U.S. Nuclear Regulatory Commission
Site-Specific
Written Examination

Applicant Information	
Name:	Region: (I) / II / III / IV
Date: July 12, 2002	Facility/Unit: CCNPP / 1 & 2
License Level: RO / (SRO)	Reactor Type: W / (CE) / BW / GE
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected five hours after the examination starts.

Applicant Certification

All work done on this examination is my own. I have neither given nor received aid.

_____
Applicant's Signature

Results	
Examination Value	_____ Points
Applicant's Score	_____ Points
Applicant's Grade	_____ Percent

Name: _____

1. A reactor startup is in progress per OP-2, group 2 CEAs are being fully withdrawn in the Manual Individual mode.
   Which set of conditions would indicate an **inoperable** stuck CEA?

   A. CEAPDS position for the affected CEA indicates 130", primary position indicates 126", "PRIMARY CEA POSITION DEVIATION +/- 4" alarm.

   B. Primary position for the affected CEA indicates 130.5", CEAPDS position is 127", "SECONDARY CEA POSITION DEVIATION +/- 4" alarm.

   C. Primary position for the affected CEA indicates 130.5", CEAPDS position is 120","PRIMARY CEA POSITION DEVIATION +/- 8" alarm.

   D. CEAPDS position for the affected CEA indicates 1.5", primary position indicates 0", "PRIMARY CEA POSITION DEVIATION +/- 8" alarm.

2. Given the following:
   * Unit 2 has tripped due to a Loss of Offsite Power, EOP-2 has been implemented
   * Plant cooldown has commenced
   * 21 loop Th 520°F and Tc 525°F
   * 22 loop Th 535°F and Tc 520°F

   Which of the following is the required action by the CRO for this condition?

   A. Increase steaming rate via TBVs.

   B. Increase steaming from 21 S/G via ADV.

   C. Increase steaming from 22 S/G via ADV.

   D. Lower steaming from 21 S/G.

3. Given the following:

   - Unit 1 is operating at 100% power.
   - Alarm 1C07B X-02 11A RCP, CCW FLOW LO, has actuated.

   WHICH of the following RCP conditions requires the operator to trip the reactor and the reactor coolant pump?

   A. Upper thrust bearing temperature is 197°F.

   B. Controlled bleed off flow is 2.0 gpm.

   C. Guidebearing temperature is 193°F.

   D. Component cooling water outlet temperature at the RCP is 135°F.

4. Given the following conditions:
   * Unit 1 at 100% power
   * Pressurizer pressure is 2250 psia
   * PZR backup and proportional heater control in auto
   * 1-HS-100 (PZR pressure control) in the "Y" position
   * 1-HS-100-3 (PZR htr cutoff) in the "X+Y" position
   * 1-PT-100Y fails high

   Select the expected PROPORTIONAL HEATER response. Assume no Operator action.

   A. Proportional heaters will continue to operate at approximately 1/3 higher power level than before the failure.

   B. Proportional heaters will operate at approximately 1/3 lower power level than before the failure.

   C. Proportional heaters will de-energize and the green light will be illuminated.

   D. Proportional heaters will de-energize and the red light will be illuminated.

5. What action does the Unit-2 CRO take to prevent an excessive heat transfer conditon in the event of an uncomplicated reactor trip?

   A. Press "Reset" button on the MSR control panel.

   B. Ensure both 2nd stage steam source MOVs shut.

   C. Shut upstream drain MOVs.

   D. Shut the Main Steam Isolation Valves.

6. Given the following:
   - An overcooling event has occurred

   WHICH Steam Generator should be isolated?

   A. The Steam Generator with the highest Tcold.

   B. The Steam Generator with the lowest steam pressure.

   C. The Steam Generator with the lowest AFW flow.

   D. The Steam Generator with the highest level.

7. A Unit-1 plant startup is in progress. Turbine load is 230 MWe and increasing when condenser vacuum begins to lower. The power increase is stopped, but vacuum continues to degrade and is now 24" Hg. Which one of the following actions are required?

   A. Direct the operators to decrease turbine load until vacuum is > 25".

   B. Direct the operators to trip the reactor and implement EOP-0.

   C. Direct the CRO to trip the turbine and start an Auxiliary Feed Pump.

   D. Direct the CRO to shift all steam flow to TBVs and shutdown the main turbine.

8. In EOP-7 (Station Blackout), if none of the 4KV buses have been re-energized, the operators are directed to check 125V DC bus amps less than stated limits. What is the basis for this step?
   A. Ensure DC bus feeder breakers do not trip on overload
   B. Ensures DC loads are not damaged by overcurrent
   C. Allows operators to take action to maintain battery life
   D. Allows operators to take action to protect loads from undervoltage

9. Given the following:
   - Unit 1 is at 100% power
   - Pressurizer level instrumentation is selected to channel X
   - Reactor Reg is selected to channel X
   - 120VAC bus 1Y01 has been de-energized, resulting in:
     Channel X pressurizer level control and indication fails low
     Loss of Reactor Reg system channel X
     Loss of RCS loop 11 instruments to Reactor Reg system channel Y
     CNTMT IA Control Valve, 1-IA-2085-CV shuts

   With **no operator action,** how will pressurizer level respond long term and why?

   A. Pressurizer level will lower slightly due to an improper level setpoint generated by the reactor regulating system using failed Tc inputs.
   B. Pressurizer level will rise slightly due to an improper level setpoint generated by the reactor regulating system using failed Tavg inputs.
   C. Pressurizer level will rise continuously due to all charging pumps starting and letdown being isolated.
   D. Pressurizer level will lower continuously due to letdown going to maximum and the backup charging pumps receiving a stop signal.

10. Unit-1 is at 100% power when 11 SW pump trips. "U-1 4KV ESF MOTOR OVERLOAD" alarm is annunciated. No common mode failure is indicated and the Control Room crew has decided to align align the standby pump per the applicable procedure.

    Per plant administrative procedures, which is a correct method to direct the Plant Operators' response to this situation?

    A. Direct the PPO to "restore Saltwater per AOP-7A".
    B. Direct the Turbine Building Operator to "align 13 SW power supply from 11 4KV bus" and direct the Outside Operator to "align 13 SW pump to 11 header per AOP-7A".
    C. Announce over the plant page "11 SW pump has tripped, realign 13 SW pump."
    D. Direct the Outside Operator to "align 13 SW pump to 11 header".

11. AOP-9A allows the Turbine Building Operator to control AFW discharge pressure locally.
How can the operator at 1(2)C43 verify adequate AFW pump speed?

A. Comparing local (AFW pump room) AFW pump discharge pressure with local (AFW pump room)11 and 12 S/G pressure indications as reported by the TBO.

B. Comparing local (AFW pump room) AFW pump speed indications as reported by the TBO with 1(2)C43 AFW pump discharge flow indications.

C. Comparing local (AFW pump room) AFW pump discharge pressure as reported by the TBO with 1(2)C43 11 and 12 S/G pressure indications.

D. Comparing local (AFW pump room) AFW pump flow as reported by the TBO with 1(2)C43 Main Steam header flow indications and monitoring S/G levels at 1(2)C43.

12. When recirculating the SDC system to the RWT in Mode 4 through the SIT recirc leakoff isolation valves, 1-SI-463 and 1-SI-455, what satisfies the requirements for maintaining containment integrity?

A. A locked valve log entry per NO-1-105.

B. Verification and a log entry of valve position every 15 minutes.

C. Verification that the valves have been shut within 72 hours of being opened.

D. A dedicated operator in continuous communication with the control room to shut valves if required.

13. Using provided references:
A reactor trip from 100% has occurred due to a loss of offsite power. The correct EOP has been entered and recovery actions are underway when the following conditions are noted:

--RCS Thot is 500°F and stable
--RCS pressure is 1500 psia and lowering
--Charging flow < letdown flow (letdown is rising)
--CETs indicate 500°F and stable
--11 S/G pressure 700 psia
--12 S/G pressure 680 psia
--Pressurizer level is 160 inches and rising

Based on the above conditions what is the required corrective action?

A. Energize 12 and 13 backup heaters to raise subcooling to 140°F.

B. Raise RCS cooldown rate (maintain < 100°F/hr).

C. Initiate Auxiliary Spray.

D. Lower RCS cooldown rate.

14. A high activity condition exists in the RCS. The Auxiliary Building has been evacuated except for Rad Con personnel taking surveys and the ABO. The Control Room has implemented the proper AOP. How will the Letdown and Purification lineup be configured and why?

    A. Letdown is set at minimum with Purification in service to reduce RCS activity and limit radiation levels in the Auxiliary Building.

    B. Letdown is secured to limit radiation levels in the Auxiliary Building.

    C. Letdown is maximized and Purification is bypassed to protect the ion exchanger.

    D. Letdown is maximized with Purification in service to reduce RCS activity.

15. Unit one is in Mode one at 100% power. Given the following trend on the 11B RCP:

TIME	VIBRATION	ALARMS
0000	14 mils	Alert - RCP vibration alarm
0100	16 mils	
0115	30 mils	Danger - RCP vibration alarm
0130	40 mils	
0145	44 mils	

    What action is required?

    A. Conduct a plant shutdown, and then secure RCP 11B.

    B. Trip reactor, perform reactivity control, and then secure RCP 11B.

    C. RCP 11B must be secured within 8 hours.

    D. Perform an Engineering Evaluation for continued operation.

16. What detemines the boric acid flow rate when borating per EOP-0 for more than one CEA failing to insert?

    A. Number of boric acid pumps running

    B. Number of charging pumps running

    C. Setpoint of Boric Acid Flow Controller, FIC-110Y

    D. RWT boron concentration

17. During reactor startup, at 1% power group 5 CEAs continue to move out after the "raise/ lower" switch has been released and the CEDS control panel has been turned "off".
What is the correct response?

A. Initiate fast boration.

B. Trip the reactor and implement EOP-0.

C. Attempt to stop the CEA motion by holding the "raise/lower" switch in the "lower" position.

D. Attempt to stop CEA motion by selecting an alternate regulating group of CEAs.

18. How is the value of FrT expected to have changed from its initial value as a result of a dropped CEA, short term (1 hour later) and long term (6 to 8 hours later)? Assume no operator action.

A. Increase, Increase.

B. Increase, Decrease.

C. Decrease, Increase.

D. Decrease, Decrease.

19. During EOP-0, in addition to the "CIS ACTUATED" annunciator alarm, which one of the following is required to verify that CIS has actuated?

A. SG Blowdown CVs have shut and blowdown has shifted to the Miscellaneous Waste system.

B. RCPs are tripped and all available containment air coolers are started in HIGH speed with maximum SRW cooling.

C. Containment Spray pumps start, spray header CVs open, and adequate spray flow is indicated through each header.

D. Component Cooling containment isolation valves have shut.

20. Unit-2 is at 100% power with the following conditions:
-Accoustic monitors ERV-402 and RV-200 indicate .01
-Quench tank pressure is rising slowly
-Pressurizer level is 216" and steady
-one charging pump is running
-letdown flow is 32 GPM
-AOP-2A has been implemented
-PORV block valves 402 and 404 are shut

What is the proper direction given to the RO and CRO?

A. Place the unit in cold shutdown per OP-3, OP-4 and OP-5.

B. Shut 2-CVC-515 and 2-CVC -516.

C. With S-NO concurrence, raise RCS pressure to cycle and reseat the leaking RV.

D. Trip the reactor and implement EOP-0.

21. Using references provided:
The plant has experienced a small break LOCA. The following plant conditions exist:

- Core exit thermocouples read 600°F.
- All RCPs are stopped.
- Pressurizer level indicates 300".
- Thot indicates 590°F.
- Tcold indicates 560°F.
- Pressurizer pressure indicates 1545 psia.

Calculate subcooled margin.
A. 40°F
B. 10°F
C. 5°F
D. 0°F

22. For Safety Injection pump operation **without** Component Cooling, under what plant conditions would you direct the Control Room Operators to monitor Shutdown Cooling Heat Exchanger RCS inlet temperature more frequently?

A. After RAS during a large break LOCA

B. Operational testing per STP-O-73 series

C. After more than 15 minutes of continuous operation during a small break LOCA

D. After more than 2 hours of Shutdown Cooling operation.

23. A charging header leak would be identified by which one of the following?

A. Lowering pressurizer level with minimum letdown flow and one charging pump operating.

B. Charging header pressure greater than RCS pressure with two charging pumps operating.

C. Charging header flow equals letdown flow with one charging pump operating and VCT level is lowering.

D. Charging header pressure less than RCS pressure with one charging pump operating.

24. Which condition would cause a SDC loop to be inoperable?

A. Placing the standby LPSI pump handswitch in Pull to Lock.

B. Shutting 1-CC-162 (11 Supply Header Isolation).

C. Shutting 1-SI-444 (11 LPSI Normal Suction Isolation).

D. Placing 13 CC pump handswitch in Pull to Lock.

25. At Calvert Cliffs, what method of responding to an ATWS is used and why is this action taken?

A. Manually inserting all CEAs using "Manual Sequential" mode since there is no alternate means of de-energizing the CEDS from the control room.

B. Depressing one set of Manual Reactor Trip buttons, this energizes the TCB shunt trip relays and RPS actuation does not.

C. De-energizing 12A and 13A 480 volt buses, this removes power from the CEDM Motor Generator Sets and is independant of RPS actuation.

