV-31202 will fail CLOSED.
BORATE as needed to maintain Reactor Power less than 100%.

b. CV-31202 will fail CLOSED.
DILUTE as needed to maintain Reactor Power near 100%.

c. CV-31202 will fail OPEN.
BORATE as needed to maintain Reactor Power less than 100%.

d. CV-31202 will fail OPEN.
DILUTE as needed to maintain Reactor Power near 100%.

9. Given the following conditions:
   - Unit 1 is in Mode 4.
   - RCS Temperature is 340ºF and stable.
   - Pressurizer Cold Cal. Level is 80% and stable.
   - Pressurizer Pressure is 375 psig.
   - Pressurizer heaters are ALL energized.

   What will be the Pressurizer Liquid Temperature when a pressurizer bubble starts forming?

   a. 434ºF

   b. 435-439ºF

   c. 440-444ºF

   d. 445ºF OR higher

10. Given the following conditions:
    - Unit 2 is at 100% power.
    - The Pressurizer Master Pressure Controller output is 50% in AUTO.
    - The Pressurizer Pressure Control SETPOINT fails to 2185 psig.

    The IMMEDIATE response of the plant to the failure is the:

    a. Spray Valves OPEN and the Variable Heaters DEENERGIZE.

    b. Spray Valves CLOSE, Variable and Backup Heaters ENERGIZE.

    c. Spray Valves OPEN and the Backup Heaters, if ON, will DEENERGIZE.

    d. PORV PCV-431C OPENS, Spray Valves OPEN, Variable and Backup Heaters, if ON, will DEENERGIZE.

11. Given the following conditions:
    - Unit 1 is at 100% power.
    - A Reactor Trip occurs.
    - The Turbine Left Stop Valve sticks OPEN.

    With NO operator action, the……

    a. Steam Pressure Controller will open Steam Dumps as required.

    b. Steam Generator PORV's will open as required.

    c. Load Rejection Controller will open Steam Dumps as required.

    d. Turbine Trip Controller will open Steam Dumps as required.

12. Given the following conditions:
    - Unit 2 is at 9% power and DECREASING POWER per 2C1.3, Unit 2 Shutdown.
    - 47514-0304, P-7 LO POWER TRIP BLOCKED, is alarming.

    What caused the alarm?

    a. 2/4 Power Range Instruments below P-10 <u>AND</u> 1/2 First Stage Pressures below P-7.

    b. 2/2 First Stage Pressures below P-7.

    c. 3/4 Power Range Instruments below P-10 <u>AND</u> 2/2 First Stage Pressures below P-7.

    d. 3/4 Power Range Instruments below P-10.

13. Given the following conditions:
    - Unit 1 is in Mode 1.
    - A 2” break occurs on the Loop A Cold Leg.
    - Both SI pumps FAIL to START.
    - No operator actions are taken.

    What effect will this have on the Reactor? Core damage will:

    a. result unless SI flow is restored.

    b. NOT result as long as adequate SG levels are maintained.

    c. result no matter when SI flow is restored.

    d. NOT result as long as RHR pumps function correctly.

14. Given the following conditions:
    - Unit 2 is at 100% power.
    - One train of CFCU’s lose power.
    - Containment temperature increases from 90ºF to 115ºF.

    What is the effect (if any) on INDICATED pressurizer level?

    a. No effect. The instruments are designed for post accident conditions.

    b. Level indicates higher than actual due to a decrease in pressurizer fluid density.

    c. Level indicates lower than actual due to a decrease in reference leg fluid density.

    d. Level indicates higher than actual due to a decrease in reference leg fluid density.

15. Which is (are) the required plant condition(s) that will cause SI Active Panel 44103-A5, 11 CONTMT FAN COIL RUNNING, to LIGHT?

a. 11 Containment Fan Coil Unit RUNNING in SLOW.
Associated Cooling Water Inlet and Return Isolation Valves OPEN

b. 11 Containment Fan Coil Unit RUNNING in SLOW.
Associated dampers aligned to the DOME position.

c. 11 Containment Fan Coil Unit RUNNING in SLOW.

d. 11 Containment Fan Coil Unit RUNNING.

16. Given the following conditions:

- Unit 2 is at 100% power.
- A Large Break LOCA occurs.
- A Containment Spray “P” signal is generated.

Which of the following describes the AUTOMATIC operation of the Containment Spray System?

a. 21 Containment Spray Pump breaker CLOSES, which sends an OPEN signal to 21 Containment Spray Pump Discharge Valve MV-32114.

b. 21 Containment Spray Pump Discharge Valve MV-32114 receives an OPEN signal.
When MV-32114 is fully OPEN, THEN 21 Containment Spray Pump breaker CLOSES.

c. 21 Containment Spray Pump Discharge Valve MV-32114 receives an OPEN signal.
21 Containment Spray Pump breaker receives a CLOSE signal at the same time.

d. 21 Containment Spray Pump Discharge Valve MV-32114 receives an OPEN signal.
IF MV-32114 is NOT fully OPEN in 30 seconds, 21 Containment Spray Pump breaker trips OPEN.

17. Given the following conditions:
    - A Unit 1 startup is in progress following a mid-cycle outage.
    - The Reactor is critical at 1E-8 amps.
    - The condenser steam dump valve fails OPEN.

    Assuming NO action by the operating crew, which one of the following describes the IMMEDIATE effect on the plant?

	RCS Temperature	Reactor Power
a.	DECREASES	INCREASES
b.	INCREASES	INCREASES
c.	INCREASES	DECREASES
d.	DECREASES	DECREASES

18. Given the following:
    - 2PT-485, TURB FIRST STAGE PRESS, indicates 400 psig.
    - 2PT-486, TURB FIRST STAGE PRESS, indicates 405 psig.

    What is the expected indication for SG Program Level?

    a. 30%

    b. 33%

    c. 40%

    d. 44%

19. Which of the following is the power supply to MV-32025, Cooling Water to 11 Aux Feedwater Pump Valve?

    a. MCC 1K1

    b. MCC 1A1

    c. MCC 1LA1

    d. DC Distribution Panel 191

20. Given the following:
    - A low voltage condition exists on the grid.
    - While performing SP 2118, Offsite Source Verification, you observe the following bus voltages on Unit 2:
        - Bus 25: 3980V from 2RY Transformer.
        - Bus 26: 4020V from CT12 Transformer.

    What is the impact (if any) of the above conditions on the plant?

    a. None.
    Voltages are low but are within procedural limits.

    b. Bus 25 ONLY is outside procedural limits.
    Notify the Shift Supervisor of the out of specification readings.

    c. Bus 25 ONLY is in a degraded voltage condition.
    The Load Sequencer will automatically transfer Bus 25 to the CT12 source.

    d. Bus 25 <u>AND</u> Bus 26 are BOTH in a degraded voltage condition.
    D5 and D6 will BOTH be started and BOTH buses will automatically transfer to their respective Diesel Generators.

21. Given the following conditions:
    - Unit 1 is at 100% power.
    - During maintenance, an electrician working on 11 DC Panel mistakenly jumpers a 125VDC POSITIVE BUS lead to a local connection to GROUND.

    What is the result AND what action is required next?

    a. 47024-1101, DC PANEL GROUND DETECTION, is alarming.
       Dispatch an operator to locally investigate the alarm.

    b. 47024-1201, 11 DC PANEL UNDERVOLTAGE.
       Check battery condition using ERCS display DC1.

    c. Reactor Trip.
       Perform immediate actions of 1E-0, Reactor Trip or Safety Injection.

    d. Reactor Trip and Safety Injection.
       Perform immediate actions of 1E-0, Reactor Trip or Safety Injection.

22. What is the condition of 11 and 12 batteries?

    a. 11 Battery is being charged at a rate of 38.6 amps.
       12 Battery is being charged at a rate of 0.2 amps.

    b. 11 Battery is discharging at a rate of 38.6 amps.
       12 Battery is being charged at a rate of 0.2 amps.

    c. 11 Battery is discharging at a rate of 38.6 amps.
       12 Battery is discharging at a rate of 18.5 amps.

    d. 11 Battery is being charged at a rate of 38.6 amps.
       12 Battery is being charged at a rate of 18.5 amps.

