Final Submittal
(Blue Paper)

FINAL RO/SRO WRITTEN

EXAMINATION REFERENCES

HARRIS JAN./FEB. 2006 EXAM

05000400/2006301

JANUARY 23 - FEBRUARY 2, 2006
FEBRUARY 6, 2006 (WRITTEN)

2/9/06

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COMBINED RO/SRO WRITTEN EXAM

WITH KAS, ANSWERS, REFERENCES,

AND ANALYSIS

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05000400/2006301

JANUARY 23 - FEBRUARY 2, 2006
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2/9/06

1. Given the following conditions:

   - The plant is at 40% power.
   - The crew has entered AOP-018, RCP Abnormal Conditions, due to temperature alarms on RCP "A".
   - The following ERFIS indications currently exist for RCP "A":

• Upper and Lower Thrust Bearing temperatures	182 deg F
• Upper and Lower Radial Bearing temperatures	186 deg F
• Motor Stator Winding Temperature	306 deg F
• Motor Current Fluctuations Peak to Peak	25 Amps

   Which ONE (1) of the following describes the impact of these indications, and the action required in accordance with AOP-018?

   A. Thrust bearing temperatures exceed allowable limits. Trip the reactor and trip RCP "A".

   B. Radial bearing temperatures exceed allowable limits. Trip RCP "A".

   C. Motor current fluctuations exceed allowable limits. Trip the reactor and trip RCP "A".

   D. Motor stator winding temperature exceeds allowable limits. Trip RCP "A".

2. Given the following conditions:

   - The plant is at 100% power.
   - All control systems are in their normal alignments.

   Which ONE (1) of the following describes the maximum allowable amount of Letdown flow to prevent receiving alarm ALB-007-3-4, LOW PRESSURE LETDOWN HIGH FLOW?

   A. 105 GPM

   B. 120 GPM

   C. 150 GPM

   D. 165 GPM

3. Which ONE (1) of the following describes the parameter limit that will prevent an explosive atmosphere in the VCT?

   A. Nitrogen concentration is maintained less than 4%.

   B. Hydrogen concentration is maintained greater than 4%.

   C. Oxygen concentration is maintained less than 4%.

   D. Hydrazine concentration is maintained greater than 4%.

4. Given the following conditions:

   - The plant is in Mode 4.
   - RHR Train "A" is in service.
   - The Instrument Air supply line to Heat Exchanger Flow Control Valve 1RH-30 becomes severed and is completely detached.

   Which ONE (1) of the following describes the effect on the RHR system?

   A. The operating RHR pump will cavitate.

   B. The operating RHR pump will operate at shutoff head.

   C. RHR Heat Exchanger outlet temperature indication rises.

   D. RHR Heat Exchanger outlet temperature indication lowers.

5. Given the following conditions:

   - A small break LOCA has occurred. The crew is in EPP-009, Post LOCA Cooldown and Depressurization.
   - One RCP is operating.
   - Two CSIPs are operating.
   - RCS subcooling is 72 degrees F. The crew has determined that one CSIP can be stopped.

   Which ONE (1) of the following describes the system response after the crew stops one CSIP?

   A. RCS break flow remains constant while ECCS flow decreases and RCS subcooling decreases.

   B. RCS pressure decreases in response to reduced ECCS flow and RCS subcooling decreases.

   C. RCS subcooling remains the same and flow from the running CSIP increases, reaching a balance with break flow.

   D. RCS temperature and pressure increase in response to the reduced ECCS flow and RCS subcooling remains the same.

6. Which one of the following conditions will exist in the associated train when the SSPS "OPERATE/TEST MODE SELECTOR" switch is in the TEST position?

   A. ESF actuations will be inhibited and reactor trip signals will be available

   B. ESF actuations will be available and reactor trip signals will be inhibited

   C. Both ESF actuations and reactor trip signals will be inhibited

   D. Both ESF actuations and reactor trip signals will be available

7. Which ONE (1) of the following describes the Nuclear Instrumentation response from the time control rods begin to drop due to a reactor trip from 100% power until the Source Range instruments energize?