D. Manually opening the trip circuit breakers in the Cable Spreading Room as there is no alternate method of opening all the trip circuit breakers from the control room.

26. A shutdown per AOP-2A is in progress due to a tube leak in 11 S/G. Assuming the plant does not automatically trip, which one of the following conditions would require you to manually trip the reactor?

A. Tavg is reduced to less than 557°F.

B. Pressurizer level cannot be maintained above 101 inches.

C. Condenser off gas or S/G blowdown RMS alarms.

D. 11 S/G tube leakage exceeds 100 gallons per day.

27. When responding to Steam Generator tube failures, one input used by the CRS in setting priorities and assigning actions is the magnitude of the rupture.
Which set of parameters can be used to determine the magnitude of the SGTR?

A. RCS cooldown rate, VCT level rate of change, PZR level rate of change.

B. Safety Injection flowrate, S/G level rate of change, PZR level rate of change.

C. RCS cooldown rate, S/G pressure rate of change, PZR level rate of change.

D. Safety Injection flowrate, S/G pressure rate of change, PZR pressure rate of change.

28. A reactor trip from 100% power due to a loss of all feedwater has occurred. The crew is unable to regain a source of feedwater and has initiated Once Through Core Cooling. Plant conditions at start of OTCC are:

Time after Trip-1 hour
RCS Temperatures are 525°F and RCS pressure is 1000 psia
CETs are 527°F
RWT level is 25'6"
2 charging pumps are available
MCC-114R is deenergized

Based on the above conditions and using provided references, what is the expected HPSI flow and will Once -Through -Cooling be successful? **Assume no operator actions outside of the control room.**

A. 380 gpm, not successful

B. 380 gpm, successful

C. 750 gpm, not successful

D. 750 gpm, successful

29. 21 125 VDC bus is de-energized.
What is the effect on the Emergency Diesel Generators?

A. 1A will receive a UV start signal, 2B will be unaffected.

B. 1A will be inoperable, 1B will receive a UV start signal.

C. 2B will receive a UV start signal, 1B will be inoperable.

D. 2B will be inoperable, 2A is unaffected.

30. Unit 1 is stable at 100% power. "NI CH INOPERATIVE" alarm has annunciated at 1C05. The following indications are reported by the RO:
    * Channel A WR Log Pwr --120%
    * Channel B SUR -- -.3 DPM
    * Channel C TMLP setpoint-- 2500 psia
    * Channel D VOPT setpoint-- 6%

    Which of the control room indications will aid the CRS in determining a probable cause of the alarm?

    A. Channel A WR Log Pwr

    B. Channel B SUR

    C. Channel C TMLP setpoint

    D. Channel D VOPT setpoint

31. Unit-1 Waste Processing Ventilation Radiation Monitor (1-RE-5410) is in alarm. **All other RMS indications appear normal.**
    Which of the following would be a likely cause?

    A. A fuel handling event in the spent fuel pool.

    B. Elevated dose rates in the ECCS pump rooms due SDC operations.

    C. Excessive packing leakage from a Charging pump.

    D. Leakage from a Waste Gas Compressor.

32. Which instrumentation must be operable to ensure the Containment Purge System will be automatically secured should a fuel handling incident occur inside containment?

    A. Containment High Range Monitors (RE-5317 A/B)

    B. Containment Area Radiation Monitors (RE-5316 A thru D)

    C. Main Vent Gaseous Monitor (RE-5415)

    D. Wide Range Noble Gas Monitor (RIC-5415)

33. Which automatic action is performed by the Containment High Range Rad Monitor (RE-5317 A/B)?

    A. Starts the11(21) and 12 (22) Penetration Room Exhaust Fans.

    B. Shuts the Containment Normal Sump Drain Valves, 1(2)-EAD-5462 and 5463 MOVs.

    C. Shuts the Containment Vent / H2 Purge MOVs,1(2),-HP-6900 and 6901.

    D. Starts 11(21), 12 (22) and 13(23) Iodine Removal Units.

34. Unit-2 is operating at 100% power with LT-110X , PZR Level transmitter selected and PZR Heater Low Level Cutout Switch, 2- HS-100-3 in the X + Y position. If a leak on the variable leg for LT-110X developed, what is an operator action which the CRS must direct to restore PZR level control system functions?

A. Shut Letdown Stop valves, 2-CVC-515 and 516.

B. Place the PZR HTR LO LVL SEL switch, 2-HS-100-3 to channel Y .

C. Adjust Pressurizer Level Controller, 2-LIC-110X, setpoint to shut the letdown control valve.

D. Place Pressurizer Level Controller, 2-LIC-110Y in AUTO-LOCAL.

35. A loss of offsite power has occurred and 1A Diesel Generator has failed to start. What is the status of the PORVs on Unit-1?

A. Both PORVs will operate on high pressure, their "manual open" handswitch positions will not function to open the PORVs.

B. One PORV will not operate on high pressure, its "manual open" handswitch position will not function to open the PORV.

C. Neither PORV will operate on high pressure, both "manual open" handswitch positions will function normally.

D. One PORV will fail open but can be overriden shut using the "override shut" handswitch position.

36. Given the following:
- Unit 2 is at 80% power
- Unidentified RCS leakage is .5 GPM
- No SG leakage is identified
- RO reports that VCT trace indicates an increase in RCS leakage

AOP 2A (Excessive RCS leakage) has been implemented.

Which of the following conditions would require Unit-2 to be shutdown per T.S. 3.4.13?

A. 5 GPM known leakage from body of 2-CVC-500 (VCT Diversion).

B. 5 GPM leakage identified from the packing gland on PORV-404.

C. 5 GPM leakage identified from RCP integral heat exchanger.

D. 5 GPM leakby from seat of SI-652-MOV.

37. Following a LOCA on U-1, both #11 and #13 HPSI pumps are operating when RAS actuates. Oscillating amps are observed on both pumps. Loop injection header flow values are observed to be: **(Assume time after LOCA event is 40 minutes)**

--Loop 11A - 275 gpm
--Loop 11B - 260 gpm
--Loop 12A - 265 gpm
--Loop 12B - 270 gpm

Based on observed indications, what action must the CRS direct be taken first?

A. Secure a HPSI pump and after flow stabilizes reduce total flow until cavitation stops on operating pump.

B. Align SDC HX outlet flow to the suction of the HPSI pumps to minimize cavitation.

C. Throttle flow in each header to 250 gpm not to exceed a total HPSI flow of 1000 gpm.

D. Secure a HPSI pump, align the SDC HX flow to suction of the operating HPSI pump and throttle flow to stop cavitation.

38. AOP-1B directs that after a large CEA misalignment, if Quadrant Power Tilt (Tq) is greater than .1, Nuclear Fuel Management will provide guidance for restoration of Tq.

Why does the procedure direct operators to Nuclear Fuel Management for guidance instead of providing specific steps to restore Tq?

A. The 10 CFR 50.59 process is required to change operating procedures allowing operation with Tq greater than .1.

B. CEAs must be inserted to correct Tq, and the effect on ASI must be analyzed to determine which CEAs to insert.

C. Insertion or withdrawal of CEAs may be required to correct Tq, power history and power density must be analyzed.

D. Recommendations from SOER 84-02 direct that Reactor Engineering are consulted prior to taking corrective actions for any abnormal power distribution events.

39. During an Excess Steam Demand Event, the unaffected S/G is maintained as a viable heat sink during the blowdown phase of the affected S/G because:

A. it is required to provide the thermal driving head neccessary for natural circulation.

B. it ensures that a rapid repressurization of the RCS after a large cooldown does not occur, leading to a PTS event.

C. cooling the non-affected S/G helps to maintain subcooled margin in the 30-140°F range to prevent voiding during blowdown.

D. insufficient RCS cooldown due to the break may be occurring and the unaffected S/G may be needed to maintain the required RCS cooldown rate close to 100°F/Hr.

40. Unit 1 is operating at 100% power. RCP 11B parameters are as follows:

VCT pressure	40 PSIG
11B RCP upper seal	1100 PSIA
11B RCP middle seal	2150 PSIA
11B RCP lower seal cavity temperature	160°F
11B RCP bleedoff flow	2.0 GPM
Controlled bleedoff temperature	152°F

Which one of the following statements correctly describes the condition of 11B RCP seals?

A. No RCP seal is degraded

B. Lower RCP seal is degraded

C. Middle RCP seal is degraded

D. Upper RCP seal is degraded

41. While operating at 100% power, power is lowered to 80% using fast boration. How is NI power indication effected?

A. Indicated power is less than actual power due to greater neutron absorption by boron.

B. Indicated power is greater than actual power because of increased thermalization of neutrons by colder Tave.

C. Indicated power is less than actual power due to less neutron leakage from the core.

D. Indicated power is greater than actual power due to more neutron leakage from the core.

42. Who is responsible for supplying plant operational information to the fire brigade members and the Control Room staff from the scene of the fire?

A. Fire Brigade Leader

B. Shift Fire and Safety Responder

C. Operations Technical Assistant

D. Plant Watch Supervisor

43. If ESFAS sensor channel ZF is de-energized for maintenance, what is the resultant actuation logic?

A. 1 of 2

B. 2 of 3

C. 1 of 3

D. 2 of 4

44. Which set of conditions would cause a CEA Withdrawal Prohibit?

A. 1/4 pretrips from TM/LP, APD or High SUR.

B. 1/4 pretrips from High SUR, VOPT or APD.

C. 2/4 pretrips from VOPT, High SUR or TM/LP.

D. 2/4 pretrips from APD, TM/LP or VOPT.

45. Why will a linear range NI calibration require an adjustment to the NUCLEAR PWR CALIBRATE potentiometer over core life, even if the same power level is maintained?

A. More competition for neutrons by boron concentration over core life reduces leakage seen by the detectors

B. Moderator density changes over core life increases leakage seen by the detectors

C. A greater neutron flux is required to maintain the same power level as fuel is depleted

D. A higher fission rate is required to maintain the same power level as fuel is depleted

46. While operating in mode 3 on natural circulation, how many CETs must be read as a minimum to ensure consistency with Thot?

A. One per quadrant

B. Two per quadrant

C. Two

D. One

47. Using provided reference(s):

-- Unit 1 is at 50% power

-- .Plant Air is being used inside the Containment by Fermanite contractors to repair a small feedwater leak on #11 MFW Check Valve.

Which of the below statements meets the requirement regarding containment integrity?

A. The Technical Specification LCO is not met and the affected flowpath must be isolated within 4 hours.

B. The Technical Specification LCO is met because 1-PA-1040 receives an automatic CIS signal to shut.

C. The LCO is not met and Technical Specifications require the flowpath to be isolated within 1 hour.

D. The LCO is met, as Technical Specifications allow opening of this penetration under administrative control.

48. Given the following:
Unit 1 is at 100% power. A loss of offsite power occurs and 1B DG fails to start.
Which Containment Coolers will remain operable?

A. 11 and 12

B. 11 and 13

C. 12 and 13

D. 13 and 14

49. Which of the conditions below will provide an automatic start signal to a SRW pump with the Control Room handswitch in AUTO?

A. Service Water header pressure less than 35 PSIG.

B. A SIAS signal has actuated with or without an undervoltage signal present.

C. The operating pump breaker has tripped on overcurrent and standby pump disconnect is aligned to that bus.

D. An RAS signal has actuated during plant cooldown to shutdown cooling conditions with a LOCA in progress.

50. Per Technical Specifications, which of the following is a basis for the automatic bypass setpoints for the high SUR trip?

A. With power > 1E-5%, all other RPS trips provide adequate protection.

B. With power < 13%, all other RPS provide adequate protection.

C. With power < 1E-4%, erroneous indication of power may occur.

D. With power > 12%, erroneous indication of SUR may occur.

51. U-1 is at 75% power when two condensate pumps trip. The TBO reports the condensate header has ruptured spraying water near the Condensate Booster Pumps. What is the proper response?

A. Trip the Reactor, verify reactivity control, secure main feed system to stop flooding and continue with EOP-0.

B. Perform a rapid shutdown and secure the last condensate pump use AFW to maintain SG levels.

C. Secure remaining condensate pump, await TBO's report that flooding has stopped and trip the reactor when SGFPs trip on low suction.

D. Insert CEAs and fast borate to reduce power to maintain < 8000 gpm condensate header flow and direct TBO to isolate leak if possible.

52. #12 SGFP tripped at 60% power during a load increase. It has been determined that 12 SGFP cannot be restarted. Which one of the following requirements must be met to maintain power above 440 MWe with only #11 SGFP in operation?

A. #11 SGFP speed must be controlled in manual.

B. SGFP suction flow must be maintained < 16,500 GPM.

C. SGFP suction pressure must be maintained > 250 PSIG.

D. All 3 condensate pumps must remain running.

53. Which of the following are AFW water sources which can be used per existing Emergency Operating Procedures?

A. 21 Condensate Storage Tank to 13 AFW pump suction via fire hose conections.

B. Condenser hotwell to the 11 CST to the AFW pump suctions.

C. Condensate hotwell directly to the suction of 13 AFW pump.

D. Condensate pump discharge header to the AFW pump suctions.

54. Given the following conditions:

--Unit 2 is at 100% power
--Fuel Burnup is 8900 MWD/MTU
--Tc is 547.8 °F
--PZR pressure is 2262 PSIA

An inadvertant AFAS channel A actuation occurs. How will the RCS respond?