23. Which of the following is a correct physical connection in the D1 Starting Air System?

Starting air is supplied…….

a. to the Lube Oil 3-way Thermostatic Control Valve to maintain oil temperature in band.

b. to the stopping jacks for overspeed protection.

c. to the in-line oiler for lubrication of the air start distributor.

d. to the cooling water inlet control valve.

24. Which of the following will AUTOMATICALLY close CV-31610, 21 Steam Generator Blowdown Flow Control Valve?

a. Steam Generator Blowdown Flash Tank Temperature > 140°F.

b. HIGH alarm on Radiation Monitor 2R-19.

c. Steam Generator Blowdown Flash Tank LOW level.

d. Containment Isolation signal on EITHER train.

25. Given the following conditions:
    - The Reactor has tripped and Safety Injection has actuated.
    - 12 CC Heat Exchanger Outlet Temperature is 125ºF and increasing.
    - NO operator actions have occurred.

    These conditions indicate that 12 CC Heat Exchanger Cooling Water:

    a. Inlet Motor Valve (MV-32146) did NOT open on a Train “B” Safety Injection as expected.

    b. Inlet Motor Valve (MV-32146) did NOT open on the 12 CC Pump start as expected.

    c. Outlet Control Valve (CV-31411) did NOT fail open on a Train “B” Safety Injection as expected.

    d. Outlet Control Valve (CV-31411) did NOT fail open on the 12 CC Pump Start as expected.

26. What is the power supply for Instrument Air Compressor 122?

    a. 480V MCC 1A1

    b. 480V MCC 1A2

    c. 480V MCC 2A1

    d. 480V MCC 2A2

27. Given the following conditions:
    - The Control Room has been evacuated per F5, Appendix B, Control Room Evacuation (Fire).
    - You are the Unit 2 Reactor Operator.
    - 121 and 123 Instrument Air Compressors have been restarted per Attachment K.

    If the Shift Supervisor directs you to monitor Cooling Water Pressure to determine if adjustments must be made, the closest location is....

    a. at the running Cooling Water Pump local pressure indicator.

    b. at the local indicators near the Instrument Air Compressors 121 and 123.

    c. at the Train A Hot Shutdown Panel ONLY.

    d. at the Train A <u>AND</u> B Hot Shutdown Panel.

28. Given the following conditions:
    - Unit 1 is at 100% power.
    - A small steam line leak inside containment has caused the following indications:
        - Containment pressure is 0.3 psig and increasing very slowly.
        - Containment temperature is 105°F and increasing very slowly.
        - Humidity is 40% and increasing slowly.

    Which of the following is a Technical Specification limit AND the appropriate action to take?

    a. 120°F Containment Temperature.
    Place the Containment In-Service Purge System in service.

    b. 120°F Containment Temperature.
    Align ALL Containment Fan Coil Units to the DOME.

c. 2.0 psig Containment Pressure.
Continue to control pressure through the 1R-11 Sample Outlet Test Line, shutdown if pressure nears the limit.

d. 2.0 psig Containment Pressure
Align ALL Containment Fan Coil Units to the DOME.

29. Which of the following is the power supply to 11 Rod Drive MG Set?

a. 480V Bus 180

b. 480V Bus 111

c. 480V Bus 130

d. 4160V Bus 13

30. Given the following conditions:

- Unit 2 is at 100% power.
- The Pressurizer Level Control Channel Selector Switch is in the normal “2-3” Position.
- 2LT-427 White Channel Pressurizer Level, Fails LOW.

Which of the following is the initial plant response assuming NO operator action?

Charging flow:

a. does NOT change, letdown isolates, and ALL Pressurizer Heaters shut off.

b. does NOT change, letdown does NOT isolate, and ONLY Pressurizer Backup Heaters shut off.

c. increases, letdown does NOT isolate, and ALL Pressurizer Heaters shut off.

d. increases, letdown isolates, and ONLY Pressurizer Backup Heaters shut off.

31. Given the following conditions:
    - Unit 1 is conducting a Reactor startup per C1B, Reactor Startup.
    - Control Bank D is at 19 STEPS.
    - Control Bank D, Rod G-11 drops to the bottom.

    Which of the following describes the indications the RO would see AND what actions should be taken?

    Rod G-11 Rod Bottom Light is LIT, Rod G-11 IRPI is at 0 steps,

    a. and 47013-0406, ROD AT BOTTOM, is NOT in alarm.
       Manually insert all control rods to 0 steps.

    b. and 47013-0406, ROD AT BOTTOM, is in alarm.
       Manually insert all control rods to 0 steps.

    c. and 47013-0406, ROD AT BOTTOM, is NOT in alarm.
       Confirm a dropped rod using diverse indications then manually trip the Reactor.

    d. and 47013-0406, ROD AT BOTTOM, is in alarm.
       Confirm a dropped rod using diverse indications then manually trip the Reactor.

32. Given the following conditions:
    - Unit 1 is at 18% power.
    - The high pressure tap to RCS Loop A Flow Instrument 1FT-411 shears off.

    What is the effect on the RCS flow indicators, AND what action should be taken?

    a. All Loop A flow indicators will read HIGH.
       Perform 1C51.1, Instrument Failure Guide, for 1FT-411.

    b. All Loop A flow indicators will read LOW.
       MANUALLY trip the Unit 1 Reactor.

    c. ONLY 1FT-411 RCS Loop A Flow indication fails LOW.
       Perform 1C51.1, Instrument Failure Guide, for 1FT-411.

    d. All Loop A flow indicators will read LOW.
       Perform the immediate actions of 1E-0, Reactor Trip or Safety Injection.

33. On the ICCM Panel Train “A” Panel in the Control Room, the Core T/C Average Temperature Trend may be displayed.

    IF the quality code trend in the upper section of the Core T/C Average Temperature Trend is indicating “BAD,” THEN what is the effect on the calculation of Core T/C Average Temperature?

    a. The calculated input is affected by a redundant sensor failure in Train B.

    b. The calculated input is affected by a disabled sensor.

    c. The calculated input is offscale.

    d. The calculated input has less than 5 valid thermocouple inputs.

34. Given the following conditions:
    - 47016-0101, 121 SPENT FUEL PIT LO LVL, is alarming.
    - Local level reading is 752 feet 6 inches with NO visible level decrease in progress.
    - The crew determines a 5000 gallon makeup to the Spent Fuel Pool is required.
    - A sample reveals that SFP Boron Concentration is 3074 ppm.

    The Reactor Operator should:

    a. perform a manual makeup to the Spent Fuel Pool per C12.5, Boron Concentration Control.

    b. direct a makeup from the Reactor Makeup Water System using C16, Spent Fuel Pool Cooling System.

    c. stop 121 and 122 SFP Cooling Pumps per C16 AOP1, Loss of SFP Inventory.

    d. perform a makeup from the CVCS Holdup Tanks per C16 AOP1, Loss of SFP Inventory.

35. Spent Fuel Assemblies are being rearranged in the Spent Fuel Pool prior to cask loading. An operator is attempting to lift a fuel assembly with the West Fuel Hoist. The fuel assembly is STUCK and will NOT move.

    The OVERLOAD condition is ……

    a. ONLY indicated at its breaker.

    b. indicated at the West Fuel Hoist Pendent AND at the Bridge Control Cabinet.

    c. ONLY indicated at the West Fuel Hoist Pendent.

    d. NOT indicated anywhere.

36. Which of the following can be routed DIRECTLY to the TOP of the Reactor Coolant Drain Tank?

a. Reactor Coolant Loop Drains.
Pressurizer Relief Tank Drain.

b. Excess Letdown Heat Exchanger discharge flow.
Reactor Coolant Pump #3 Seal Leakoff.

c. Safety Injection Accumulator Drains.
Excess Letdown Heat Exchanger discharge flow.

d. Refueling Canal Drain.
RCP Standpipe drains.

37. Given the following conditions:

- A release of radioactive gas is in progress using C21.3-10.1, Releasing Radioactive Gas from 121 Low Level Gas Decay Tank.
- The Supply Air Line to CV-31271, Gas Decay Tanks to Plant Vent Control Valve, ruptures.
- No other plant evolutions are in progress.

What would be the effect on the plant?

a. CV-31271 fails CLOSED.
The release would terminate.
Vent Stack radiation would decrease.

b. CV-31271 fails OPEN.
The release rate would increase.
Vent Stack radiation would increase.

c. CV-31271 fails CLOSED.
The release would terminate.
Auxiliary Building radiation levels would increase.

d. CV-31271 fails AS IS.
The release would continue.
Vent Stack radiation would remain the same.