   A. Prompt Drop of approximately 3 decades, followed by a -1/3 DPM startup rate for approximately 20 minutes.

   B. Prompt Drop to approximately 5% power, followed by a -1/3 DPM startup rate for approximately 20 minutes.

   C. Prompt Drop of approximately 3 decades, followed by a -1/3 DPM startup rate for approximately 3-4 hours.

   D. Prompt Drop to approximately 5% power, followed by a -1/3 DPM startup rate for approximately 3-4 hours.

8. Which of the following describes how the Pressurizer Relief Tank (PRT) is cooled in accordance with OP-100, "Reactor Coolant System"?

   A. Recirculate the PRT through the Reactor Coolant Drain Tank heat exchanger using Component Cooling Water to cool the heat exchanger

   B. Recirculate the PRT through the Reactor Coolant Drain Tank heat exchanger using Service Water to cool the heat exchanger

   C. Drain the PRT to the Reactor Coolant Drain Tank while making up to the PRT from the Demineralized Water Storage Tank

   D. Drain the PRT to the Containment Sump while making up to the PRT from the Reactor Makeup Water Storage Tank

9. Given the following conditions:

   - A reactor trip and safety injection have occurred.
   - RCS pressure is 1200 psig and lowering.
   - Tavg is 550 degrees F and lowering slowly.
   - PRZ level is 65% and rising.
   - Containment pressure is 2 psig and rising.

   Which ONE (1) of the following describes the cause of this event?

   A. A stuck open pressurizer PORV.

   B. Large break on an RCS cold leg.

   C. Small break on an RCS hot leg.

   D. A stuck open pressurizer spray valve.

10. Which ONE (1) of the following states the NORMAL and ALTERNATE sources of makeup water to the CCW Surge Tank?

	NORMAL	ALTERNATE
A.	Demineralized Water System	Primary Makeup Water System
B.	Condensate Storage Tank	Demineralized Water System
C.	Potable Water System	Condensate Storage Tank
D.	Primary Makeup Water System	Potable Water System

11. Given the following conditions:

- A small break LOCA is in progress.
- All equipment responded as designed.
- RCS pressure is 1450 psig and stable.
- Containment pressure is 2.5 psig and rising slowly.

Which ONE (1) of the following describes the trend on MCR Charging flow indication FI-122.A1 and the computer trend during this event?

A. Charging flow indication stable prior to reactor trip, and rises to a stable higher value after reactor trip.

B. Charging flow indication rising prior to reactor trip, and goes off-scale high upon safety injection actuation.

C. Charging flow indication rising prior to reactor trip, and lowers to zero upon safety injection actuation.

D. Charging flow indication stable prior to reactor trip, and lowers to zero upon safety injection actuation.

12. Which ONE (1) of the following combinations of pressurizer heater groups may be powered from Emergency Diesel Generators following a Loss of Off-Site Power?

A. Groups A and B

B. Groups A and C

C. Groups B and D

D. Groups C and D

13. Given the following conditions:

- The plant is at 100% power.
- All control systems are in their normal alignments, with the exception of the Pressurizer Pressure Master Controller, which is in MANUAL.
- The Pressurizer Pressure Master Controller output fails HIGH.

Which ONE (1) of the following describes the effect on RCS pressure and the reason for that effect?

A. RCS pressure rises due to PRZ spray valves closing and pressurizer control group heater energization.

B. RCS pressure rises due to PRZ spray valves closing and pressurizer backup group heater energization.

C. RCS pressure lowers due to pressurizer heater deenergization, PRZ spray valve operation, and operation of all 3 PRZ PORVs.