A. Reactor power rises, Tc increases, spray valves open to maintain PZR pressure.

B. Tc lowers, reactor power rises, PZR heaters energize to maintain PZR pressure.

C. All parameters remain constant as the Main Feedwater Reg. Valves compensate for the increased feed flow to the S/Gs.

D. The reactor trips on TM/LP or VOPT and SIAS initiates due to the drop in RCS pressure.

55. An alarm occurs on the liquid waste discharge radiation monitor (RE-2201) during a discharge of the 11 RCWMT. The radiation monitor is flushed with demineralized water in an attempt to reduce background radiation levels. Where is the flush water discharged to?

A. Miscellaneous Waste Monitor Tank

B. On-service RCWMT

C. On-service degasifier

D. Miscellaneous Waste Receiver Tank

56. The concentration of oxygen in the waste gas holdup system shall be limited to _____% by volume?

A. 3
B. 4
C. 5
D. 6

57. RCS boration is in progress when a loss of Instrument Air occurrs. Which mode of operation would require the CRS to direct an alternate means of boration?

A. BA pump makeup to VCT.

B. BA pump to charging pump suction (fast boration).

C. Gravity feed to charging pump suction.

D. RWT to charging pump suction.

58. The functional recovery procedure (EOP-8) directs plant configuration changes, such as aligning fire hoses to the suction of AFW pumps.
What process is used to control these changes to plant systems?

A. Procedure deviations allowed per 10 CFR 50.54x.

B. The procedure review and approval process, per PR-1-100 and PR1-101.

C. Changes to the facility allowed per 10 CFR 50.59

D. Temporary Alterations per MD-1-100 and MN-1-110.

59. An RCS leak has been diagnosed, AOP-2A has been implemented and the following plant conditions exist:

-- Letdown flow is 37 GPM
-- Waste processing RMS alarm
-- One Charging pump is running
-- PZR level is on program
-- Rate of VCT decrease has risen

What action directed by the CRS will minimize personnel exposure when investigating for leaks in the West Penetration Room?

A. Increase purification flow rate.

B. Secure Charging and letdown.

C. Notify Radiation Safety to investigate by video camera.

D. Declare a radiological event per the ERPIP.

60. What instrumentation provides the best indications for monitoring RCS level when draining from 47 ft. to 37.6 ft.?

A. RVLMS, LIC-110X, LT-4138 (narrow range) and LT-4139 (wide range).

B. Refueling level Tygon hose, LT-4138 (narrow range) and LT-4139 (wide range).

C. LT-4140 (d/p transmitter), GEMS sightglass and LI-103.

D. LT-4138 (narrow range), LT-4140 (d/p transmitter), LT-4139 (wide range).

61. As pressurizer temperature lowers, pressurizer level instruments LI-110X and 110Y are expected to be:

A. Indicating less than actual level.

B. Indicating greater than actual level.

C. Pegged high due to draining reference legs.

D. Tracking actual level due to density compensation.

62. Given the following conditions in the Quench Tank:

1) Pressure is 8 psig
2) Temperature is 122°F
3) Level is 28 inches

What action should be taken to restore normal operating conditions to the quench tank?

A. Drain the Quench Tank.

B. Fill the Quench Tank.

C. Add Nitrogen to raise pressure.

D. Perform a bleed and feed to cool the Quench Tank .

63. Which of the following signals will energize all Pressurizer Backup heaters? **(Assume heater control H/Ss are in AUTO)**

A. Key switches HS-100-4A & 100-6A on 1(2)C43 in ON.

B. +13 inches level deviation above level setpoint.

C. PZR level lowers to 101 inches.

D. PZR pressure lowers to 2225 PSIG.

64. Which statement describes the basis for the Axial Power Distribution Trip?

A. DNB and peak linear heat rate will not be exceeded

B. DNB SAFDL of 1.25 is not exceeded

C. Provides protection for uncontrolled CEA withdrawal event

D. Minimize radial power redistribution above 15% power

65. While inserting group 5 CEAs from ARO during a power decrease, PRIMARY CEA POSITION DEVIATION +/- 4" alarm annunciates. CEA 34 computer position indication is 130", indication by CEAPDS is 125". All other group 5 CEA position indications are 124.5" to 125.5"
What action is required?

A. Align CEA 34 to the rest of group 5 CEAs per AOP-1B.

B. Declare CEA 34 primary position indication inoperable and refer to the TRM (TNC15.1.4).

C. Declare CEA 34 inoperable and refer to Technical Specifications (LCO 3.1.4).

D. Declare CEA secondary position indication inoperable and refer to the TRM (TNC 15.1.4).

66. Which control signals are supplied by the Reactor Regulating System?

A. PZR level control, Main turbine runback, Turbine Bypass Valve (TBV) analog demand, and SG level control modes for Digital Feedwater Control System (DFWCS).

B. Atmospheric dump valve (ADV) analog demand, TBV quick open, Main turbine runback, and SG level control modes for the DFWCS.

C. PZR Level control, Pressurizer Heater Cutout, ADV quick open, and SG level control modes for the DFWCS.

D. ADV analog demand and quick open, TBV quick open, PZR level control, and SG level control modes for the DFWCS.

67. Which combination of Containment Spray pumps and/or Containment Air Coolers will be **unable** to maintain the pressure and temperature of the containment within design parameters for the most limiting UFSAR analyzed accident?

A. Four (4) Containment Air Coolers

B. Two (2) Containment Spray Pumps

C. One (1) Containment Spray Pump and One (1) Containment Air Cooler

D. One (1) Containment Spray Pump and Two (2) Containment Air Coolers

68. Unit-2 is in mode 6, refueling in progress with Containment Purge in service. A momentary loss of power causes the operating Main Exhaust Fan to trip. What is the most likely effect on parameters in containment?

A. Containment pressure rises 1 to 2 PSIG.

B. Refueling pool level changes.

C. Area radiation monitors indicate higher.

D. Containment temperature rises 5 to 10 degrees.

69. High Spent Fuel Pool temperature can be caused by:

A. Throttling shut SFP CLR DISCH HDR stop valve.

B. Shutting the spent fuel pool heat exchanger Component Cooling outlet valve.

C. Opening the 21A SRW HXR bypass valve.

D. Raising the setpoint of the spent fuel pool temperature controller on 1C13.

70. Given the following:
Unit-1 is at 100% power. 11 MSIV is being partial stroke tested per the Surveillance Test Procedure. A system failure results in 11 MSIV shutting completely.
How will the plant respond?

A. RCS pressure will rise due to less steam demand, a High Pressure reactor trip will occur and the PORVs will open.

B. 12 S/G level will lower due to the steam demand imbalance, causing a Low S/G level reactor trip.

C. 11 S/G pressure will rise, 12 S/G pressure will lower due to the steam demand imbalance, resulting in an ASGT reactor trip.

D. RCS pressure will lower due to the increased steam demand from 12 S/G, resulting in a TM/LP reactor trip.

71. Which radiation monitor detects noble gas releases from the Atmospheric Dump Valves?

A. Wide Range Noble Gas Monitor (RIC-5415)

B. Main Vent Gaseous Monitor (RE-5415)

C. Main Steam Line Radiation Monitor (RE-5421)

D. Condenser Off-Gas Radiation Monitor (RE-5414)

72. Per the applicable OP-7 checklist, all of the following must be verified prior to entering Mode 6, **EXCEPT:**

A. Reactor has been subcritical for > 72 hours.

B. A shutdown cooling loop is in operation with > 3000 GPM flow.

C. RCS temperature < 140°F.

D. RCS boron concentration > 2300 PPM.

73. Using provided references:

Both units are in Mode 1. 24B 480V bus is lost due to a fault on the bus, de-energizing #24 battery charger.
Select the most appropriate response.

A. Verify #12 battery charger is in operation.

B. Restore #24 battery charger to operation in 2 hours.

C. Unit-2 in Mode 3 within 6 hours and Mode 5 in 36 hours.

D. Place 1Y03 and 2Y03 on the inverter backup bus.

74. Using provided references:
An electrician performing a surveillance requirement reports that #11 battery has one cell with it's electrolyte level below the top of the plates.
What action is required? **Assume both units operating at 100% power.**

A. Verify pilot cell(s) electrolyte level and individual cell float voltage meet Table 3.8.6-1 Category C limits within 1 hour.

B. Replace #11 Battery with the reserve battery within 4 hours.

C. Restore #11 125 VDC bus to operable within 2 hours.

D. Restore battery cell parameters to Category A and B limits of Table 3.8.6-1 within 31 days.

75. 2A Diesel Generator is running fully loaded when the operator monitoring the diesel reports that the "FUEL-OIL LEVEL LOW IN DAY TANK" alarm has annunciated and the fuel oil transfer pump will not run.
With no operator action, how long will 2A Diesel Generator continue to operate?

A. 30 to 45 minutes

B. 1 to 2 hours

C. 5 to 6 hours

D. 7 to 8 days

76. Per the Technical Specifications, which statement is a basis for the CEA insertion limits?

A. Ensures that Rod drop times per tech specs are met.

B. Boron Dilution event power excursion is limited.

C. Potential effects of a dropped rod are limited to acceptable values.

D. Potential effects of an ejected rod are limited to acceptable values.

77. The wind speed has been > 5 MPH from the south-southeast for the last two days and the bay temperature is 75°F. Why is this a concern for operators and where is guidance for monitoring parameters associated with this condition?

A. These are precursor conditions for the tsunami analyzed in the FSAR which renders the intake inoperable. AOP-7L, Intake Malfunctions Abnormal Operating Procedure

B. This condition is indiciative of continuing high injection temperature which leads to lower MWe output. OI-43A Main Turbine and Generator/Excitor Operation Operating Instruction

C. This condition requires a special report to be written to explain why the condenser differential temperature limit is being exceeded. Maryland State Discharge Permit

D. This condition is indicative of a potential fish kill resulting in loss of circulating water pumps and power reductions or trips. OI-14A Circulating Water System Operating Instruction

78. Unit 1 was at 100% power when a reduction in the Instrument Air Header pressure occurred. The CRO observed that Instrument Air header pressure lowered to 83 PSIG and is rising while Plant Air header pressure is 84 PSIG and lowering.
Which of the following set of actions would you direct the CRO to verify?

A. PA-2061-CV, PA to IA Cross Connect is OPEN, the Standby Instrument Air Compressor has STARTED and PA-2059-CV, PA header isolation valve is OPEN.

B. PA-2061-CV, PA to IA Cross Connect is OPEN, the Standby Plant Air Compressor has STARTED and PA-2059-CV, PA header Isolation Valve is SHUT.

C. Standby Instrument Air Compressor has STARTED, IA-2085-CV, Containmant IA Isolation Valve is SHUT and the Standby Plant Air Compressor has STARTED.

D. Standby Instrument Air Compressor has STARTED, PA-2059-CV, PA header Isolation Valve is SHUT, and IA-2085-CV, Containmant IA Isolation Valve is SHUT.

79. A smoke detector for the Unit-1 27' Switch Gear Room malfunctions, causing an alarm. Which one of the following describes the effect on the system?

A. "FIRE PROT PANEL 1C24B" alarm actuates and after a time delay, Halon system discharges.

B. "FIRE PROT PANEL 1C24B" alarm actuates and immediately results in Halon system discharge.

C. "FIRE SYS" alarm actuates and after a time delay, Halon system discharges.

D. "FIRE SYS" alarm actuates but does not result in Halon system discharge.

80. Which of the following is a responsibility of the Shift Manager, prior to commencing a core onload from a defueled condition?

A. Verify Containment Purge is in operation and that all required ESFAS equipment is operable to support core alterations.

B. Review the Temporary Alteration Log for operability impact of equipment required for core alterations.

C. Review Required Reading for changes in procedures that may affect the operation of equipment required for core alterations.

D. Verify that no projects or modifications are currently outstanding which could impact core alterations.

81. A loss of load transient resulted in a plant trip with PORVs lifting.
What would indicate that the quench tank rupture disk has ruptured?

A. RCS pressure lowers more rapidly.

B. RCS pressure lowers less rapidly.

C. "QUENCH TK TEMP LVL PRESS" alarm clears.

D. "CNTMT NORMAL SUMP LVL HI" alarm actuates.

82. The normal power supply and header lineup of #13 and (23) Component Cooling pumps is:

A. Powered from bus 14A(21B) and aligned to 11(22) CCW headers respectively.

B. Powered from bus 14 B(24B) and aligned to both CCW headers respectively.

C. Powered from bus 11A(24A) and aligned to 12(21) CCW headers respectively.

D. Powered from bus 11B(21B) and aligned to both CCW headers respectively.

83. U-1 is in Mode 6 with fuel handling in progress when the refueling machine operator notices the refueling pool level is rapidly lowering.
Per the applicable plant procedure, which statement summarizes the control room actions required to ensure containment and atmosphere activity levels are kept to a minimum and the general public will be protected?

A. Start all Containment Air Coolers in high with maximum SRW flow, start Penetration Room Exhaust fans, and ensure the SFP charcoal filters are in service.

B. Isolate containment purge, start all Containment Air Coolers in low with maximum SRW flow, and start Penetration Room Exhaust fans.

C. Start all Containment Air Coolers in low with minimum SRW flow, start all Iodine Filter Fans, and ensure the SFP charcoal filters are in service.