38. Given the following conditions:
- A 40 foot long horizontal pipe measures 200 mrem/hour at 1 foot.
- R-28 is 20 feet away.

Assuming all measured radiation is from the pipe, what is the expected 1R-28 reading?

a. 100 mrem/hour.

b. 10 mrem/hour.

c. 0.5 mrem/hour.

d. 0.025 mrem/hour.

39. What is the reason for stopping both Reactor Coolant Pumps during a LARGE BREAK Loss of Coolant Accident?

a. To stop adding pump heat to the Reactor Coolant System.

b. To minimize damage to the pumps with the loss of support conditions.

c. To ensure the pumps will be available during the performance of 1FR-C.1, Response to Inadequate Core Cooling.

d. To prevent core damage IF the Reactor Coolant Pumps were to trip at a later time.

40. During a Unit 1 RCP start, the following indications are noted:
    - RCP Motor amps peg high and then return to just above their prestart value 10 seconds after the start.
    - Associated RCS Flow does not change.
    - The RCP breaker remains closed.

    After 15 seconds, the Shift Supervisor directs that the RCP breaker be OPENED.

    What has occurred?

    a. Sheared RCP shaft.

    b. Locked RCP rotor.

    c. RCS Flow Instrument failure.

    d. Normal RCP start.

41. Given the following conditions:
    - Unit 1 is at 100% power.
    - Pressurizer level was decreasing.
    - A Letdown Isolation occurs.
    - Pressurizer level then stabilizes.
    - No operator actions have been taken.

    Which of the following leak locations would cause these indications?

    a. Letdown heat exchanger tube leak.

    b. Regenerative heat exchanger tube leak.

c. Charging line inside containment.

d. Letdown piping downstream of CV-31203, Letdown Pressure Control Valve.

42. Given the following conditions:
- Unit 1 is in a refueling outage.
- The crew has placed RHR in service per 1C1.3, Unit Shutdown.
- An inadvertent Safety Injection occurs.
- A leak develops at the outlet of MV-32165, Loop A Hot Leg to RHR Isolation Valve.
- SI pumps are stopped but NO additional operator actions have occurred.

Which of the following list ALL of the indications that would alert the control room operator to this leak?

a. Containment building radiation levels.
Sump A level increase.

b. Auxiliary building radiation levels.
121 Aerated Sump Tank level increase.

c. Containment building radiation levels.
Sump A level increase.
Waste Holdup Tank level increase.

d. Containment building radiation levels.
Sump C level increase.

43. Given the following conditions:
- Unit 1 is at 100% power.
- RCS activity is elevated due to a leaking fuel assembly.
- A large leak develops in the Letdown Heat Exchanger.
- 47020-0203, 11 CC SURGE TANK HI/LO LEVEL, is alarming.

What are ALL the automatic actions and alarms that have occurred?

a. 1R-39, Component Cooling System Liquid Monitor, is in HIGH ALARM.
CV-31432, 11 CC Surge Tank Makeup Control Valve has CLOSED.
MV-32088, 11 CC Surge Tank Vent, has CLOSED.

b. 1R-39, Component Cooling System Liquid Monitor, is in HIGH ALARM, <u>AND</u>
CV-31432, 11 CC Surge Tank Makeup Control Valve has CLOSED.

c. CV-31432, 11 CC Surge Tank Makeup Control Valve has OPENED, <u>AND</u> CV-31202, Letdown Temperature Control Valve, has CLOSED.

d. CV-31432, 11 CC Surge Tank Makeup Control Valve has OPENED.

44. Given the following conditions:
- The Master Pressurizer Pressure Controller output is stable at 50%.
- The controlling pressurizer pressure channel fails to 2230 psig.

What is the expected response of the pressurizer control board master controller deviation and output meters?

	Deviation Meter	Output Meter
a.	Slightly negative	Steadily decreasing to 0
b.	Pegged low	47.5% and stable
c.	Slightly positive	52.5% and stable
d.	Pegged high	Steadily decreasing to 0

45. Given the following conditions:
    - Unit 1 is at 100% power.
    - 11 Charging Pump is running in AUTOMATIC.
    - 12 Charging Pump speed controller has failed to minimum AND the pump is OFF and AVAILABLE.
    - 13 Charging Pump is running in MANUAL at minimum speed.
    - Due to a loss of Bus CT11, Bus 16 automatically transfers to the D2 Diesel Generator.
    - Bus 15 is energized from the 1R Transformer.
    - Safety Injection actuates.
    - The Reactor CANNOT be tripped automatically or manually.
    - The immediate actions of 1FR-S.1, Response to Nuclear Generation/ATWS, are in progress.

    What Charging Pump is PREFERRED for Normal Boration AND why?

    a. 11 Charging Pump, as it has remained running and is capable of the 15 gpm boration rate that is required.

    b. 12 Charging Pump, as it was not running, and is powered from an Offsite Source.

    c. 13 Charging Pump, as it lost power from minimum speed, AND can accommodate a 15 gpm boration rate.

    d. 12 Charging Pump, as it was not running, and is powered from a reliable Emergency Diesel Generator source.

46. Given the following conditions:
    - Unit 1 is at 80% (460 MWe)
    - 11 and 12 Condensate Pumps are in service.

    47009-0103, 12 CONDENSATE PUMP LOCKED OUT, is alarming.

    What is the AUTOMATIC plant response and what actions (if any) must be taken?

a. 13 Condensate Pump STARTS AND 11 Feedwater Pump TRIPS.
Power must be reduced below 60% (330 MWe).

b. 13 Condensate Pump STARTS.
Power may be maintained at 80% (460 MWe).

c. ONLY 11 Feedwater Pump TRIPS.
Start 13 Condensate Pump and reduce power below 60% (330 MWe)

d. BOTH 11 and 12 Feedwater Pumps TRIP.
Enter 1E-0, Reactor Trip or Safety Injection.

47. Given the following conditions:
- Unit 1 has had a Small Break LOCA.
- RCS Pressure is 950 psig and slowly decreasing.
- NO SI Pumps are available.

Due to high CET temperatures, the crew is now performing 1FR-C.1, Response to Inadequate Core Cooling.

Per 1FR-C.1, which of the following is the most effective method to recover the core and restore adequate core cooling?

a. OPEN RCS Vent Paths and Pressurizer PORVs.

b. ESTABLISH RCS Bleed and Feed.

c. START ONE available Reactor Coolant Pump.

d. DEPRESSURIZE ALL intact Steam Generators to 200 psig.

48. Given the following conditions:

- Unit 2 was operating at 100% power.
- A loss of offsite power occurs.
- The reactor automatically tripped.
- 30 minutes has elapsed.

Which combination of parameter trends below verifies that natural circulation cooling is occurring?

	RCS HOT LEG TEMP	SG PRESSURES	CETC TEMP	RCS SUBCOOLING	RCS COLD LEG TEMP
a.	Stable	Decreasing	Stable	35°F	Decreasing
b.	Stable	Stable	Stable	15°F	T_{SAT} for SG Pressure
c.	Increasing	Increasing	Increasing	25°F	Increasing
d.	Decreasing	Stable	Decreasing	35°F	T_{SAT} for SG Pressure

49. Given the following conditions:

- Unit 1 is at 8% power and INCREASING per 1C1.2, Unit 1 Startup Procedure.
- The Generator has just been synchronized to the grid.
- Instrument Bus 112 loses power.

What are ALL the actions that need to be taken?

a. Perform the immediate actions of 1E-0, Reactor Trip or Safety Injection.
MANUALLY open Generator Breakers 8H16 and 8H17.
Transfer the Source Breaker to the “INTERRUPTIBLE PANEL 117” position.

b. Place Rod Control in MANUAL.
Verify power has remained below the P-10 setpoint.
Transfer the Source Breaker to the “INTERRUPTIBLE PANEL 117” position.

c. Perform the immediate actions of 1E-0, Reactor Trip or Safety Injection.
Transfer the Source Breaker to the “INTERRUPTIBLE PANEL 117” position.

d. Place Rod Control in MANUAL.
Transfer the Source Breaker to the “INTERRUPTIBLE PANEL 117” position.