D. RCS pressure lowers due to pressurizer heater deenergization, PRZ spray valve operation, and operation of 1 PRZ PORV.

14. Which one of the following reactor trip signals provides protection against DNB (Departure from Nucleate Boiling)?

A. High pressurizer level

B. Overpower Delta T

C. RCP underfrequency

D. Steam generator low-low water level

15. Given the following conditions:

- The plant is currently at full power.
- The following sequence of events occurred:

  0200 The normal feeder breaker to 6.9kV bus 1A-SA (Bkr 105) tripped open. The 1A-SA EDG started and the sequencer correctly loaded all loads.
  0215 The 1A-SA EDG tripped.
  0220 The 1A-SA DC bus was lost.

- NO operator actions have been taken.
- The 1A-SA normal feeder (Bkr 105) has been repaired.

What is the current status of the load breakers on 6.9kV bus 1A-SA AND what action, if any, is required prior to re-energizing the bus?

A. Closed; Open all load breakers on 6.9kV bus 1A-SA from the MCB.

B. Closed; Open all load breakers on 6.9kV bus 1A-SA locally at the switchgear.

C. Open; DC Bus 1A-SA must be reenergized prior to restoring Bus 1A-SA.

D. Open; no additional action is necessary.

16. Given the following conditions:

- The following alarm is received in the control room:
  - ALB-010-1-1B, RCP A UPPER OIL RSVR LOW LEVEL
- The crew reduces power from 65% to 47% in the last 30 minutes in accordance with AOP-038, Rapid Downpower, to remove RCP A from service.

In accordance with AOP-038, which of the following plant personnel must be notified?

A. Health Physics

B. Chemistry

C. Plant Manager

D. Operations Manager

17. Which one of the following contains BOTH conditions that will result in indicated reactor power being LOWER than actual reactor power?

A. Source Range pulse height discrimination set too LOW
Intermediate Range Compensating voltage set too LOW

B. Source Range pulse height discrimination set too HIGH
Intermediate Range Compensating voltage set too HIGH

C. Source Range pulse height discrimination set too LOW
Intermediate Range Compensating voltage set too HIGH

D. Source Range pulse height discrimination set too HIGH
Intermediate Range Compensating voltage set too LOW

18. Which ONE (1) of the following describes the Steam Generator level indication that is available on the Auxiliary Control Panel?

A. One channel of SG narrow range per SG

B. Two channels of SG narrow range per SG

C. One channel of SG wide range per SG

D. Two channels of SG wide range per SG

19. Given the following conditions:

- Following a plant trip, EPP-004, "Reactor Trip Response," is being performed.
- The crew is verifying Natural Circulation conditions as a result of a loss of power to all RCPs.
- Five (5) core exit thermocouples are failed.

How do the failed core exit thermocouples affect indications used to verify Natural Circulation?

A.
- The Core Exit Temperature indications will be HIGHER than actual
- RCS Subcooling will indicate MORE subcooling than actual

B.
- The Core Exit Temperature indications will be HIGHER than actual
- RCS Subcooling will indicate LESS subcooling than actual

C.
- Core Exit Temperature indications will indicate LOWER than actual
- RCS Subcooling will indicate MORE subcooling than actual

D.
- Core Exit Temperature indications will indicate the SAME as actual
- RCS Subcooling will indicate the SAME subcooling as actual

20. Given the following conditions:

- A small break LOCA has occurred.
- Containment pressure is 3.8 psig and increasing.
- Containment temperature is 137°F and increasing.

The expected Containment Cooling Fan alignment will be one (1) fan in each Containment Fan Cooler Unit running in ...

A. high speed with the post-accident dampers shut.

B. high speed with the post-accident dampers open.

C. low speed with the post-accident dampers shut.

D. low speed with the post-accident dampers open.

21. Which ONE (1) of the following describes the cooling water provided to the following Containment Cooling System components?

	Containment Fan Coil Units	Containment Fan Coolers
A.	Normal Service Water	Normal Service Water
B.	Normal Service Water	Emergency Service Water
C.	Emergency Service Water	Normal Service Water
D.	Emergency Service Water	Emergency Service Water

22. Given the following conditions:

- Emergency Boration is required.
- Boric Acid Pump "B" is operating

Which ONE (1) of the following alignments results in the FASTEST reactor power reduction in accordance with AOP-002, "Emergency Boration"?