D. Isolate containment purge, start all Containment Air Coolers in high with maximum SRW flow, start all Iodine Filter Fans, and ensure the SFP charcoal filters are in service.

84. While raising a fuel assembly for a core to upender sequence, the hoist position is approximately 127 inches and being raised. The load increases from 1230 pounds to 2530 pounds. What is causing the weight change?

A. A grid-to-grid hangup with adjacent fuel assemblies is occurring.

B. The fuel assembly is bowed and contacting reactor vessel internals.

C. The hoist box is off the down stop, and the weight gain is normal.

D. The camera has contacted the core support barrel.

85. Following a reactor trip from 100% power, how do the ADVs respond?

A. Initially they quick open and as RCS temperature lowers they ramp shut and when Thot is 532°F they are fully shut.

B. Initially they quick open and as RCS temperatures lower they ramp shut and when Tave is 535°F they are fully shut.

C. Initially they ramp fully open and as RCS temperature lowers they ramp shut and when Thot is 535°F the ADVs are fully shut.

D. As RCS temperature lowers they remain open until the control room operator places the ADV controller in MANUAL with 0% signal to shut them.

86. A fuel bundle is suspended from the hoist, at 263" and as the Fuel Handling Supervisor, you have determine it is required to move .2" away from the core to alleviate a grid interference.
What direction do you provide the Refueling Machine Operator to accomplish this task?

A. Open the main breaker on the console and manually operate the bridge and/or trolley.

B. Select an off index option in full auto mode.

C. Depress the "emergency stop" button and manually operate the bridge and/or trolley.

D. Depress the "travel override" button and move in manual electric.

87. As the OWC, under which condition would rescheduling routine maintenance on 12B Service Water Heat Exchanger be warranted?

A. 12A SRW HX Bypass Valve is in MANUAL AND SHUT.

B. The associated SRW pump differential pressure is less than the value stated in OI-15 for determining minimum header flowrate.

C. Saltwater temperature is greater than 80° F.

D. Saltwater header pressure less than 27 PSIG.

88. When operating the controls at 1C43, what is the effect on any AFW controller output signal if the operating lever is moved past its detent pin when placed toward the "MIN" position ? (assume output signal is presently at 20%)

A. Signal goes to 0% output.

B. Signal goes to 50% output.

C. Signal stays at 20% output.

D. Signal goes to 100% output.

89. Given electrical drawing 61-076-B sh 14J rev 2:

With no SIAS present, when 1HS5467 is placed in OPEN with HS5467A in NORMAL, what is the initial current flowpath?

A. Through 1HS5467A contact 9-10, through relays 1SV5467 and 5467A, through relay 94.

B. Through contact 94, through 1HS5467contact 1-2, through 1HS5467A contact 3-4, through relays 1SV5467 and 5467A.

C. Through 1HS5467 contact 7-8, through contact SIAS A4, through relays 1SV5467and 5467A.

D. Through contact 94, through 1HS5467 contact 1-2, through contact SIAS A4, through relays 1SV5467 and 5467A.

90. Under which of the following circumstances may you depart from a procedure as written?

A. With GS-NPO approval, to prevent damage to plant equipment or if safety functions are not being met.

B. With Shift Manager, or in his absence, CRS approval, to prevent conditions adverse to personnel safety, plant safety, plant stability or safety of the public.

C. With CRS approval, in the event that safety functions are not being met, or unexpected alarms/plant responses are being received.

D. With shift manager approval, if safety functions are not being met.

91. Given the following conditions:

--Unit 1 is shutdown for a maintenance outage
--Shutdown cooling has been lost, AOP-3B has been implemented
--CET temperature is 220°F
--RCS is capable of being pressurized
--S/G levels are -35"
--Main Feedwater was secured 4 hours ago

What is required for the reinitiation of Main Feedwater ?

A. Raise S/G levels to > -26" with Auxiliary Feedwater.

B. Place the Feedwater Regulating Bypass Valve controller in Manual with a 95% output.

C. Purge the gooseneck for at least 10 minutes at 100 to 160 gpm.

D. Maintain Main Feedwater flow < 80 gpm for at least 10 minutes.

92. Which one of the following operations requires you, as the CRS or Shift Manager, to approve a gaseous waste discharge permit?

A. Shifting Waste Gas Decay Tanks.

B. Containment modified purge.

C. Nitrogen Purging of the VCT.

D. Containment negative pressure vent.

93. Which of the following is a function of the Refueling Control Room Operator (RCRO)?

A. Approving temporary changes to core alteration procedures, such as CEA or fuel assembly location due to malfunctioning refueling equipment.

B. Verifying the qualifications of refueling machine, spent fuel handling machine and transfer machine operators prior to commencing core alterations.

C. Ensuring that all applicable requirements of the Technical Specifications and the TRM are met for the evolution in progress.

D. Documenting any fuel handling problems and maintaining the Refueling Status board.

94. A new electric motor has been installed on an existing pump. The MO requires the motor to be checked for proper rotation and not all clearances have been returned.

Which one of the following actions are required to remove the Danger Tag from the motor power supply? (assume the pump suction and discharge valves are to remain tagged out)

A. Process a Supplementary Clearance.

B. Process a clearance order to the existing clearance.

C. Clear all tags and use a "human danger tag" for equipment not ready for operation.

D. Verbally authorize the "lifting" of the motor tag and re-tag after rotation check.

95. Per OP-2, Plant Startup from Hot Standby to Minimum Load,11 and 12 MSIVs may be opened when the differential pressure across the valves is less than 100 PSID. How could you verify the differential pressure across the MSIVs?

A. Compare the applicable Steam Generator Header Pressure indication (PI-3991 or PI-4008) with the process variable indication on the Turbine Bypass Controller, (PIC-4056).

B. Use the computer points of MSIV differential pressure from computer group 4, (11 & 12 Steam Generators).

C. Compare the process variable indication with the setpoint indication on the Turbine Bypass Controller (PIC-4056).

D. Compare one of the safety channel S/G pressures PI-1013A-D (1023A-D) with the associated Steam Generator Header Pressure indications on 1C03, PI-3991 (PI-4008).

96. A female operator that you supervise provided you with the required written declaration that she is 3 months pregnant. Reviewing her dosimetry records with Rad Protection, you determine that she has received 60 mR TEDE during the previous 3 months.

To ensure Federal limits are not exceeded, you must limit her exposure over the next 6 months to:

A. 60 mR

B. 300 mR

C. 340 mR

D. 440 mR

97. Given the following:
* Unit 2 is in Mode 6, with refueling operations in progress
* A Gaseous Waste Release Permit has been issued for commencing containment purge
* Satisfactory RMS operability checks on RI-5316 A through D have been completed
* The OWC requests that you bypass Containment Radiation Signal sensor channel ZG for maintenance

What is the appropriate action for the stated conditions?

A. Ensure that the COD is shut, the Equipment Hatch is installed, the Personnel Airlock interlocks are installed, and bypass the ESFAS sensor channel.

B. Deny the OWC's request to bypass the ESFAS sensor channel.

C. Verify operability of RI-5316 A through C, and bypass the ESFAS sensor channel.

D. Verify containment closure and bypass the ESFAS sensor channel.

98. The setpoint for the normal liquid effluent monitor is based on assumptions in the Offsite Dose Calculation Manual (ODCM).

Which one of the following would require the Plant Computer activity setpoint to be decreased?

A. Decrease in actual release rate from 120 gpm to 90 gpm.

B. Decrease in operating circ water pumps from 6 to 5.

C. Decrease in monitor background radiation level.

D. Decrease in Bay level.

99. Which statement defines a Severe Fire as it applies to determining if AOP-9 series procedures must be implemented?

A. A fire located in an dedicated/alternate shutdown area which inhibits or prohibits the use of normal shutdown procedures.

B. A fire located anywhere that requires the plant be shutdown and cooldown initiated to comply with Technical Specifications.

C. Any fire located within the protected area that requires offsite assistance from local fire agencies.

D. Any fire located within the protected area that has not been extinguished within 15 minutes of applying an extinguishing agent.

100. There has been a reactor trip with safety injection actuation. During EOP-0, it was determined something more than an uncomplicated reactor trip had occurred for which an Optimal Recovery Procedure was not available. EOP-8 was then entered, a Site Emergency was declared and a cooldown commenced. The Technical Support Center staff was asked to provide a procedure for this situation. The procedure has been completed and approved.
When may you direct exiting the current procedure and implement this new procedure developed by the Technical Support Center?

A. When EOP-0 Safety Function Acceptance Criteria are met.

B. When the EOP-8 Safety Function Acceptance Criteria are met.

C. Upon direction by the Site Emergency Coordinator (SEC).

D. When any Optimal Recovery Procedure's (i.e. EOPs 1-7) Intermediate Safety Function Acceptance Criteria can be met.

Answer Key

Test Name: 02SRO.TST
Test Date: Wednesday, July 10, 2002

		Question ID		Type	Pts	Answer(s) 0	1	2	3	4	5	6	7	8	9
1:	D	INOP/STUCK CEA	003	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	2	NATURAL CIRC	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	3	LOSS OF CCW	001	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	4	PZR PRESS MALF	002	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	5	STM LINE RUPTURE	003	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	6	STM LINE RUPTURE	005	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	7	LOR-020270301-003	003	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	8	BATTERY DISCHARGE	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	9	LOSS VITAL AC	002	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	10	LOR-020380304-005	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	11	CRO-202-9A-2-48	048	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	12	CRO-7-1-5-81A	811	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	13	SRO-201-2-1-18	018	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	14	AOP-6A-03	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	15	CRO-106-1-2-12	012	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	16	LOR-020060218-002	003	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	17	CRO-202-1B-1-04	004	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	18	CRO-60-1-51	051	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	19	SRO-201-0-3-23	023	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	20	CRO-202-2A-0-09	001	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	21	SMALL BREAK LOCA	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	22	CRO-113-5-5-22A	001	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	23	CRO-107-1-3-50	050	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	24	CRO-7-1-5-76B	762	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	25	SRO-201-0-3-02A	003	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	26	AOP-2A-01	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	27	SRO-201-6-1-06A	007	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	28	SRO-201-3-1-18	018	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	29	AOP-7J-06	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	30	CRO-57-1-5-12A	014	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	31	CRO-122-1-3-42	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	32	CRO-134-1-5-36	036	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	33	CRO-122-1-3-27A	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	34	CRO-62-1-3-19A	020	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	35	SRO-201-2-1-24	024	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	36	EXCESSIVE RCS LEAK	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	37	CRO-7-1-5-06	006	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	38	AOP-1B-08	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	39	SRO-201-4-1-08	008	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	40	LOR-020050447-002	003	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	41	CRO-57-1-5-04	005	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	42	CRO-202-9A-2-14A	015	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	43	CRO-63-1-3-15	015	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	44	CRO-59-1-5-60	060	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	45	CRO-57-1-5-39	039	MC-SR	1	C	D	A	B	C	D	A	B	C	D

Test Name: 02SRO.TST
Test Date: Wednesday, July 10, 2002

		Question ID		Type	Pts	Answer(s) 0	1	2	3	4	5	6	7	8	9
1:	46	CRO-64-1-4-09	009	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	47	CRO-7-1-5-115	116	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	48	CRO-7-1-5-100	101	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	49	CRO-113-3-5-04	004	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	50	CRO-57-1-5-10A	011	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	51	CRO-202-3G-1-0003	003	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	52	LOR-020320305-002	003	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	53	CRO-34-2-3-04	005	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	54	CRO-34-2-3-21A	022	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	55	CRO-219-1-0-33	034	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	56	CRO-134-1-7-03	003	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	57	CRO-107-1-3-04A	005	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	58	SRO-201-8-1-22	022	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	59	CRO-107-1-3-63	063	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	60	CRO-203-5A-3-03	003	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	61	SRO-301-15-1-05	007	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	62	CRO-5-2-3-39	039	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	63	CRO-62-1-3-22	023	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	64	CRO-59-1-5-04	004	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	65	CRO-60-1-58A	059	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	66	CRO-58-1-13	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	67	CRO-7-1-5-17A	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	68	CRO-134-1-5-44	044	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	69	CRO-113-4-3-07	007	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	70	CRO-103-2-4-61A	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	71	CRO-122-1-3-04	005	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	72	LOR-032030504-003	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	73	CRO-54-1-1-12A	01A	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	74	CRO-54-1-1-23	023	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	75	CRO-48-1-2-28	028	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	76	CRO-60-1-52	052	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	77	CRO-113-1-5-20A	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	78	STATION AIR	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	79	FIRE PROTECTION	002	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	80	CORE ONLOAD	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	81	CRO-5-2-3-46	046	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	82	CRO-113-5-5-03	003	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	83	CRO-134-1-5-40B	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	84	CRO-113-6-4-17	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	85	CRO-58-1-07	007	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	86	CRO-113-6-4-21	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	87	CRO-113-3-5-29A	030	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	88	CRO-202-9A-2-23	023	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	89	SRO-204-1-1-22	022	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	90	SRO-204-1-1-12	012	MC-SR	1	B	C	D	A	B	C	D	A	B	C

Test Name: 02SRO.TST
Test Date: Wednesday, July 10, 2002

		Question ID		Type	Pts	Answer(s) 0	1	2	3	4	5	6	7	8	9
1:	91	SRO-201-3-1-27	027	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	92	CRO-134-1-5-31	031	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	93	SRO-204-200-01	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	94	EQUIPMENT CONTROL	002	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	95	CRO-203-2-4-012	012	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	96	RADIATION CONTROL	007	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	97	RADIATION CONTROL	006	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	98	RADIATION CONTROL	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	99	CRO-202-9A-2-14	014	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	100	LOR-042040404-001A	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C

U.S. Nuclear Regulatory Commission
Site-Specific
Written Examination

Applicant Information	
Name:	Region: (I) / II / III / IV
Date: July 12, 2002	Facility/Unit: CCNPP / 1+2
License Level: (RO) / SRO	Reactor Type: W / (CE) / BW / GE
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected five hours after the examination starts.