50. Given the following conditions:
- Unit 2 is at 100% power.
- A Loss of Offsite Power then occurs.
- 15 minutes elapse.
- Train “A” DC Power is then lost.

What is the effect on the operation of D5 Emergency Diesel Generator AND why?

The loss of Train “A” DC Power:

a. will NOT stop D5 or interfere with its operation, because control power is supplied by the generator.

b. will trip D5, because power is lost to all instrumentation.

c. will NOT stop D5, but the diesel CANNOT be tripped electrically, because control power is lost to the engine and generator.

d. will trip D5 to protect the engine because of the loss of cooling fans and fuel booster pumps.

51. Given the following conditions:
    - BOTH units are at 100% power.
    - Cooling water is in a normal at-power lineup.
    - A large break occurs in the Train “A” Cooling Water Header.
    - 121 Motor Driven Cooling Water Pump auto starts on low header pressure.
    - Loop A Cooling Water Flow is 20000 gpm and stable.
    - Loop B Cooling Water Flow is 16000 gpm and stable.
    - Loop A Pressure is 78 psig and stable.
    - Loop B Pressure is 82 psig and stable.
    - Flooding is reported in the Turbine Building.

    Per C35 AOP2, Loss of Pumping Capacity or Supply Header Without SI, what actions should be taken NEXT?

    a. START 12 AND 22 Cooling Water Pumps.
       PLACE CS-46052, 121 Cooling Water Pump, control switch, in PULLOUT.

    b. Align safeguards features to header “B” AND isolate cooling water flow to the 12 CC Heat Exchanger.

    c. VERIFY at least one train of safeguard equipment is OPERABLE, AND
       VERIFY cooling water flow has been reduced to <15000 gpm per pump.

    d. CLOSE MV-32144, Loop A/B Cooling Water Header Crossover Valve A, AND
       CLOSE MV-32159, Loop A/B Cooling Water Header Crossover Valve B.

52. Given the following conditions:
    - Both units are at 100% power.
    - 121 and 123 Instrument Air Compressors are RUNNING with 122 Instrument Air Compressor in STANDBY.
    - A large instrument air leak develops in the Unit 1 Turbine Building.

    Which of the following actions will MINIMIZE the air demand on the Unit 1 Instrument Air System?

    a. MV-32362, 121 Instrument Air Dryer Bypass Valve, automatically OPENING at 78 psig decreasing pressure.

b. Manually RE-OPENING of MV-32314, Instrument Air Header Isolation Valve A.

c. Manually CLOSING of SA-65-1, 121 Air Dryer Purge Exhaust Isolation.

d. MV-32321, Instrument Air Crossover Valve, automatically CLOSING at 85 psig decreasing pressure.

53. Given the following conditions:
- A Small Break LOCA has occurred OUTSIDE containment.
- 2ECA-1.2, LOCA Outside Containment, has been entered.
- RCS pressure is slowly decreasing.
- 21 SI Pump is injecting.
- 22 SI Pump FAILED to start.
- Step 1a is in progress.

22 SI Pump is repaired and is STARTED. RCS pressure begins slowly INCREASING.

Which one of the following is correct concerning adherence to the Emergency Operating Procedures?

Recommend to the Shift Supervisor to...

a. IMMEDIATELY exit 2ECA-1.2, and transition to 2ECA-1.1, Loss of Emergency Coolant Recirculation.

b. IMMEDIATELY exit 2ECA-1.2, and transition to 2E-1, Loss of Reactor or Secondary Coolant.

c. continue in 2ECA-1.2 UNTIL step 1 is complete and the crew can check for break isolation.

d. check for SI Termination criteria.

54. Given the following conditions:

- Unit 1 Reactor Trip and Safety Injection.
- BOTH Unit 1 AFW Pumps are lost and the crew enters 1FR-H.1, Loss of Secondary Heat Sink.
- The crew aligns 21 MDAFW Pump to Unit 1 AND establishes 220 gpm AFW flow to the 11 and 12 Steam Generators.
- Unit 2 has remained at 100% power.

What are the Technical Specification implications (if any) of taking this action?

21 MDAFWP is:

a. INOPERABLE on Unit 2 AND cannot be credited as an OPERABLE pump on Unit 1.

b. INOPERABLE on Unit 2 BUT is OPERABLE for Unit 1, as it is performing its design function.

c. OPERABLE for both units as long as dedicated operators are used to align it to Unit 2 if needed.

d. is NOT credited as an OPERABLE pump for Unit 1, BUT it is still OPERABLE for Unit 2 as long as dedicated operators are used to align it to Unit 2 if needed.

55. Given the following conditions:
- A LOCA has occurred on Unit 1.
- Both trains of RHR are in service from Sump B.
- You have been assigned to monitor recirculation per F3-17.2, Long Term Core Cooling.

You note the following parameters:

Time	11 RHR Disch. P	11 RHR Suct. P	11 RHR Amps	12 RHR Disch P	12 RHR Suct. P	12 RHR Amps	CETC Avg.
1300	120	25	22	120	22	25	310
1315	121	25	22	125	23	23	312
1330	120	25	22	128	23	21	314

What action is required NEXT per F3-17.2, Table 2?

a. Stop 12 RHR Pump.

b. Throttle RHR Flow from 11 and 12 RHR Pumps.

c. Align Loop B for High Head Recirculation.

d. Perform ECA-1.3 while refilling the RWST.

56. Given the following conditions:
- Unit 2 is at 100% power.
- 21 MDAFWP is OOS for maintenance.

A Main Steam Line Break then occurs in the Unit 2 Auxiliary Building.
- Both MSIV's failed to CLOSE.
- 21 Steam Generator Pressure is 250 psig and slowly decreasing.
- 22 Steam Generator Pressure is 460 psig and slowly decreasing.
- BOTH Steam Generators NR levels are offscale low.
- BOTH Steam Generators WR levels are <50% WR.
- The crew has entered 2ECA-2.1, Uncontrolled Depressurization of Both Steam Generators and is performing Step 1.

Per 2ECA-2.1, what must be done with the steam supply valves to the 22 TDAFWP AND why?

a. BOTH steam supply valves to 22 TDAFWP are CLOSED as Feedwater can be established from Main Feedwater or the 12 MDAFWP.

b. BOTH steam supply valves to 22 TDAFWP are CLOSED as SG pressure is too low to maintain 22 TDAFWP running.

c. The steam supply valve from 21 SG is CLOSED. The steam supply from 22 SG is left OPEN to maintain 22 TDAFWP running.

d. BOTH steam supply valves to 22 TDAFWP are left OPEN as the AFW supply lines CANNOT be the cause of the steam break in the Auxiliary Building.

57. Given the following Conditions:
- Unit 1 is at 80% power.
- Control Rods are in AUTOMATIC.
- Control Bank D is at 200 steps.
- Bank D begins stepping out due to an instrument failure.
- NO operator action is taken.

What will be the final rod position AND what will step counters read?

	Rod Height	Step Counter
a.	228	228
b.	220	continue to increase above 228
c.	220	220
d.	228	continue to increase above 228

58. Given the following conditions:
- Unit 1 was manually tripped due to the complete LOSS of Unit 1 Instrument Air Header pressure.
- ONLY ONE Charging Pump is available.
- Control Rod G11 is stuck at 220 steps.
- Control Rod H8 is stuck at 50 steps.
- The crew is performing 1ES-0.1, Reactor Trip Recovery.
- C12.5 AOP1, Emergency Boration of the Reactor Coolant System, has been initiated.

What is the MINIMUM time for boration to add the required amount of boric acid?

a. 16 minutes

b. 21 minutes

c. 32 minutes

d. 42 minutes

59. Given the following conditions:
- Unit 1 is shutting down per 1C1.3. Unit 1 Shutdown.
- Power is reduced below P-6 ($1X10^{-10}$ amps) on both Intermediate Range instruments.
- 47014-0301, SOURCE RANGE BLOCKED HI VOLT OFF, is LIT

Which actions are required to manually reenergize the Source Range instruments based on these conditions?

a. Remove Instrument Power fuses from TWO Power Range Nuclear Instruments.

b. Place Source Range Reset-Block Train A <u>AND</u> Train B in the RESET position.

c. Place BOTH the N31 and N32 High Flux At Shutdown switches to the NORMAL position.

d. Pull Control Power fuses from both N35 and N36 Intermediate Range Nuclear Instruments.