A. Open both 1CS-283, Boric Acid To Boric Acid Blender FCV-113A and 1CS-155, Make Up To VCT FCV-114A

B. Open both 1CS-283, Boric Acid To Boric Acid Blender FCV-113A and 1CS-156, Make Up To CSIP Suction FCV-113B

C. Open either 1CS-291, Suction From RWST LCV-115B or 1CS-292, Suction From RWST LCV-115D

D. Open 1CS-278, Emergency Boric Acid Addition

23. Given the following conditions:

- The plant was operating with the Reactor Coolant System in a reduced inventory condition, with the "B" RHR train in service.
- RCS level was 85 inches below the reactor vessel flange.
- "B' RHR Pump exhibited signs of cavitation, and RHR Cooling was lost.
- The crew entered AOP-020, Loss of RCS Inventory or Residual Heat Removal while Shutdown.
- The cause of the Loss of Inventory has been corrected.

Which ONE (1) of the following actions is required to restore RHR flow using Train "B" in accordance with AOP-020?

A. Raise CCW flow to Train "B" RHR heat exchanger to ensure adequate heat removal and maintain RCS temperature below 200 degrees F.

B. Restore RCS inventory and vent the "B" RHR Pump at 190' RAB and 236' RAB in accordance with AOP-020, Attachment 1, RHR Venting.

C. Refill the RCS to greater than 55 inches below the reactor vessel flange, start "B" RHR Pump, and maintain RHR flow less than 3500 GPM.

D. Restore RCS inventory and start "B" RHR Pump at greater than 3500 GPM to sweep voids from the RHR system.

24. Given the following conditions:

- The plant is at 80% power.
- A Loss of Component Cooling Water has occurred.
- The crew is performing actions of AOP-014.
- The USCO has directed isolation of the non-essential CCW header to isolate the leak.

Which ONE (1) of the following describes the effect on the plant?

A. Letdown and Charging must be stopped. RCPs may only run for up to 10 minutes due to loss of thermal barrier cooling flow.

B. Letdown and Charging must be stopped. RCPs may only run for up to 10 minutes due to loss of motor oil cooling.

C. Letdown and Charging are unaffected. RCPs may only be run for up to 10 minutes due to loss of thermal barrier cooling flow.

D. Letdown and Charging are unaffected. RCPs may only be run for up to 10 minutes due to loss of motor oil cooling.

25. With an SI signal present and both Containment Spray pumps in service, the Spray pump suctions are _____ aligned to the Containment Sump upon receipt of a _____ condition.

A. manually; lo-lo RWST level

B. manually; high Containment Sump level

C. automatically; lo-lo RWST level

D. automatically; high Containment Sump level

26. Given the following conditions:

- The plant is at 50% power.
- ARR Fan S-1A is in operation in Containment.
- The following sequence of events occur:
  - ALB-028-1-4, CNMT BLDG ARR CHAR FILTER TROUBLE, is received
  - ARR Fan S-1A control switch indication is OFF

Which ONE (1) of the following describes the cause of the condition above?

A. High charcoal filter DP.

B. ARR Fan S-1A electrical overload

C. High charcoal filter temperature

D. Loss of power to ARR Fan S-1A

27. Given the following conditions:

- The unit is in Mode 3 at normal operating pressure.
- Pressurizer Pressure Control is in AUTO.
- Pressurizer Pressure Channel PT-445 fails high.

- PRZ Pressure Channel indications are:
  - PI-444 2025 psig
  - PI-445 2500 psig
  - PI-455 1975 psig
  - PI-456 2025 psig
  - PI-457 1975 psig

Assuming NO operator actions, which of the following describes the position of the PRZ PORVs and Spray Valves for the current plant conditions?