Applicant Certification

All work done on this examination is my own. I have neither given nor received aid.

_____
Applicant's Signature

Results	
Examination Value	_____ Points
Applicant's Score	_____ Points
Applicant's Grade	_____ Percent

Name: _____

1. A reactor startup is in progress per OP-2, group 2 CEAs are being fully withdrawn in the Manual Individual mode.
   Which set of conditions would indicate an **inoperable** stuck CEA?

   A. CEAPDS position for the affected CEA indicates 130", primary position indicates 126", "PRIMARY CEA POSITION DEVIATION +/- 4" alarm.

   B. Primary position for the affected CEA indicates 130.5", CEAPDS position is 127", "SECONDARY CEA POSITION DEVIATION +/- 4" alarm.

   C. Primary position for the affected CEA indicates 130.5", CEAPDS position is 120","PRIMARY CEA POSITION DEVIATION +/- 8" alarm.

   D. CEAPDS position for the affected CEA indicates 1.5", primary position indicates 0", "PRIMARY CEA POSITION DEVIATION +/- 8" alarm.

2. Given the following:
   * Unit 2 has tripped due to a Loss of Offsite Power, EOP-2 has been implemented
   * Plant cooldown has commenced
   * 21 loop Th 520°F and Tc 525°F
   * 22 loop Th 535°F and Tc 520°F

   Which of the following is the required action by the CRO for this condition?

   A. Increase steaming rate via TBVs.

   B. Increase steaming from 21 S/G via ADV.

   C. Increase steaming from 22 S/G via ADV.

   D. Lower steaming from 21 S/G.

3. Given the following:

   - Unit 1 is operating at 100% power.
   - Alarm 1C07B X-02 11A RCP, CCW FLOW LO, has actuated.

   WHICH of the following RCP conditions requires the operator to trip the reactor and the reactor coolant pump?

   A. Upper thrust bearing temperature is 197°F.

   B. Controlled bleed off flow is 2.0 gpm.

   C. Guidebearing temperature is 193°F.

   D. Component cooling water outlet temperature at the RCP is 135°F.

4. Given the following conditions:
   * Unit 1 at 100% power
   * Pressurizer pressure is 2250 psia
   * PZR backup and proportional heater control in auto
   * 1-HS-100 (PZR pressure control) in the "Y" position
   * 1-HS-100-3 (PZR htr cutoff) in the "X+Y" position
   * 1-PT-100Y fails high

   Select the expected PROPORTIONAL HEATER response. Assume no Operator action.

   A. Proportional heaters will continue to operate at approximately 1/3 higher power level than before the failure.

   B. Proportional heaters will operate at approximately 1/3 lower power level than before the failure.

   C. Proportional heaters will de-energize and the green light will be illuminated.

   D. Proportional heaters will de-energize and the red light will be illuminated.

5. What action does the Unit-2 CRO take to prevent an excessive heat transfer conditon in the event of an uncomplicated reactor trip?

   A. Press "Reset" button on the MSR control panel.

   B. Ensure both 2nd stage steam source MOVs shut.

   C. Shut upstream drain MOVs.

   D. Shut the Main Steam Isolation Valves.

6. Given the following:

   - An overcooling event has occurred

   WHICH Steam Generator should be isolated?

   A. The Steam Generator with the highest Tcold.

   B. The Steam Generator with the lowest steam pressure.

   C. The Steam Generator with the lowest AFW flow.

   D. The Steam Generator with the highest level.

7. An electrical malfunction has occurred on U-1. Diagnosis by the CRS has determined that a loss of 16 4KV bus has occurred. What effect will this have on the plant?
Assume U-1 is at 100% power

A. One condensate and two condensate booster pumps have tripped, requiring a power reduction.

B. Three circulating water pumps have tripped, requiring a manual reactor trip.

C. All circulating water pumps have tripped, requiring a manual reactor trip.

D. Two condensate and one condensate booster pump has tripped, requiring a power reduction.

8. Given the following:
* Unit 2 tripped
* EOP-5 (Loss of Coolant Accident) is implemented
* a concurrent loss of AC power occurs

What is the minimum design life of the 125 VDC batteries if unable to restore power to an associated battery charger?

A. 2 hours from initial loss of power

B. 4 hours from initial loss of power

C. 6 hours from time of Reactor Trip

D. 8 hours from time of Reactor Trip

9. Given the following:
- Unit 1 is at 100% power
- Pressurizer level instrumentation is selected to channel X
- Reactor Reg is selected to channel X
- 120VAC bus 1Y01 has been de-energized, resulting in:
  Channel X pressurizer level control and indication fails low
  Loss of Reactor Reg system channel X
  Loss of RCS loop 11 instruments to Reactor Reg system channel Y
  CNTMT IA Control Valve, 1-IA-2085-CV shuts

With **no operator action,** how will pressurizer level respond long term and why?

A. Pressurizer level will lower slightly due to an improper level setpoint generated by the reactor regulating system using failed Tc inputs.

B. Pressurizer level will rise slightly due to an improper level setpoint generated by the reactor regulating system using failed Tavg inputs.

C. Pressurizer level will rise continuously due to all charging pumps starting and letdown being isolated.

D. Pressurizer level will lower continuously due to letdown going to maximum and the backup charging pumps receiving a stop signal.

10. Unit-1 is at 100% power when 11 SW pump trips. "U-1 4KV ESF MOTOR OVERLOAD" alarm is annunciated. No common mode failure is indicated and the Control Room crew has decided to align align the standby pump per the applicable procedure.

    Per plant administrative procedures, which is a correct method to direct the Plant Operators' response to this situation?

    A. Direct the PPO to "restore Saltwater per AOP-7A".

    B. Direct the Turbine Building Operator to "align 13 SW power supply from 11 4KV bus" and direct the Outside Operator to "align 13 SW pump to 11 header per AOP-7A".

    C. Announce over the plant page "11 SW pump has tripped, realign 13 SW pump."

    D. Direct the Outside Operator to "align 13 SW pump to 11 header".

11. AOP-9A allows the Turbine Building Operator to control AFW discharge pressure locally.
    How can the operator at 1(2)C43 verify adequate AFW pump speed?

    A. Comparing local (AFW pump room) AFW pump discharge pressure with local (AFW pump room)11 and 12 S/G pressure indications as reported by the TBO.

    B. Comparing local (AFW pump room) AFW pump speed indications as reported by the TBO with 1(2)C43 AFW pump discharge flow indications.

    C. Comparing local (AFW pump room) AFW pump discharge pressure as reported by the TBO with 1(2)C43 11 and 12 S/G pressure indications.

    D. Comparing local (AFW pump room) AFW pump flow as reported by the TBO with 1(2)C43 Main Steam header flow indications and monitoring S/G levels at 1(2)C43.

12. When recirculating the SDC system to the RWT in Mode 4 through the SIT recirc leakoff isolation valves, 1-SI-463 and 1-SI-455, what satisfies the requirements for maintaining containment integrity?

    A. A locked valve log entry per NO-1-105.

    B. Verification and a log entry of valve position every 15 minutes.

    C. Verification that the valves have been shut within 72 hours of being opened.

    D. A dedicated operator in continuous communication with the control room to shut valves if required.

13. What is a method of lowering RCS subcooling margin?

A. Raise RCS cooldown rate.

B. Initiate Aux spray.

C. Stop Reactor Coolant Pumps.

D. Energize pressurizer heaters.

14. A high activity condition exists in the RCS. The Auxiliary Building has been evacuated except for Rad Con personnel taking surveys and the ABO. The Control Room has implemented the proper AOP. How will the Letdown and Purification lineup be configured and why?

A. Letdown is set at minimum with Purification in service to reduce RCS activity and limit radiation levels in the Auxiliary Building.

B. Letdown is secured to limit radiation levels in the Auxiliary Building.

C. Letdown is maximized and Purification is bypassed to protect the ion exchanger.

D. Letdown is maximized with Purification in service to reduce RCS activity.

15. Unit one is in Mode one at 100% power. Given the following trend on the 11B RCP:

TIME	VIBRATION	ALARMS
0000	14 mils	Alert - RCP vibration alarm
0100	16 mils	
0115	30 mils	Danger - RCP vibration alarm
0130	40 mils	
0145	44 mils	

What action is required?

A. Conduct a plant shutdown, and then secure RCP 11B.

B. Trip reactor, perform reactivity control, and then secure RCP 11B.

C. RCP 11B must be secured within 8 hours.

D. Perform an Engineering Evaluation for continued operation.

16. What detemines the boric acid flow rate when borating per EOP-0 for more than one CEA failing to insert?

A. Number of boric acid pumps running

B. Number of charging pumps running

C. Setpoint of Boric Acid Flow Controller, FIC-110Y

D. RWT boron concentration

17. During reactor startup, at 1% power group 5 CEAs continue to move out after the "raise/ lower" switch has been released and the CEDS control panel has been turned "off".
What is the correct response?

A. Initiate fast boration.

B. Trip the reactor and implement EOP-0.

C. Attempt to stop the CEA motion by holding the "raise/lower" switch in the "lower" position.

D. Attempt to stop CEA motion by selecting an alternate regulating group of CEAs.

18. How is the value of FrT expected to have changed from its initial value as a result of a dropped CEA, short term (1 hour later) and long term (6 to 8 hours later)? Assume no operator action.

A. Increase, Increase.

B. Increase, Decrease.

C. Decrease, Increase.

D. Decrease, Decrease.

19. During EOP-0, in addition to the "CIS ACTUATED" annunciator alarm, which one of the following is required to verify that CIS has actuated?

A. SG Blowdown CVs have shut and blowdown has shifted to the Miscellaneous Waste system.

B. RCPs are tripped and all available containment air coolers are started in HIGH speed with maximum SRW cooling.

C. Containment Spray pumps start, spray header CVs open, and adequate spray flow is indicated through each header.

D. Component Cooling containment isolation valves have shut.

20. Unit-2 is at 100% power with the following conditions:
-Accoustic monitors ERV-402 and RV-200 indicate .01
-Quench tank pressure is slowly rising
-Pressurizer level is 216" and steady
-RCS pressure is 2250 PSIG
-one charging pump is running, charging header pressure is 2280 PSIG
-letdown flow is 32 GPM

Per AOP-2A, which action will terminate the event?

A. Lower RCS pressure by adjusting the setpoint of pressure controller 2-PIC-100X.

B. Realign charging pump discharge to the HPSI header.

C. Place PORV handswitches in OVERRIDE SHUT.

D. Secure charging and isolate letdown.

21. Using references provided:
The plant has experienced a small break LOCA. The following plant conditions exist:

- Core exit thermocouples read 600°F.
- All RCPs are stopped.
- Pressurizer level indicates 300".
- Thot indicates 590°F.
- Tcold indicates 560°F.
- Pressurizer pressure indicates 1545 psia.

Calculate subcooled margin.
A. 40°F
B. 10°F
C. 5°F
D. 0°F

22. Which one of the following describes the limits for operation of HPSI and LPSI pumps with no Component Cooling flow?

A. 45 minutes then pumps must be secured and allowed to cool for the next 15 minutes.

B. 2 hours then pumps must be allowed to cool for 45 minutes before allowing another 2 hours of operation.

C. Continuously, as long as the pumped fluid is maintained at or below 350°F.

D. Continuously, as long as the pumped fluid is maintained at or below 170°F for HPSI pumps and at or below 300°F for LPSI pumps.

23. A charging header leak would be identified by which one of the following?

A. Lowering pressurizer level with minimum letdown flow and one charging pump operating.

B. Charging header pressure greater than RCS pressure with two charging pumps operating.

C. Charging header flow equals letdown flow with one charging pump operating and VCT level is lowering.

D. Charging header pressure less than RCS pressure with one charging pump operating.

24. Which condition would cause a SDC loop to be inoperable?

A. Placing the standby LPSI pump handswitch in Pull to Lock.

B. Shutting 1-CC-162 (11 Supply Header Isolation).

C. Shutting 1-SI-444 (11 LPSI Normal Suction Isolation).

D. Placing 13 CC pump handswitch in Pull to Lock.

25. At Calvert Cliffs, what method of responding to an ATWS is used and why is this action taken?

A. Manually inserting all CEAs using "Manual Sequential" mode since there is no alternate means of de-energizing the CEDS from the control room.

B. Depressing one set of Manual Reactor Trip buttons, this energizes the TCB shunt trip relays and RPS actuation does not.

C. De-energizing 12A and 13A 480 volt buses, this removes power from the CEDM Motor Generator Sets and is independant of RPS actuation.

D. Manually opening the trip circuit breakers in the Cable Spreading Room as there is no alternate method of opening all the trip circuit breakers from the control room.