60. Which of the following plant conditions AND alarms would require an IMMEDIATE, manual Reactor Trip?

a. Decreasing CC Surge Tank Level.
47020-0403, CC TO RCP HI FLOW.

b. CC Surge Tank Level at –6” and slowly decreasing. CV-31432, 11 CC Surge Tank Makeup Valve is OPEN.
47020-0203, 11 CC SURGE TANK HI/LO LEVEL.

c. CC Area Sump is at 1” and increasing.
47020-0303, CC AREA SUMP HI LVL.

d. CC HX Outlet Temperature is 106°F and increasing.
47020-0502, 11 CC HX OUTLET HI TEMP.

61. Given the following conditions:

- Unit 1 was at 100% power.
- Due to a toxic gas environment, the Control Room was evacuated.
- 1C1.3 AOP1, Shutdown From Outside the Control Room – Unit 1, was entered.
- The operators were NOT able to complete any actions in the Control Room before evacuating.
- The Lead Operator trips the Turbine from the front standard BEFORE the Reactor Operator can trip the Reactor from the Rod Drive Room.

Because of this action,

a. the Reactor trips.
Buses 11,12,13, and 14 transfer to the 1R transformer.

b. the Reactor must still be tripped MANUALLY from the Rod Drive Room.
Buses 11,12,13, and 14 transfer to the 1R transformer.

c. the Reactor trips.
Buses 11,12,13, and 14 do NOT transfer to the 1R transformer.

d. the Reactor must still be tripped MANUALLY from the Rod Drive Room.
Buses 11,12,13, and 14 do NOT transfer to the 1R transformer.

62. Given the following conditions:

- Unit 2 is at 100% power.
- A Small Break LOCA then occurred.
- RCS Pressure is 325 psig and slowly decreasing.
- Containment pressure peaked at 6 psig and is now 3 psig.
- BOTH Safety Injection Pumps are running, but Safety Injection Cold Leg Injection Flow CANNOT be established.
- The crew has entered 2FR-C.3, Response to Saturated Core Cooling and is performing Step 2.
- RHR Pumps are BOTH running.

What are ALL the action(s) that must be taken to COMPLETE step 2, Verify SI Flow?

a. Attempt to establish Maximum Charging Flow.

b. Establish SI Vessel Injection Flow.

c. Establish SI Vessel Injection Flow.
Attempt to establish Maximum Charging flow.
Establish RHR flow.

d. Establish SI Vessel Injection Flow.
Attempt to establish Maximum Charging Flow.

63. 2ES-0.4, Natural Circulation Cooldown with Steam Void in Vessel, Step 2, requires the user to “Establish Pressurizer Level to Accomodate Void Growth.”

The Note before this step states “IF Pressurizer is water solid, THEN saturated conditions in the Pressurizer should be established before attempting to reduce Pressurizer level.”

If the Pressurizer is NOT saturated, decreasing Pressurizer level using Charging and Letdown will cause Pressurizer pressure to _____ _____ than if the Pressurizer were saturated.

Though Pressurizer pressure still decreases when level is reduced under saturated conditions, the rate of decrease is _____ since vapor is created as the pressure drops.

a. increase slower
faster

b. increase slower
slower

c. decrease faster
faster

d. decrease faster
slower

64. Given the following conditions:

- A Design Basis LOCA has occurred in Unit 1.
- Operators are responding per 1FR-Z.1, Response to High Containment Pressure.

Based on the operating behavior characteristics of the facility, Containment Pressure should remain below _____, IF _____.
The Containment Fan Coil Units must be running in SLOW to the DOME to _____.

a. 23 psig, IF 1 Containment Spray Pump AND 1 Containment Fan Coil Unit is running. prevent the discharge of the fans from interfering with the operation of the Containment Spray System.

b. 23 psig, IF 1 Containment Spray Pump AND 2 Containment Fain Coil Unit are running. prevent stalling under the high density atmospheric conditions in the Containment.

c. 46 psig, IF 1 Containment Spray Pump AND 1 Containment Fan Coil Unit is running. prevent the discharge of the fans from interfering with the operation of the Containment Spray System.

d. 46 psig, IF 1 Containment Spray Pump AND 2 Containment Fan Coil Units are running. prevent stalling under the high density atmospheric conditions in the Containment.

65. Unit 1 is responding to a Small Break LOCA with Fuel Failure. Containment radiation levels are extremely HIGH.

Which system should be operated to reduce the release or radiation to the general public in this situation?

a. Containment Spray System.

b. Containment Post-LOCA Ventilation System.

c. Containment In-Service Purge.

d. Containment Cleanup Fans.

66. Given the following conditions:
    - Unit 1 is at 100% power.
    - No control room activities are in progress.
    - The RO requests to move control bank D in 1 step for a minor adjustment of Axial Flux Deviation.

    What are the requirements to perform this activity?

    a. A peer check is NOT required because this activity adds negative reactivity.

    b. A peer check is required for this activity.

    c. A peer check is NOT required, but the Shift Supervisor must give prior concurrence for the activity.

    d. A peer check is NOT required but encouraged for this activity.

67. The unit is at 50% power. Which of the following conditions would require verification that Shutdown Margin is within limits within 1 hour?

    a. The Isothermal Temperature Coefficient is determined to be positive.

    b. Core Reactivity is not within +/- 1% $\Delta k/k$ of predicted values.

    c. Two control rods in Control Bank D are declared INOPERABLE.

    d. Two Rod Position Indicators in two DIFFERENT groups in Control Bank D are declared INOPERABLE.

68. Given the following conditions:
- Unit 1 is at 100% power.
- Bus 11 loses power.
- The Reactor trip breakers do NOT open.

What are ALL the DIRECT IMMEDIATE responses (if any) of the AMSAC/DSS System?

a. All control rods on the bottom.
Turbine is tripped.
11 TDAFWP is running.
Steam Generator Blowdown is isolated.

b. All control rods on the bottom.
Turbine is tripped.
Both AFW Pumps are running.

c. All control rods on the bottom.
Turbine is tripped.

d. No response. The time delay has not yet been satisfied.

69. A Reactor startup is in progress on Unit 2 after a Refueling Outage with the following conditions:

- You are stabilizing power at $1x10^{-8}$ amps.
- ITC is slightly positive.
- AFW flow to 12 SG is increased from 30 gpm to 50 gpm to maintain level.

Power will _____ and the RO will _____.

a. increase; insert control rods to stabilize Reactor power.

b. increase; allow power to increase to the POAH to avoid using control rods.

c. decrease; withdraw control rods to stabilize Reactor power.

d. decrease; allow power to decrease to avoid using control rods.

70. The Unit 2 Lead Reactor Operator is performing SP2001B, Unit 2 Control Room Log – Modes 1 and 2. What are the required actions on step 9?

a. Circle the “40%” recorded for 2LI-463.
IMMEDIATELY notify the Unit 2 Shift Supervisor.

b. Circle the “41%” recorded for 2LI-462.
IMMEDIATELY notify the Unit 2 Shift Supervisor.

c. Circle the “41%” recorded for 2LI-462 AND THE “40%” recorded for 2LI-463.
Note the discrepancy on the SP2001B coversheet and complete the logs.

d. Initial the block for “Check A S/G NR deviations within above values.”

71. A point source in containment is reading 500 mrem/hour at a distance of 2 feet. Two options are available to complete a required job near this source:

Option 1: ONE operator can perform the job in 40 minutes working at a distance of 3 feet from the source.

Option 2: TWO operators can perform the job in 65 minutes at a distance of 6 feet from the source.

What is the expected dose when the preferred option based on ALARA policy is chosen?

a. 30 mrem

b. 37 mrem

c. 120 mrem

d. 148 mrem

72.

- Unit 1 is in the Severe Accident Management Guidelnes (SAMGs)
- You are an extra operator assigned to the TSC.
- You are tasked with aligning the Fire Header to the 11 SI Pump Suction.
- Local area radiation levels are 200 Rem/hour.
- The task will take 10 minutes to complete.