A.
- PRZ PORV PCV-444B closed
- PRZ PORVs PCV-445B and PCV-445A open
- PRZ Spray Valves PCV-444C and PCV-444D open

B.
- PRZ PORV PCV-444B open
- PRZ PORVs PCV-445B and PCV-445A closed
- PRZ Spray Valves PCV-444C and PCV-444D open

C.
- PRZ PORV PCV-444B closed
- PRZ PORV PCV-445B and PCV-445A closed
- PRZ Spray Valves PCV-444C and PCV-444D closed

D.
- PRZ PORV PCV-444B open
- PRZ PORVs PCV-445B and PCV-445A closed
- PRZ Spray Valves PCV-444C and PCV-444D closed

28. Given the following conditions:

- The plant is at 100% power.
- Pressurizer Level indication LT-459, 460, and 461 failed a channel check in accordance with OST-1021, Daily Surveillance Requirements.
- The USCO directs verification of actual pressurizer level using Cold-Calibrated channel LI-462.

Assuming actual pressurizer level is on program, which ONE (1) of the following describes the indication on LI-462 if it is indicating as designed?

A. 40%

B. 44%

C. 54%

D. 60%

29. Given the following conditions:

- An ATWS has occurred.
- Actions of FRP-S.1 are in progress.
- Reactor Trip Breakers indicate CLOSED.
- The RO is inserting control rods.

Which ONE (1) of the following describes ALL of the methods that may be attempted to locally cause control rods to insert?

A. Open Reactor Trip Breakers only.

B. Open Reactor Trip Breakers or one Rod Drive MG Set output breaker.

C. Open Reactor Trip Breakers or both Rod Drive MG Set supply breakers.

D. Open Reactor Trip Breakers, or both Rod Drive MG Set output breakers, or both Rod Drive MG Set supply breakers

30. Given the following conditions:

- A reactor startup is in progress.
- Both Intermediate Range channels indicate approximately 5 E -11 amps.
- Source Range Channel N-31 fails DOWNSCALE.

Which one of the following describes the required operator response and the reason for the response?

A. Continue the reactor startup; with only one source range channel operable; 48 hours is allowed to restore two channels to service.

B. Suspend the reactor startup; source range channels are not required to trip the reactor; however, the source range monitoring functions must be available.

C. Continue the reactor startup; the Intermediate Range Neutron Flux Trip and the Power Range Neutron Flux-Low Trip provide the necessary core protection.

D. Suspend the reactor startup; with only one source range channel operable, the minimum required Source Range High Flux Trip protection is not met.

31. Given the following conditions:

- The plant is in Mode 1.
- Irradiated Fuel movement is being performed in the Spent Fuel Pool in preparation for Refueling.
- Fuel Handling Building area radiation monitor RM-*1FR-3564ASA, fails HIGH and is declared inoperable.
- The crew has determined that all plant equipment is operating as required.

Which ONE (1) of the following describes the effect on the plant and the status of fuel movement in the Spent Fuel Pool?

A. Fuel Handling Building Emergency Exhaust unit E-12 starts. Fuel movement may continue with no additional actions required.

B. Fuel Handling Building Emergency Exhaust unit E-12 starts. Fuel movement may continue ONLY as long as BOTH Control Room Outside Air Intake radiation monitors remain operable

C. Fuel Handling Building Emergency Exhaust unit E-12 must be declared inoperable. Fuel movement must be suspended until Fuel Handling Building Emergency Exhaust unit E-13 is placed in service in the recirculation mode.

D. Fuel Handling Building Emergency Exhaust unit E-12 must be declared inoperable. Fuel movement must be suspended until both trains of Fuel Handling Building Emergency Exhaust are operating in the recirculation mode or restored to operable.

32. Given the following conditions:

- A Unit startup is in progress with the MSIVs closed.
- The operating crew is preparing to warm up the main steam lines.

Which one of the following actions will cause "A" SG pressure to INCREASE in this plant configuration?

A. Decrease "A" SG PORV controller setpoint in AUTO.

B. Decrease "A" SG PORV controller output in MANUAL.

C. Decrease Steam Dump pressure controller output in STM PRESS mode.

D. Decrease Steam Dump pressure controller setpoint in STM PRESS mode.

33. Given the following conditions:

- REM-01TV-3534, Condenser Vacuum Pump Effluent radiation monitor, indication is rising.
- Chemistry has been directed to perform CRC-804, Primary to Secondary Leak Rate Monitoring, to quantify the leak rate

Which ONE (1) of the following indications will serve to verify the value of actual primary to secondary leak rate?