26. A shutdown per AOP-2A is in progress due to a tube leak in 11 S/G. Assuming the plant does not automatically trip, which one of the following conditions would require you to manually trip the reactor?

A. Tavg is reduced to less than 557°F.

B. Pressurizer level cannot be maintained above 101 inches.

C. Condenser off gas or S/G blowdown RMS alarms.

D. 11 S/G tube leakage exceeds 100 gallons per day.

27. Which one of the following indications would differentiate between a steam generator tube leak and a steam generator tube rupture?

A. condenser off-gas radiation monitor alarm

B. unbalanced charging and letdown flow

C. decrease in steam generator pressure

D. decreasing pressurizer level

28. A reactor trip from 100% power due to a loss of all feedwater has occurred. The crew is unable to regain a source of feedwater and has initiated Once Through Core Cooling. Plant conditions at start of OTCC are:

Time after Trip-1 hour
RCS Temperatures are 525°F and RCS pressure is 1000 psia
CETs are 527°F
RWT level is 25'6"
2 charging pumps are available
MCC-114R is deenergized

Based on the above conditions and using provided references, what is the expected HPSI flow and will Once -Through -Cooling be successful? **Assume no operator actions outside of the control room.**

A. 380 gpm, not successful

B. 380 gpm, successful

C. 750 gpm, not successful

D. 750 gpm, successful

29. 21 125 VDC bus is de-energized.
What is the effect on the Emergency Diesel Generators?

A. 1A will receive a UV start signal, 2B will be unaffected.

B. 1A will be inoperable, 1B will receive a UV start signal.

C. 2B will receive a UV start signal, 1B will be inoperable.

D. 2B will be inoperable, 2A is unaffected.

30. "NI CH INOPERATIVE" alarm has annunciated at 1C05.
Where are the indications that would allow you to identify the cause of the alarm?

A. 1C15, 1C43, Plant Computer

B. 1C05, 1C15, Plant Computer

C. 1C05, 1C43, Plant Computer

D. 1C05, 1C15, 1C43

31. Unit-1 Waste Processing Ventilation Radiation Monitor (1-RE-5410) is in alarm. **All other RMS indications appear normal.**
Which of the following would be a likely cause?

A. A fuel handling event in the spent fuel pool.

B. Elevated dose rates in the ECCS pump rooms due SDC operations.

C. Excessive packing leakage from a Charging pump.

D. Leakage from a Waste Gas Compressor.

32. Which instrumentation must be operable to ensure the Containment Purge System will be automatically secured should a fuel handling incident occur inside containment?

A. Containment High Range Monitors (RE-5317 A/B)

B. Containment Area Radiation Monitors (RE-5316 A thru D)

C. Main Vent Gaseous Monitor (RE-5415)

D. Wide Range Noble Gas Monitor (RIC-5415)

33. Which automatic action is performed by the Containment High Range Rad Monitor (RE-5317 A/B)?

A. Starts the11(21) and 12 (22) Penetration Room Exhaust Fans.

B. Shuts the Containment Normal Sump Drain Valves, 1(2)-EAD-5462 and 5463 MOVs.

C. Shuts the Containment Vent / H2 Purge MOVs,1(2),-HP-6900 and 6901.

D. Starts 11(21), 12 (22) and 13(23) Iodine Removal Units.

34. Given the following conditions:

-- Plant is at 100% power
-- HS-110 (Pzr Level Control) is selected to Y position
-- HS-100-3 (Pzr Heater Cutoff) is in X + Y position
-- LT-110Y fails low

Operator response is required to prevent which of the following conditions?

A. Filling the PZR solid followed by a high pressurizer pressure trip.

B. Continuous cycling of backup charging pumps due to conflicting signals.

C. All charging pumps stopping at + 13" deviation from setpoint.

D. Loss of PZR level followed by a Thermal Margin/Low pressure trip.

35. A loss of offsite power has occurred and 1A Diesel Generator has failed to start. What is the status of the PORVs on Unit-1?

A. Both PORVs will operate on high pressure, their "manual open" handswitch positions will not function to open the PORVs.

B. One PORV will not operate on high pressure, its "manual open" handswitch position will not function to open the PORV.

C. Neither PORV will operate on high pressure, both "manual open" handswitch positions will function normally.

D. One PORV will fail open but can be overriden shut using the "override shut" handswitch position.

36. Given the following:
- Unit 2 is at 80% power
- Unidentified RCS leakage is .5 GPM
- No SG leakage is identified
- RO reports that VCT trace indicates an increase in RCS leakage

AOP 2A (Excessive RCS leakage) has been implemented.

Which of the following conditions would require Unit-2 to be shutdown per T.S. 3.4.13?

A. 5 GPM known leakage from body of 2-CVC-500 (VCT Diversion).

B. 5 GPM leakage identified from the packing gland on PORV-404.

C. 5 GPM leakage identified from RCP integral heat exchanger.

D. 5 GPM leakby from seat of SI-652-MOV.

37. What component of the CEDM constitutes part of the RCS pressure boundary?

A. Operating Coil Stack Assembly

B. Shroud Assembly

C. Magnetic Jack Motor Assembly

D. Motor Housing Assembly

38. The most likely cause of an excessive Azimuthal Power Tilt (Tq) is:

A. A misaligned CEA

B. Axial xenon oscillations due to power changes

C. Uneven boron distribution within the core

D. Insertion of CEAs below PDIL

39. Unit-1 is in **EOP-1** with feed water controls in automatic when RCP Bus Feeder breaker, 252-1201, trips. Assume no operator action.

Which of the following secondary plant parameters indicate a loss of RCS flow is occuring ?

A. Lowering feed flow and steam flow with rising S/G pressures

B. Rising steam flow and feed flow with lowering S/G pressures

C. Rising steam flow and feed flow with rising S/G pressures

D. Lowering steam flow and feed flow with lowering S/G pressures

40. Unit 1 is operating at 100% power. RCP 11B parameters are as follows:

VCT pressure	40 PSIG
11B RCP upper seal	1100 PSIA
11B RCP middle seal	2150 PSIA
11B RCP lower seal cavity temperature	160°F
11B RCP bleedoff flow	2.0 GPM
Controlled bleedoff temperature	152°F

Which one of the following statements correctly describes the condition of 11B RCP seals?

A. No RCP seal is degraded

B. Lower RCP seal is degraded

C. Middle RCP seal is degraded

D. Upper RCP seal is degraded

41. While operating at 100% power, power is lowered to 80% using fast boration. How is NI power indication effected?

A. Indicated power is less than actual power due to greater neutron absorption by boron.

B. Indicated power is greater than actual power because of increased thermalization of neutrons by colder Tave.

C. Indicated power is less than actual power due to less neutron leakage from the core.

D. Indicated power is greater than actual power due to more neutron leakage from the core.

42. Given the same magnitude steam line rupture inside containment in each case, which condition would result in the highest containment temperature? (Assume no operator action)

A. failure of CIS Channel B to actuate

B. failure of SIAS Channel A to actuate

C. failure of CSAS Channel B to actuate

D. failure of SGIS channel A to actuate

43. If ESFAS sensor channel ZF is de-energized for maintenance, what is the resultant actuation logic?

A. 1 of 2

B. 2 of 3

C. 1 of 3

D. 2 of 4

44. Which set of conditions would cause a CEA Withdrawal Prohibit?

A. 1/4 pretrips from TM/LP, APD or High SUR.

B. 1/4 pretrips from High SUR, VOPT or APD.

C. 2/4 pretrips from VOPT, High SUR or TM/LP.

D. 2/4 pretrips from APD, TM/LP or VOPT.

45. Why will a linear range NI calibration require an adjustment to the NUCLEAR PWR CALIBRATE potentiometer over core life, even if the same power level is maintained?

A. More competition for neutrons by boron concentration over core life reduces leakage seen by the detectors

B. Moderator density changes over core life increases leakage seen by the detectors

C. A greater neutron flux is required to maintain the same power level as fuel is depleted

D. A higher fission rate is required to maintain the same power level as fuel is depleted

46. When CETs are unavailable, what other indications are used to verify natural circulation?

A. T-hot minus T-cold less than 50°F and temperatures constant or lowering

B. T-hot minus T-cold greater than 50°F and loop subcooling constant or lowering

C. T-hot minus T-cold less than 10°F and feed rate equal to steaming rate

D. T-hot minus T-cold greater than 10°F and steam/feed rate affects temperature

47. A Loss of All Feedwater requires that OTCC be initiated prior to CETs reaching 560°F. What is the basis for ensuring OTCC has been initiated prior to reaching this temperature?

A. Reflux boiling heat removal mechanism degrades considerably above this temperature.

B. Energy released to the containment will exceed design values above this temperature.

C. Above this temperature the corresponding RCS pressure may prevent achieving the minimum adequate core cooling flow needed for decay heat conditions.

D. To ensure RCS voiding does not occur in quantities sufficient to prevent natural circulation flow.

48. Given the following:
Unit 1 is at 100% power. A loss of offsite power occurs and 1B DG fails to start.
Which Containment Coolers will remain operable?

A. 11 and 12

B. 11 and 13

C. 12 and 13

D. 13 and 14

49. Which of the conditions below will provide an automatic start signal to a SRW pump with the Control Room handswitch in AUTO?

A. Service Water header pressure less than 35 PSIG.

B. A SIAS signal has actuated with or without an undervoltage signal present.

C. The operating pump breaker has tripped on overcurrent and standby pump disconnect is aligned to that bus.

D. An RAS signal has actuated during plant cooldown to shutdown cooling conditions with a LOCA in progress.

50. Unit 1 is operating at 100% reactor power when the 11 Heater Drain Pump trips on overcurrent. What will determine continued operation at present power level?

A. Condensate Header pressure.

B. MSR drain tank levels.

C. Feedwater heater levels.

D. SGFP suction pressure.

51. Unit 1 is operating at 100% power with condensate pumps 11, 12 and 13 running when #12 condensate pump trips.
What effect will this have on the secondary and what steps should be taken to mitigate the consequences?

A. Reduced feed flow to the S/Gs and lowering levels will result. Bias feed pumps as required to maintain S/G levels.

B. Lower feed pump suction pressure will exist. Verify a condensate booster pump automatically starts.

C. Lower condensate header pressure will exist. Place hotwell level control in manual and bypass condensate demineralizers and precoat filters.

D. Cavitation and unncessary wear will occur. Reduce power to maintain condensate header flow less than 8,000 GPM.

52. #12 SGFP tripped at 60% power during a load increase. It has been determined that 12 SGFP cannot be restarted. Which one of the following requirements must be met to maintain power above 440 MWe with only #11 SGFP in operation?

A. #11 SGFP speed must be controlled in manual.

B. SGFP suction flow must be maintained < 16,500 GPM.

C. SGFP suction pressure must be maintained > 250 PSIG.

D. All 3 condensate pumps must remain running.

53. Which of the following are AFW water sources which can be used per existing Emergency Operating Procedures?

A. 21 Condensate Storage Tank to 13 AFW pump suction via fire hose conections.

B. Condenser hotwell to the 11 CST to the AFW pump suctions.

C. Condensate hotwell directly to the suction of 13 AFW pump.

D. Condensate pump discharge header to the AFW pump suctions.

54. Given the following conditions:

--Unit 2 is at 100% power
--Fuel Burnup is 8900 MWD/MTU
--Tc is 547.8 °F
--PZR pressure is 2262 PSIA

An inadvertant AFAS channel A actuation occurs. How will the RCS respond?

A. Reactor power rises, Tc increases, spray valves open to maintain PZR pressure.

B. Tc lowers, reactor power rises, PZR heaters energize to maintain PZR pressure.

C. All parameters remain constant as the Main Feedwater Reg. Valves compensate for the increased feed flow to the S/Gs.

D. The reactor trips on TM/LP or VOPT and SIAS initiates due to the drop in RCS pressure.

55. An alarm occurs on the liquid waste discharge radiation monitor (RE-2201) during a discharge of the 11 RCWMT. The radiation monitor is flushed with demineralized water in an attempt to reduce background radiation levels. Where is the flush water discharged to?

A. Miscellaneous Waste Monitor Tank

B. On-service RCWMT

C. On-service degasifier

D. Miscellaneous Waste Receiver Tank

56. The concentration of oxygen in the waste gas holdup system shall be limited to _____% by volume?

A. 3
B. 4
C. 5
D. 6

57. During a waste gas decay tank release through the U-1 plant vent, the waste gas discharge radiation monitor (RI-2191) alarms.

Which valve must be shut to prevent a possible waste gas decay tank discharge to the waste gas surge tank?

A. Waste gas discharge isolation (WGS-2191-CV)

B. Waste gas discharge to Unit 1 plant vent (WGS-683)

C. Waste gas discharge pressure control (WGS-2191-PCV)

D. Waste gas discharge final filter bypass (WGS-630)

58. During preparations for initiating Containment Purge, it is discovered that the Radiation Monitors associated with securing the system have their fuses pulled.
What effect will this have on the Containment Purge CVs?

A. The Containment Purge CVs will not open because they receive a CRS.

B. The Containment Purge CVs will not open because they receive a CIS.

C. The Containment Purge CVs will open, but would not shut on a valid CRS.

D. The Containment Purge CVs will open, but will immediately shut.

59. Given the following:

-- Unit-1 in Mode-3 at 532°F
-- Letdown flow indicates 0 GPM
-- Waste processing RMS alarm
-- Letdown pressure low alarm
-- Chemical Volume Control Isolation Signal (CVCIS)
-- B/U charging pump running
-- High outlet temperature on the Regenerative HX
-- PZR level --140" and rising

Which area of the plant would contain the highest personnel contamination and safety risks for this situation?