What are the requirements for performing this task per F3-12, Table 1?

a. This task MUST be performed by multiple operators with Emergency Director permission to receive up to 10 Rem each.

b. This task may be performed by a single operator with Emergency Director permission to receive up to 25 Rem.

c. A volunteer fully aware of the risk WITH Emergency Direction permission to receive in excess of 25 Rem.

d. This task MUST be performed by multiple operators with Emergency Director permission to receive up to 25 Rem each.

73. Given the following:

- You are performing an isolation on the CVCS system.
- The work requires a full set of anti-C's.
- The hose comes off of the valve when it is opened.
- A large amount of water sprays on the walls and equipment.
- The spray also wets the leg of your anti-C's.
- The vent valve has been re-closed.
- You have exited the charging pump room.

What additional actions are required per F2, "Radiation Safety?"

a. Call x4911 to report the spill.
LEAVE the area and proceed to Access Control for decontamination.

b. Contact the Control Room and remain NEAR the area to keep personnel out until assistance arrives.

c. Remove anti-C's <u>AND</u> proceed to Access Control.

d. Call the Lead RPS to report the unexpected contamination.
Remain in the area until assistance arrives.

74. Which one of the following Abnormal Operating Procedures is considered important enough that actions are directed to continue IN PARALLEL with required Emergency Operating Procedures?

a. 1C5 AOP5, "Unit 1 Misaligned Rod, Stuck Rod, and/or RPI Failure or Drift."

b. C34 AOP1, "Loss of Instrument Air."

c. C22.5 AOP1, "Loss of Generator Bus Duct Cooling."

d. 1C28.2 AOP1, "Unit 1 Feedwater Regulating Valve Control Failure."

75. During an emergency, it becomes necessary to energize Unit 1 Pressurizer Heater “A” LOCALLY.

This action will be accomplished from _____.

If placed in LOCAL, Unit 1 Pressurizer Heater “A” will _____ on a Pressurizer Low Level signal.

a. MCC 1S1.
still cutout

b. MCC 1S1.
NOT cutout

c. Train “A’ Hot Shutdown Panel.
NOT cutout

d. Train “A’ Hot Shutdown Panel.
still cutout

76. Given the following conditions:
- Unit 2 is at 100% power.
- D6 has been out of service for 2 days for cylinder liner replacements.
- The Unit 2 Turbine Building Operator reports that the D5 Diesel Room Cooling Exhaust Damper is failed AND in its Safeguards Position.
- D5 room temperature is 70°F.

What Technical Specification implications exist at this time AND what actions should be taken?

a. LCO 3.0.3 applies.
Be in Mode 3 within 7 hours.

b. LCO 3.8.1, Condition E is NOT MET.
Restore EITHER D5 or D6 to service within 2 hours.

c. LCO 3.8.1, Condition B is NOT MET.
D5 remains OPERABLE, restore D6 to service within 14 days of its original Out of Service time.

d. LCO 3.8.1, Condition B is NOT MET.
D5 remains OPERABLE, restore D6 to service within 7 days of its original Out of Service time.

77. Given the following conditions:
- Unit 2 is at 100% power.
- A Pressurizer PORV then OPENS and CANNOT be isolated.

What response is expected AND what procedural path is followed?

a. RCS leakage is within Charging Pump capacity.
Enter 2C4 AOP1, Reactor Coolant Leak AND shut down Unit 2 using Normal Operating Procedures.

b. Reactor Trip AND Safety Injection are required.
Enter 2E-0, Reactor Trip or Safety Injection, TRANSITION to
2E-1, Loss of Reactor or Secondary Coolant, TRANSITION to
2ES-1.1, Post LOCA Cooldown and Depressurization.

c. Reactor Trip AND Safety Injection are required.
Enter 2E-0, Reactor Trip or Safety Injection, TRANSITION to 2E-1, Loss of Reactor or Secondary Coolant, TRANSITION to 2ES-0.2, SI Termination.

d. Reactor Trip AND Safety Injection are required.
Enter 2E-0, Reactor Trip or Safety Injection, TRANSITION to 2E-1, Loss of Reactor or Secondary Coolant, TRANSITION to 2ES-1.2, Transfer To Recirculation.

78. Given the following:

- A Small Break LOCA has occurred in Unit 1.
- Bus 16 has LOCKED OUT.
- The crew has completed 1E-0, Reactor Trip or Safety Injection.
- The crew is performing 1E-1, Loss of Reactor or Secondary Coolant.
- SI flow has been verified.
- RCS pressure is 1550 psig and slowly decreasing.
- Containment pressure is 3 psig and slowly increasing.
- 11 Component Cooling Pump then TRIPS.

What action is required from the Shift Supervisor regarding Reactor Coolant Pump operation?

a. EVEN if Reactor Coolant Pump bearing temperatures increase above 200ºF, direct the operator to continue operating both Reactor Coolant Pumps UNTIL later EOP steps direct stopping them.

b. Reactor Coolant Pump Trip Criteria is MET; direct the operator to TRIP BOTH Reactor Coolant Pumps immediately per the information page of 1E-1, Loss of Reactor or Secondary Coolant.

c. ONLY 11 Reactor Coolant Pump bearing temperature is expected to increase. If 11 Reactor Coolant Pump bearing temperatures reach 200°F, then TRIP the pump per C47.

d. BOTH Reactor Coolant Pumps bearing temperatures will increase. If EITHER pump's bearing temperature reaches 200°F then TRIP the pump per 1C14 AOP1, Loss of Component Cooling.

79. Given the following conditions:
- A small break LOCA is in progress in Unit 2.
- Following the LOCA, containment pressure reached 8 psig and is now slowly decreasing.
- 22 TDAFWP has tripped and CANNOT be restarted.
- Offsite power has been LOST.

What Emergency Classification is required to be made?

a. Unusual Event

b. Alert

c. Site Area Emergency

d. General Emergency

80. Given the following conditions:
- Unit 1 had a Reactor Trip and Safety Injection from 100% power.
- 12 Steam Generator is faulted to the AUXILIARY BUILDING.
- All personnel in the Auxiliary Building have NOT been accounted for.
- 1E-2, Faulted Steam Generator, IS COMPLETE.
- 1E-1, Loss of Reactor or Secondary Coolant, is IN PROGRESS.
- 12 Steam Generator is at 35 psig and 2% WR level.
- Steam Dumps are controlling RCS temperature.

1R-15, Condenser Air Ejector Radiation Monitor, increases rapidly and alarms at 2550 cps.

What has occurred <u>AND</u> what is the implication of this?

a. 12 Steam Generator is faulted <u>AND</u> ruptured.
Primary to Secondary leakage cannot be stopped until Cold Shutdown is reached.
Cooldown and SI Termination will be completed in 1ECA-3.1, SGTR with Loss of Reactor Coolant – Subcooled Recovery.

b. 11 Steam Generator is RUPTURED.
12 Steam Generator should NOT be used for cooldown, THEREFORE Primary to Secondary Leakage cannot be stopped until Cold Shutdown is reached.
Cooldown and SI Termination will be completed in 1ECA-3.1, SGTR with Loss of Reactor Coolant – Subcooled Recovery.

c. 11 Steam Generator is RUPTURED.
If a cooldown is required, 12 Steam Generator CAN be used, provided feedwater flow is initiated SLOWLY.
Cooldown and SI Termination will be completed in 1E-3, Steam Generator Tube Rupture.

d. 11 Steam Generator has Primary to Secondary leakage. A transition to 1E-3, Steam Generator Tube Rupture, will be made ONLY if 11 Steam Generator level increases uncontrollably.

81. Given the following conditions:
- Unit 2 experienced a 21 Main Steam Line Break inside Containment.
- A Reactor Trip and Safety Injection occurred.
- The crew has transitioned from 2E-2, Faulted Steam Generator Isolation TO 2E-1, Loss of Reactor or Secondary Coolant.

The following conditions are noted:
- Containment Pressure is 17 psig and slowly increasing.
- 21 Steam Generator Level is 6% WR and decreasing.
- 21 Steam Generator Pressure is 142 psig and decreasing.
- 22 Steam Generator Level is 58% WR and slowly increasing.
- 22 Steam Generator Pressure is 765 psig and slowly decreasing.
- RCS pressure is 1566 psig and slowly decreasing.
- Subcooling is 221ºF and slowly increasing.
- Auxiliary Feedwater Flow to 22 Steam Generator is 200 gpm and stable.
- Pressurizer level is offscale low.

Upon entry into 2E-1, what actions will the Shift Supervisor make?

a. Perform the actions of 2E-1 until SI Termination Criteria are MET, THEN transition to 2ES-0.2, SI Termination.

b. Transition back to 2E-2, Faulted Steam Generator Isolation.

c. Perform the actions of 2E-1 THEN transition to 2ES-1.1, Post LOCA Cooldown and Depressurization.

d. Transition to 2FR-Z.1, High Containment Pressure.

82. Given the following conditions:

- Unit 1 was at 100% power.
- An RCS leak in the Auxiliary Building occurred.
- The crew was unable to isolate the leak.
- The crew tripped the Reactor and manually initiated Safety Injection.
- The crew completed 1E-0, Reactor Trip or Safety Injection AND transitioned to 1ECA-1.2, LOCA Outside Containment.

The Lead Reactor Operator finished performing Attachment L of 1E-0 and informs the Shift Supervisor that BOTH 11 and 21 Auxiliary Building Makeup Air Unit Fans are RUNNING.

What is the MOST limiting Technical Specification LCO that is NOT met AND what action is required to be taken?

a. LCO 3.4.14, RCS Operational Leakage.
Identify leakage within 54 hours OR be in Mode 5 in 84 hours.

b. LCO 3.0.3.
Be in Mode 4 within 13 hours.

c. LCO 3.4.14, RCS Operational Leakage.
Be in Mode 3 within 6 hours.

d. LCO 3.7.12, Auxiliary Building Special Ventilation System.
Restore ABSVS train to OPERABLE within 7 days.

83. Given the following conditions:

- Unit 2 is at 25% power near the end of the operating cycle.
- Due to a voltage transient, all RPIs are out of service and being investigated.
- Actions are being taking for the RPI failure per Technical Specification 3.1.7.
- A transient then occurs that results in RCS Temperature and Pressure changes and OUTWARD Control Rod movement in AUTO.

The following parameters were then noted.

- N-41 = 20%, N-42 = 26%, N-43 = 28%, N-44 = 27%.
- Control Rods are 20 steps further OUT from their beginning position.
- Tave is equal to Tref.

What is the cause of the transient AND what action will the Shift Supervisor direct?

a. Turbine Runback.
Direct entry into 2C23 AOP1, Turbine Runback.

b. Dropped Control Rod.
Direct entry into 2C5 AOP4, Dropped RCCA.

c. N-41 has failed downscale.
Direct entry into 2C51.1, Instrument Failure Guide, for N-41.

d. RCS Boration.
Determine the cause of and STOP the inadvertent boration AND restore the plant to the desired power level per 2C1.4, Power Operation.

84. Given the following:

- Unit 1 was raising power from 45% to 100% per 1C1.4, Power Operation.
- 47013-0507, Computer Alarm Rod Deviation/Sequencing, alarmed.
- Control Bank D Rod C7 is determined to be at 170 steps by flux trace.
- Control Bank D position is 185 steps.
- 1C5 AOP5, Misaligned Rod, Stuck Rod, and/or RPI Failure or Drift, is complete through step 2.4.2.
- The ERCS plot for 2.4.2.C is attached.

What has occurred and what actions are required per Technical Specifications?

a. The C-7 Rod Position Indicator has malfunctioned.
Enter LCO 3.1.7, Condition A AND verify C-7 position once per 8 hours.

b. Rod C-7 is STUCK and is INOPERABLE.
LCO 3.1.4, Condition A is entered, AND LCO 3.1.6 is MET. Be in MODE 3 within 6 hours.

c. Rod C-7 is STUCK and is INOPERABLE.
LCO 3.1.4, Condition A AND LCO 3.1.6, Condition A, are BOTH entered.
Initiate boration within 1 hour, restore compliance with LCO 3.1.6 within 2 hours, and be in MODE 3 within 6 hours.

d. Rod C-7 is MISALIGNED.
LCO 3.1.4, Condition B is entered; LCO 3.1.6 is MET. Contact Nuclear Engineering to perform the required surveillances.

85. The Control Room has been evacuated due to a fire AND has entered F5 Appendix B, Control Room Evacuation (Fire).

The Unit 1 Shift Supervisor is required to “Establish AFW Flow” per Attachment I. IF AFWP suction pressure approaches 3 psi, THEN this individual is responsible to…..

a. switch over to Cooling Water for AFWP suction.

b. locally trip the TDAFWPs.

c. refill the CST’s from the Condensate System.

d. prepare to feed the Steam Generators from Main Feedwater.

86. Given the following conditions:
- Unit 2 was at 100% power.
- A Main Steam Line break INSIDE containment occurred.
- SI has been RESET.
- All SI and RHR pumps have been STOPPED.
- Reactor Trip Breakers have NOT been operated since the Reactor Trip.

IF a Large Break LOCA occurs, THEN what is the plant response AND what actions will the Shift Supervisor take?

a. An automatic Safety Injection on High Containment Pressure occurs.
Direct entry into 2E-0, Reactor Trip or Safety Injection, STEP 1.

b. NO automatic Safety Injection occurs.
Manually START Safety Injection pumps AND go to 2E-1, Loss of Reactor or Secondary Coolant, STEP 1.

c. An automatic Safety Injection on Low Pressurizer Pressure occurs.
Direct entry into 2E-1, Loss of Reactor or Secondary Coolant, STEP 1.

d. NO automatic Safety Injection occurs.
Direct a MANUAL Safety Injection AND go to 2E-0, Reactor Trip or Safety Injection, STEP 3.

87. Given the following conditions:
- Unit 1 is at 7% and increasing power per 1C1.2, Unit 1 Startup.
- Pressurizer Level Channel 1LT-426 (RED) failed HIGH.
- The crew has completed all required actions per 1C51.1, Red Channel Instrument Failure Guide.
- The Pressurizer Level Selector Switch is in the “2-3” (WHITE-BLUE) position.
- Troubleshooting of 1LT-426 is in progress.
- Pressurizer Level Channel 1LT-428 (BLUE) fails LOW.

Which of the following is a required TECHNICAL SPECIFICATION action?

a. Do NOT raise power above 10% until BOTH level channels are declared OPERABLE OR LCO 3.0.4 is satisfied.

b. Initiate action within 1 hour to place the unit in MODE 3 within 7 hours.

c. Operate A and B Pressurizer Heaters locally at the Hot Shutdown Panel.

d. Trip bistables for 1LT-428.

88. Given the following conditions:
- 2 hours ago, Unit 2 had a Loss of Offsite Power and a Reactor Trip.
- The crew has restored power to Buses 21 and 22.
- Voltage on both buses is calculated to be 70% of the rated bus voltage.

What Technical Specification actions (if any) are required?

a. NO actions are required.

b. Restore ONE RCS loop to OPERABLE status within 72 hours.

c. Initiate action to restore ONE RCS loop to OPERABLE status <u>AND</u> in operation IMMEDIATELY.

d. Place both channels of UV relays in TRIP within 6 hours.

89. Given the following conditions:

- Unit 2 is in Mode 5.
- 2C1.2, Unit 2 Startup Procedure, is in progress.
- 21 RHR pump is in service and OPERABLE per Technical Specification 3.4.7, RCS Loops – MODE 5, Loops Filled.
- 22 RHR pump is tagged out for emergent work.
- RCS temperature is 185°F and stable.
- 22 Steam Generator is capable of removing decay heat if required per Technical Specification 3.4.7, RCS Loops – MODE 5, Loops Filled.
- 21 Steam Generator is NOT available for heat removal.

CV-31233, PRZR PORV B, fails OPEN and CANNOT be isolated.

What Technical Specification (if any) is impacted AND what actions will be taken?

a. NONE, LCO 3.4.7 is MET.

b. LCO 3.4.7, Condition B is ENTERED due to 22 Steam Generator NOT being capable of removing decay heat.
Initiate action to restore EITHER an RHR loop OR a required Steam Generator capable of removing decay heat IMMEDIATELY.

c. LCO 3.4.7, Condition A is ENTERED due to RHR Loop A NOT being OPERABLE.
Initiate action to restore EITHER an RHR loop OR a required Steam Generator capable of removing decay heat IMMEDIATELY.

d. LCO 3.4.7, Condition C is ENTERED due to RHR Loop A NOT being OPERABLE.
Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet Shutdown Margin requirements.