A. East Penetration Room

B. 1C63 Room

C. Charging Pump Room

D. West Penetration Room

60. What instrumentation provides the best indications for monitoring RCS level when draining from 47 ft. to 37.6 ft.?

A. RVLMS, LIC-110X, LT-4138 (narrow range) and LT-4139 (wide range).

B. Refueling level Tygon hose, LT-4138 (narrow range) and LT-4139 (wide range).

C. LT-4140 (d/p transmitter), GEMS sightglass and LI-103.

D. LT-4138 (narrow range), LT-4140 (d/p transmitter), LT-4139 (wide range).

61. As pressurizer temperature lowers, pressurizer level instruments LI-110X and 110Y are expected to be:

A. Indicating less than actual level.

B. Indicating greater than actual level.

C. Pegged high due to draining reference legs.

D. Tracking actual level due to density compensation.

62. Given the following conditions in the Quench Tank:

1) Pressure is 8 psig
2) Temperature is 122°F
3) Level is 28 inches

What action should be taken to restore normal operating conditions to the quench tank?

A. Drain the Quench Tank.

B. *Fill the Quench Tank.*

C. Add Nitrogen to raise pressure.

D. Perform a bleed and feed to cool the Quench Tank .

63. Which of the following signals will energize all Pressurizer Backup heaters? **(Assume heater control H/Ss are in AUTO)**

A. Key switches HS-100-4A & 100-6A on 1(2)C43 in ON.

B. +13 inches level deviation above level setpoint.

C. PZR level lowers to 101 inches.

D. PZR pressure lowers to 2225 PSIG.

64. Match the reactor trip in column A with the trip basis in column B. (Basis in column B may be used once, more than once, or not at all)

COLUMN A (REACTOR TRIP)	COLUMN B (BASIS)
____ TM/LP	1. S/G tube rupture
____ Loss of Load	2. Uncontrolled CEA Withdrawal
____ Power Level High	3. Excess Steam Demand
	4. Loss of Load Without Reactor Trip
	5. Extending S/G Safety Valve Service Life

A. 3,4,5

B. 2,2,3

C. 1,5,2

D. 1,4,2

65. While inserting group 5 CEAs from ARO during a power decrease, PRIMARY CEA POSITION DEVIATION +/- 4" alarm annunciates. CEA 34 computer position indication is 130", indication by CEAPDS is 125". All other group 5 CEA position indications are 124.5" to 125.5"
What action is required?

A. Align CEA 34 to the rest of group 5 CEAs per AOP-1B.

B. Declare CEA 34 primary position indication inoperable and refer to the TRM (TNC15.1.4).

C. Declare CEA 34 inoperable and refer to Technical Specifications (LCO 3.1.4).

D. Declare CEA secondary position indication inoperable and refer to the TRM (TNC 15.1.4).

66. Which control signals are supplied by the Reactor Regulating System?

A. PZR level control, Main turbine runback, Turbine Bypass Valve (TBV) analog demand, and SG level control modes for Digital Feedwater Control System (DFWCS).

B. Atmospheric dump valve (ADV) analog demand, TBV quick open, Main turbine runback, and SG level control modes for the DFWCS.

C. PZR Level control, Pressurizer Heater Cutout, ADV quick open, and SG level control modes for the DFWCS.

D. ADV analog demand and quick open, TBV quick open, PZR level control, and SG level control modes for the DFWCS.

67. Which combination of Containment Spray pumps and/or Containment Air Coolers will be **unable** to maintain the pressure and temperature of the containment within design parameters for the most limiting UFSAR analyzed accident?

A. Four (4) Containment Air Coolers

B. Two (2) Containment Spray Pumps

C. One (1) Containment Spray Pump and One (1) Containment Air Cooler

D. One (1) Containment Spray Pump and Two (2) Containment Air Coolers

68. Unit-2 is in mode 6, refueling in progress with Containment Purge in service. A momentary loss of power causes the operating Main Exhaust Fan to trip. What is the most likely effect on parameters in containment?

A. Containment pressure rises 1 to 2 PSIG.

B. Refueling pool level changes.

C. Area radiation monitors indicate higher.

D. Containment temperature rises 5 to 10 degrees.

69. High Spent Fuel Pool temperature can be caused by:

A. Throttling shut SFP CLR DISCH HDR stop valve.

B. Shutting the spent fuel pool heat exchanger Component Cooling outlet valve.

C. Opening the 21A SRW HXR bypass valve.

D. Raising the setpoint of the spent fuel pool temperature controller on 1C13.

70. Given the following:
Unit-1 is at 100% power. 11 MSIV is being partial stroke tested per the Surveillance Test Procedure. A system failure results in 11 MSIV shutting completely.
How will the plant respond?

A. RCS pressure will rise due to less steam demand, a High Pressure reactor trip will occur and the PORVs will open.

B. 12 S/G level will lower due to the steam demand imbalance, causing a Low S/G level reactor trip.

C. 11 S/G pressure will rise, 12 S/G pressure will lower due to the steam demand imbalance, resulting in an ASGT reactor trip.

D. RCS pressure will lower due to the increased steam demand from 12 S/G, resulting in a TM/LP reactor trip.

71. Which radiation monitor detects noble gas releases from the Atmospheric Dump Valves?

A. Wide Range Noble Gas Monitor (RIC-5415)

B. Main Vent Gaseous Monitor (RE-5415)

C. Main Steam Line Radiation Monitor (RE-5421)

D. Condenser Off-Gas Radiation Monitor (RE-5414)

72. Unit-1 is initially at 100% power, 870 MWe, water box inlet temperature is 48°F. The RO reports that MWe load is lowering, and 11 CAR has tripped. What are the initial operator actions?

A. Implement AOP-7G and verify condenser differential temperature is less than 12°F.

B. Reduce generator VARs to 0, verify a standby CAR starts.

C. Reduce turbine load to maintain condenser vacuum greater than 25".

D. Start a standby CAR and monitor condenser vacuum.

73. Using provided references:

Both units are in Mode 1. 24B 480V bus is lost due to a fault on the bus, de-energizing #24 battery charger.
Select the most appropriate response.

A. Verify #12 battery charger is in operation.

B. Restore #24 battery charger to operation in 2 hours.

C. Unit-2 in Mode 3 within 6 hours and Mode 5 in 36 hours.

D. Place 1Y03 and 2Y03 on the inverter backup bus.

74. Using provided references:
An electrician performing a surveillance requirement reports that #11 battery has one cell with it's electrolyte level less than the minimum level indication mark.
What action is required? **Assume both units operating at 100% power.**

A. Verify pilot cell(s) electrolyte level and individual cell float voltage meet Table 3.8.6-1 Category C limits within 1 hour.

B. Replace #11 Battery with the reserve battery within 4 hours.

C. Verify the battery cell voltage is greater than or equal to 2.13 volts within 1 hour.

D. Restore battery cell parameters to Category A and B limits of Table 3.8.6-1 within 24 hours.

75. 2A Diesel Generator is running fully loaded when the operator monitoring the diesel reports that the "FUEL-OIL LEVEL LOW IN DAY TANK" alarm has annunciated and the fuel oil transfer pump will not run.
With no operator action, how long will 2A Diesel Generator continue to operate?

A. 30 to 45 minutes

B. 1 to 2 hours

C. 5 to 6 hours

D. 7 to 8 days

76. Unit-1 has tripped and EOP-0 is being implemented. The Condenser Off-Gas (RE-1752) and S/G Blowdown Recovery (RE-4014) Radiation Monitors meter indications are pegged low and all lights on their panels are out.
What action should be performed to support the Radiation Levels External to Containment safety function?

A. Report to the CRS "Radiation Levels External to Containment is complete".

B. Restart the RMS sample pumps and re-evaluate the indications.

C. Shut the Steam Generator Blowdown Control Valves.

D. Attempt to clear all RMS alarms and re-evaluate the indications.

77. Which of the following conditions will automatically trip an operating circulating water pump?

A. 2 of 4 Intake structure level switches sensing 3.5" of water

B. Low current trip of the exciter breaker

C. High condenser back pressure

D. High traveling screen differential pressure of 40"

78. The _____ system is designed to act as a backup supply to the Instrument Air system and will automatically supply air to the header at _____.

A. Salt Water System air compressors, 88 PSI

B. Aux Feedwater System air amplifier, 80 PSI

C. Plant Air System, 88 PSI

D. Aux Feedwater System air accumulator, 85 PSI

79. A smoke detector for the Unit-1 27' Switch Gear Room malfunctions, causing an alarm. Which one of the following describes the effect on the system?

A. "FIRE PROT PANEL 1C24B" alarm actuates and after a time delay, Halon system discharges.

B. "FIRE PROT PANEL 1C24B" alarm actuates and immediately results in Halon system discharge.

C. "FIRE SYS" alarm actuates and after a time delay, Halon system discharges.

D. "FIRE SYS" alarm actuates but does not result in Halon system discharge.

80. A Unit-1 plant cooldown is in progress with the following conditions:

- Plant was shutdown 30 hours ago following an extended full power run.
- Shutdown cooling is in service using 11 LPSI pump.
- RCS temperature is 180°F.
- RCS pressure is 120 psia with a bubble in the pressurizer.
- A component cooling leak has developed such that neither shutdown cooling heat exchanger is available.

Which one of the following options should be taken to control RCS temperature?

A. Allow RCS to heat up then control RCS temperature by bleeding steam from the steam generators.

B. Verify RCS pressure is less than 170 PSIG and align a containment spray pump for shutdown cooling.

C. Start a HPSI pump and open the PORVs to provide core cooling via RCS blowdown to containment.

D. Start a charging pump and open the PORVs to provide core cooling via RCS blowdown to containment.

81. A loss of load transient resulted in a plant trip with PORVs lifting.
What would indicate that the quench tank rupture disk has ruptured?

A. RCS pressure lowers more rapidly.

B. RCS pressure lowers less rapidly.

C. "QUENCH TK TEMP LVL PRESS" alarm clears.

D. "CNTMT NORMAL SUMP LVL HI" alarm actuates.

82. The normal power supply and header lineup of #13 and (23) Component Cooling pumps is:

A. Powered from bus 14A(21B) and aligned to 11(22) CCW headers respectively.

B. Powered from bus 14 B(24B) and aligned to both CCW headers respectively.

C. Powered from bus 11A(24A) and aligned to 12(21) CCW headers respectively.

D. Powered from bus 11B(21B) and aligned to both CCW headers respectively.

83. U-1 is in Mode 6 with fuel handling in progress when the refueling machine operator notices the refueling pool level is rapidly lowering.
Per the applicable plant procedure, which statement summarizes the control room actions required to ensure containment and atmosphere activity levels are kept to a minimum and the general public will be protected?

A. Start all Containment Air Coolers in high with maximum SRW flow, start Penetration Room Exhaust fans, and ensure the SFP charcoal filters are in service.

B. Isolate containment purge, start all Containment Air Coolers in low with maximum SRW flow, and start Penetration Room Exhaust fans.

C. Start all Containment Air Coolers in low with minimum SRW flow, start all Iodine Filter Fans, and ensure the SFP charcoal filters are in service.

D. Isolate containment purge, start all Containment Air Coolers in high with maximum SRW flow, start all Iodine Filter Fans, and ensure the SFP charcoal filters are in service.

84. While raising a fuel assembly for a core to upender sequence, the hoist position is approximately 127 inches and being raised. The load increases from 1230 pounds to 2530 pounds. What is causing the weight change?

A. A grid-to-grid hangup with adjacent fuel assemblies is occurring.

B. The fuel assembly is bowed and contacting reactor vessel internals.

C. The hoist box is off the down stop, and the weight gain is normal.

D. The camera has contacted the core support barrel.

85. Following a reactor trip from 100% power, how do the ADVs respond?

A. Initially they quick open and as RCS temperature lowers they ramp shut and when Thot is 532°F they are fully shut.

B. Initially they quick open and as RCS temperatures lower they ramp shut and when Tave is 535°F they are fully shut.

C. Initially they ramp fully open and as RCS temperature lowers they ramp shut and when Thot is 535°F the ADVs are fully shut.

D. As RCS temperature lowers they remain open until the control room operator places the ADV controller in MANUAL with 0% signal to shut them.

86. The following plant conditions exist on Unit 1:

Main Generator output breaker is shut
"Loss of Load Ch Trip Bypass" annunciator is illuminated
11 SGFP pump is in service

Which one of the following describes initial plant response to a Unit 1 turbine trip?

A. Main feed regulating valves close, bypass valves open to 56% output signal, ADVs and TBVs receive a quick open signal.

B. Main feed regulating valves remain closed, bypass valves open 5%, ADVs and TBVs operate to maintain Tave and steam header pressure.

C. Main feed regulating valves remain closed, bypass valves control as necessary to maintain SG levels, ADVs and TBVs operate to maintain Tave and steam header pressure.

D. Main feed regulating valves close, bypass valves control as necessary to maintain SG levels, ADVs and TBVs receive a quick open signal.

87. Unit 1 is operating at 5% power when the following alarm is received -- "11 and 12 SERV WATER HEAD TANK LEVEL". Both SRW Head Tank levels are decreasing rapidly and ABO reports that the floor drains on the 5 FT Aux Building are overflowing.

What actions are required by the applicable AOP?

A. Reduce MVARs to zero, commence a rapid power reduction, align make-up to SRW from Condensate and verify head tank levels recover.

B. Stop both SRW pumps, isolate SRW to the Turbine Building, start SWACs, trip the reactor and enter EOP-0.

C. Secure any operating DGs and CACs, isolate SRW to the Turbine Building, verify makeup to the SRW head Tanks and monitor levels.

D. Stop one SRW pump. Verify that SRW head tank level control valves are open and DW Transfer pump discharge pressure is greater than 30 PSIG, dispatch operators to locate and isolate the leak.

88. When operating the controls at 1C43, what is the effect on any AFW controller output signal if the operating lever is moved past its detent pin when placed toward the "MIN" position ? (assume output signal is presently at 20%)

A. Signal goes to 0% output.

B. Signal goes to 50% output.

C. Signal stays at 20% output.

D. Signal goes to 100% output.

89. Given electrical drawing 61-076-B sh 14J rev 2:

With no SIAS present, when 1HS5467 is placed in OPEN with HS5467A in NORMAL, what is the initial current flowpath?

A. Through 1HS5467A contact 9-10, through relays 1SV5467 and 5467A, through relay 94.

B. Through contact 94, through 1HS5467contact 1-2, through 1HS5467A contact 3-4, through relays 1SV5467 and 5467A.

C. Through 1HS5467 contact 7-8, through contact SIAS A4, through relays 1SV5467and 5467A.

D. Through contact 94, through 1HS5467 contact 1-2, through contact SIAS A4, through relays 1SV5467 and 5467A.

90. Under which of the following circumstances may you depart from a procedure as written?

A. With GS-NPO approval, to prevent damage to plant equipment or if safety functions are not being met.

B. With Shift Manager, or in his absence, CRS approval, to prevent conditions adverse to personnel safety, plant safety, plant stability or safety of the public.

C. With CRS approval, in the event that safety functions are not being met, or unexpected alarms/plant responses are being received.

D. With shift manager approval, if safety functions are not being met.

91. Given the following conditions:

--Unit 1 is shutdown for a maintenance outage
--Shutdown cooling has been lost, AOP-3B has been implemented
--CET temperature is 220°F
--RCS is capable of being pressurized
--S/G levels are -35"
--Main Feedwater was secured 4 hours ago

What is required for the reinitiation of Main Feedwater ?

A. Raise S/G levels to > -26" with Auxiliary Feedwater.

B. Place the Feedwater Regulating Bypass Valve controller in Manual with a 95% output.

C. Purge the gooseneck for at least 10 minutes at 100 to 160 gpm.

D. Maintain Main Feedwater flow < 80 gpm for at least 10 minutes.

92. The Principal Plant Operator (PPO) has notified the CRO that both sump pumps in 22 sump (condenser pit west) do not work and he needs to route a portable sump pump to a floor drain that collects in 21 sump (condenser pit east side) which has both pumps operable.

What additional controls are required by plant procedures?

A. Initiate a Troubleshooting Control Form per MN-1-110.

B. A Temporary Alteration must be approved by the Shift Manager per MD-100.

C. Log the installation of the portable pump on the turnoverinformation sheet per NO-1-207.

D. Initiate a Procedure Controlled Temporary Plant Configuration Change per MN-1-110.

93. Which of the following is a function of the Refueling Control Room Operator (RCRO)?

A. Approving temporary changes to core alteration procedures, such as CEA or fuel assembly location due to malfunctioning refueling equipment.

B. Verifying the qualifications of refueling machine, spent fuel handling machine and transfer machine operators prior to commencing core alterations.

C. Ensuring that all applicable requirements of the Technical Specifications and the TRM are met for the evolution in progress.

D. Documenting any fuel handling problems and maintaining the Refueling Status board.

94. A new electric motor has been installed on an existing pump. The MO requires the motor to be checked for proper rotation and not all clearances have been returned.

Which one of the following actions are required to remove the Danger Tag from the motor power supply? (assume the pump suction and discharge valves are to remain tagged out)

A. Process a Supplementary Clearance.

B. Process a clearance order to the existing clearance.

C. Clear all tags and use a "human danger tag" for equipment not ready for operation.

D. Verbally authorize the "lifting" of the motor tag and re-tag after rotation check.

95. Per OP-2, Plant Startup from Hot Standby to Minimum Load,11 and 12 MSIVs may be opened when the differential pressure across the valves is less than 100 PSID. How could you verify the differential pressure across the MSIVs?

A. Compare the applicable Steam Generator Header Pressure indication (PI-3991 or PI-4008) with the process variable indication on the Turbine Bypass Controller, (PIC-4056).

B. Use the computer points of MSIV differential pressure from computer group 4, (11 & 12 Steam Generators).

C. Compare the process variable indication with the setpoint indication on the Turbine Bypass Controller (PIC-4056).

D. Compare one of the safety channel S/G pressures PI-1013A-D (1023A-D) with the associated Steam Generator Header Pressure indications on 1C03, PI-3991 (PI-4008).

96. An operator is assigned a task to monitor a resin transfer line for blockage. The operator's current dose for the year is 850 mRem. The task is expected to result in a dose of 100 mRem.

What actions are required to permit the operator to perform this task?

A. Normal RCA entry requirements, no administrative dose limit extension is needed.

B. Dosimeter record review, Shift Manager, GS-NO approvals and a new SWP for extending the administrative dose limit.

C. Dosimeter record review, GS-NO and GS-RS approvals for extending the administrative dose limit.

D. Initiate a new SWP for extending the administrative dose limit for this individual.

97. Given the following:
    * Unit 2 is in Mode 5
    * PAL interlocks are defeated
    * Containment Equipment hatch is installed
    * Containment Outage Door is shut
    * Spent fuel moves are in progress in the SFP area
    * Containment Purge is being aligned for operation

    What actions are required to maintain operability of SFP ventilation and why are they required?

    A. Align Containment Purge with Supply fan OFF and Exhaust Fan ON, SFP ventilation is inoperable until the Exhaust Fan is ON.

    B. Verify the SFP ventilation filters are in service, with Containment Purge in operation, SFP ventilation filters must be in operation to consider the system operable.

    C. Align Containment Purge with both Supply and Exhaust fans ON, SFP ventilation will be inoperable while the Exhaust Fan is ON and the Supply Fan is OFF.

    D. Secure the Containment Purge line up, SFP ventilation is inoperable any time the Containment Purge Supply or Exhaust Valves are OPEN.

98. The setpoint for the normal liquid effluent monitor is based on assumptions in the Offsite Dose Calculation Manual (ODCM).

    Which one of the following would require the Plant Computer activity setpoint to be decreased?

    A. Decrease in actual release rate from 120 gpm to 90 gpm.

    B. Decrease in operating circ water pumps from 6 to 5.

    C. Decrease in monitor background radiation level.

    D. Decrease in Bay level.

99. Following a Control Room evacuation due to a fire, specific actions are completed to maintain positive control of plant equipment (breakers, motors, pumps, etc..) outside the control room.
Which set of conditions represents the actions taken?

A. Close fuses pulled and 4KV breakers tripped locally, local/remote keyswitches placed in LOCAL, 480V load centers are stripped, and vital MCCs are stripped of unnecessary loads.

B. Breakers tripped and racked out, 4KV busses are stripped and close fuses are removed, and all vital MCCs are stripped and tied together.

C. DGs and 4KV breakers with local/remote keyswitches are placed in LOCAL to maintain positive control of operation; all other equipment affected by fire continues to operate.

D. DGs placed in LOCAL, 1B DG is used to supply two 4KV busses, 480V load centers are stripped, and vital MCCs are deenergized and stripped then tied together.

100. Unit 1 tripped from 100% due to a turbine trip. EOP-1 has been implemented. The only abnormalities noted in EOP-0 were two stuck CEAs and 11 Charging Pump tripped. All applicable EOP-0 actions were completed. Now a loss of 14 4KV Bus occurs.
What is the appropriate action?

A. Implement EOP-8 due to not meeting reactivity control.

B. Implement EOP-2 for the loss of power.

C. Continue with EOP-1 and implement AOP-7I.

D. Implement EOP-8 due to not meeting Vital Auxiliaries.

Test Name: 2002RO.TST
Test Date: Wednesday, July 10, 2002

		Question ID		Type	Pts	Answer(s) 0	1	2	3	4	5	6	7	8	9
1:	D	INOP/STUCK CEA	003	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	2	NATURAL CIRC	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	3	LOSS OF CCW	001	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	4	PZR PRESS MALF	002	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	5	STM LINE RUPTURE	003	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	6	STM LINE RUPTURE	005	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	7	CRO-48-3-0-12	002	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	8	STATION BLACK OUT	001	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	9	LOSS VITAL AC	002	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	10	LOR-020380304-005	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	11	CRO-202-9A-2-48	048	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	12	CRO-7-1-5-81A	811	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	13	AOP-3F-04A	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	14	AOP-6A-03	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	15	CRO-106-1-2-12	012	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	16	LOR-020060218-002	003	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	17	CRO-202-1B-1-04	004	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	18	CRO-60-1-51	051	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	19	SRO-201-0-3-23	023	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	20	CRO-202-2A-0-09A	002	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	21	SMALL BREAK LOCA	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	22	CRO-113-5-5-22	022	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	23	CRO-107-1-3-50	050	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	24	CRO-7-1-5-76B	762	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	25	SRO-201-0-3-02A	003	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	26	AOP-2A-01	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	27	SRO-201-6-0-01	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	28	SRO-201-3-1-18	018	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	29	AOP-7J-06	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	30	CRO-57-1-5-12	013	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	31	CRO-122-1-3-42	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	32	CRO-134-1-5-36	036	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	33	CRO-122-1-3-27A	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	34	CRO-62-1-3-29	029	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	35	SRO-201-2-1-24	024	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	36	EXCESSIVE RCS LEAK	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	37	CRO 5-2-3-47	047	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	38	CONTROL ROD DRIVE 4	045	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	39	SRO-201-2-1-25	025	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	40	LOR-020050447-002	003	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	41	CRO-57-1-5-04	005	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	42	CRO-63-1-3-09A	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	43	CRO-63-1-3-15	015	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	44	CRO-59-1-5-60	060	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	45	CRO-57-1-5-39	039	MC-SR	1	C	D	A	B	C	D	A	B	C	D

Test Name: 2002RO.TST
Test Date: Wednesday, July 10, 2002

		Question ID		Type	Pts	Answer(s) 0	1	2	3	4	5	6	7	8	9
1:	46	CRO-202-3F-1-0003	004	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	47	SRO-201-3-1-13	013	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	48	CRO-7-1-5-100	101	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	49	CRO-113-3-5-04	004	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	50	CRO-103-2-4-24	024	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	51	CRO-103-2-4-06	007	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	52	LOR-020320305-002	003	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	53	CRO-34-2-3-04	005	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	54	CRO-34-2-3-21A	022	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	55	CRO-219-1-0-33	034	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	56	CRO-134-1-7-03	003	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	57	CRO-219-1-0-34	034	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	58	CRO-122-1-3-42	042	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	59	CRO-107-1-3-51	051	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	60	CRO-203-5A-3-03	003	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	61	SRO-301-15-1-05	007	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	62	CRO-5-2-3-39	039	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	63	CRO-62-1-3-22	023	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	64	CRO-59-1-5-03	004	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	65	CRO-60-1-58A	059	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	66	CRO-58-1-13	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	67	CRO-7-1-5-17A	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	68	CRO-134-1-5-44	044	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	69	CRO-113-4-3-07	007	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	70	CRO-103-2-4-61A	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	71	CRO-122-1-3-04	005	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	72	AOP-7G-05	005	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	73	CRO-54-1-1-12A	01A	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	74	CRO-54-1-1-24	024	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	75	CRO-48-1-2-28	028	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	76	CRO-122-1-3-38A	38A	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	77	CRO-113-1-5-14	014	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	78	CRO-113-7-1-09	009	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	79	FIRE PROTECTION	002	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	80	AOP-3B-05A	006	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	81	CRO-5-2-3-46	046	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	82	CRO-113-5-5-03	003	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	83	CRO-134-1-5-40B	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	84	CRO-113-6-4-17	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	85	CRO-58-1-07	007	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	86	CRO-102-1-43	044	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	87	CRO-113-3-5-23	023	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	88	CRO-202-9A-2-23	023	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	89	SRO-204-1-1-22	022	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	90	SRO-204-1-1-12	012	MC-SR	1	B	C	D	A	B	C	D	A	B	C

Test Name: 2002RO.TST
Test Date: Wednesday, July 10, 2002

		Question ID		Type	Pts	Answer(s) 0	1	2	3	4	5	6	7	8	9
1:	91	SRO-201-3-1-27	027	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	92	EQUIPMENT CONTROL	007	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	93	SRO-204-200-01	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	94	EQUIPMENT CONTROL	002	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	95	CRO-203-2-4-012	012	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	96	RADIATION CONTROL	008	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	97	RADIATION CONTROL	003	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	98	RADIATION CONTROL	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	99	CRO-202-9A-2-06	006	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	100	LOR-022010602-001	002	MC-SR	1	C	D	A	B	C	D	A	B	C	D