90. Given the following conditions:

- Unit 1 is at 100% power.
- A secondary transient causes BOTH Steam Generator levels to rise to 57% NR where they have been STABILIZED.
- The average steam flow signal used by the Steam Generator Water Level Control System then FAILS low.

What is the system response AND what actions will the Shift Supervisor take?

a. Steam generators levels begin INCREASING.
Take BOTH Feedwater Regulating Valves to MANUAL AND restore Steam Generator levels to program.
If any Steam Generator level approaches 67%, then TRIP the Reactor and enter 1E-0, Reactor Trip or Safety Injection.

b. BOTH Feedwater Regulating Valves FAILED to MANUAL control AS IS.
Restore Steam Generator levels back to program.
Use 5AWI 3.6.0 to evaluate the need to issue a Non-Emergency Report to the NRC for operation potentially outside the design basis of the plant.

c. BOTH Feedwater Regulating Valves FAILED to MANUAL control CLOSED.
Trip the Reactor and enter 1E-0, Reactor Trip or Safety Injection.

d. BOTH Feedwater Regulating Valves FAILED to MANUAL control AS IS.
Restore Steam Generator levels back to Program.
Declare BOTH Feedwater Regulating Valves INOPERABLE and enter Technical Specification 3.0.3.

91. Given the following conditions:
- Unit 1 Steam Generators are blowing down to the river for chemistry control
- 123 ADT Monitor Tank is being released to the river.
- A voltage transient on Train B radiation monitors occurs.
- R-18 Liquid Release Monitor AND 1R-19 SG Blowdown Monitor power fuses have blown.

Which of the following actions is correct per H4 “Offsite Dose Calculation Manual (ODCM)?”

a. ALL releases to the river must be suspended until completion of sampling, release rate calculation verification and walkdown of discharge flowpath.

b. ALL releases to the river may continue provided the flow rate is estimated when required by the ODCM.

c. 123 ADT Monitor Tank release may continue provided samples are taken when required by the ODCM.
Blowdown to the river must be suspended until completion of sampling, release rate calculations and walkdown of discharge flowpath.

d. Blowdown to the river may continue provided samples are taken when required by the ODCM.
123 ADT Monitor Tank release must be suspended until completion of sampling, release rate calculation verification and walkdown of discharge flowpath.

92. Given the following conditions:
- Unit 1 is performing a Reactor Startup per 1C1.2, Unit 1 Startup Procedure.
- 47014-0401,P-6 SOURCE RANGE PERMISSIVE, is LIT.
- Intermediate Range N-36 is reading greater than $1X10^{-10}$ amps with greater than 1 decade of overlap.
- Intermediate Range N-35 is NOT on scale.

What actions will the Shift Supervisor take?

a. Direct the operator NOT to block Source Range High Level trips.
Open the Reactor Trip Breakers immediately.

b. Direct the operator NOT to block Source Range High Level trips.
Fully insert all Control Banks within 7 hours.

c. Direct the operator to BLOCK Source Range High Level trips.
Raise power above P-10 within 24 hours.

d. Direct the operator NOT to block Source Range High Level trips.
Reduce power below P-6 within 24 hours.

93. During refueling, a Fuel Assembly is stuck in the Unit 1 Fuel Transfer Tube.

The Shift Supervisor should direct that the conveyor car will be pulled to the……

a. reactor side to contain any radiation from a potentially damaged Fuel Assembly.

b. reactor side to allow easier access to the pulley system.

c. SFP side so the Transfer Tube gate valve may be closed.

d. SFP side to avoid disrupting other work in Containment.

94. Which of the following SHALL require notification of the Operations Manager, Duty Station Manager, AND the NRC Resident Inspector?

a. A tagging error was caught by Maintenance on walkdown, resulting in an Operations Department Human Performance Clock Reset at 100% power.

b. A Containment Spray Pump Breaker locks out during its quarterly surveillance test and the pump is declared INOPERABLE at 100% power.

c. A relief crew operator cut his finger and it was treated and bandaged on site. The worker finished his shift and went home.

d. Emergency Diesel Generator D5 has been out of service for 4 days for inspections and planned maintenance.

95. Given the following conditions:
- 1C1.2, Unit 1 Startup Procedure is in progress.
- The Reactor Operator asks permission to complete step 5.1.16.B while waiting on the call back from the outplant operator for the values required for step 5.1.16.A.

The Shift Supervisor…….

a. may ONLY allow this deviation with concurrence from the Operations Manager.

b. may allow this deviation as this is an INFORMATION USE procedure.

c. may allow this deviation if desired per the guidance of C1.0, General Instructions.

d. may NOT allow this deviation under any circumstances.

96. Given the following conditions:
- Unit 2 is in MODE 2.
- The unit is being shutdown for a refueling outage per 2C1.3, Unit 2 Shutdown.
- Due to a series of malfunctions, the Reactor Core Safety Limit for the combination of Thermal Power, Reactor Coolant System highest Loop Average Temperature, and Pressurizer Pressure EXCEEDED the limits specified in the COLR.

What action will be taken (if any)?

a. NO actions are required. This Safety Limit ONLY applies in MODE 1.

b. WITHIN 5 minutes, either restore compliance with the limit OR be in MODE 3.

c. Restore compliance with the limit AND be in MODE 3 within 1 hour.

d. Restore compliance with the limit OR be in MODE 3 within 1 hour.

97. C21.3.10.1, Releasing Radioactive Gas From 121 Low Level Gas Decay Tank, is in progress.

Which individual APPROVES the release ON the Gas Decay Tank Pre-Release Authorization Form?

a. Duty Chemist

b. Radiation/Chemistry Manager

c. Shift Supervisor

d. Shift Manager

98. Given the following:

- Unit 2 is at 100% power.
- Containment/Auxiliary Building chillers are OOS for maintenance.
- Containment Fan Coil Units are aligned to Cooling Water with an inlet temperature of 73ºF.
- Containment pressure is 1.3 psig and rising.
- Containment temperatures are 115ºF, 110ºF, and 100ºF, for 755', 735', and 695' respectively.

What action will the Shift Supervisor direct?

a. Direct placing the Post-LOCA Ventilation System in service to reduce containment pressure per 2C19.4, Post LOCA Vent System Depressurizing the Containment Vessel.

b. Direct placing the Containment In-Service Purge System in service to reduce containment pressure per 2C19.2, Containment System Ventilation.

c. Direct the alignment of all Containment Fan Coil Units to the DOME to cool Containment and reduce pressure per 2C19.2, Containment System Ventilation.

d. Direct a Unit Shutdown per 2C1.4, Power Operations and 2C1.3, Unit 2 Shutdown, due to Containment Temperature exceeding its Technical Specification limit.

99. Given the following conditions:

- A Large Break LOCA is in progress.
- A Site Area Emergency has been declared.
- You are informed that general area radiation levels in the Auxiliary Building are 150 mrem/hour.

What direction will you give NEXT to the Auxiliary Building operators?

a. Obtain and wear the high range alarming radiation dosimeter from the Auxiliary Building Operator's shack.

b. Proceed to the Auxiliary Building Operator's shack and await direction from the OSC.

c. Evacuate the Auxiliary Building and proceed to the OSC.

d. Proceed to Access Control and await direction from the OSC.

100. Given the following conditions:

- Unit 2 has had a Large Break LOCA and a Loss of Offsite Power.
- Fuel damage has occurred.
- Prior to this event, 22 RHR Pit Cover was OPENED for light bulb replacement.
- The crew has just transitioned to 2ES-1.2, Transfer to Recirculation.
- Attachment K has been completed EXCEPT for closing 22 RHR Pit Cover.
- It will take approximately 1 hour to close the 22 RHR Pit Cover.
- Local dose rates near the RHR pumps are as described in F3-25, Reentry.
- Offsite power is NOT expected to be restored for 4 hours.

What action is required from the Shift Supervisor?

a. Place BOTH RHR trains in Recirculation WITH 22 RHR Pit Cover OPEN.

b. WHEN 22 RHR Pit Cover is CLOSED, THEN place both RHR trains in Recirculation.

c. Place 21 RHR in Recirculation, THEN CLOSE 22 RHR Pit Cover, THEN place 22 RHR in Recirculation.

d. Place 21 RHR in Recirculation, do NOT place 22 RHR in Recirculation.