A. Condenser Vacuum Pump Effluent Monitor indication and a conversion factor

B. Local surveys of Steam Generator Blowdown Lines

C. Alarm status of Main Steam Line Radiation Monitors RM-01MS-3591 SB, 3592 SB, or 3593 SB

D. Trend on Turbine Building Vent Stack Effluent, RM-1TV-3536-1

34. Given:

- A Main Steam line break has occurred.
- Steam Generator pressures are:
  - SG A - 900 psig
  - SG B - 750 psig
  - SG C - 910 psig

Under these conditions...

A. the open signal for the AFW flow control valve to SG-C will increase.

B. AFW will isolate to SG-B following the Main Steam Line Isolation signal.

C. the Turbine Driven AFW pump steam supply from SG-C will be blocked from opening.

D. AFW will isolate to all SGs.

35. The crew is terminating SI in EPP-014, Faulted SG isolation.

Which ONE (1) of the following describes the reason for opening FK-122.1, Charging Flow control valve a minimal amount, prior to isolating the BIT?

A. To prevent damage to the regenerative heat exchanger due to thermal shock.

B. To maintain seal injection flow within analyzed limits by maintaining appropriate backpressure on the seal injection throttle valves.

C. To prevent 'dead-heading' the running CSIP in the case where normal miniflow valves are not available.

D. To establish and maintain stable makeup flow for RCS inventory control.

36. Given the following conditions:

- The plant is operating at 100% power when the following alarm is received:
  - ALB-020-2-2, TURBINE RUNBACK OPERATIVE
- RCS Tavg has risen 9 degrees F and continues to rise.
- Steam Dumps indicate CLOSED.

Which ONE (1) of the following describes an indication that will verify a runback is in progress, and what action is required for operation of the steam dumps?

A. Runback is verified by control rod insertion; Observe steam dumps opening in automatic when the C-7A bistable illuminates

B. Runback is verified by Turbine First Stage pressure reduction on PI-446 and 447; Observe steam dumps opening in automatic when the C-7A bistable illuminates.

C. Runback is verified by control rod insertion; Open steam dumps manually by placing the steam dump header pressure controller, PK-464.1, in MANUAL with the steam dump mode selector in TAVG

D. Runback is verified by Turbine First Stage pressure reduction on PI-446 and 447; Open steam dumps manually by placing the steam dump header pressure controller, PK-464.1, in MANUAL with the steam dump mode selector in STEAM PRESS.

37. Given the following conditions:

- FRP-H.1, "Response to a Loss of Secondary Heat Sink," is being implemented.
- RCS bleed and feed has been initiated when Auxiliary Feedwater (AFW) capability is restored.
- All SGs are completely dry and depressurized.

Which of the following describes the strategy used to re-establish feed under these conditions?

A. Feed ONLY one (1) SG to ensure RCS cooldown rates are established within Technical Specification limits

B. Feed ONLY one (1) SG to minimize thermal shock to SG components

C. Feed ALL SGs to establish subcooled conditions in the RCS as soon as possible

D. Feed ALL SGs to allow termination of RCS bleed and feed as soon as possible

38. Given the following conditions:

- A Station Blackout has occurred.
- The crew is performing actions of EPP-001, Loss of Power to 1A-SA and 1B-SB Buses.
- The USCO has directed performance of Attachment 1 to restore off-site power to emergency buses.
- The lockout relay is tripped on the Startup Xfrmr. A

Which ONE (1) of the following describes the requirement for restoring power?

A. Off-Site power may be restored without resetting the Startup Xfrmr lockout relay.

B. The Startup Xfrmr lockout must be reset after receiving permission from the Load Dispatcher.

C. The Startup Xfrmr must be isolated from the grid prior to restoration of power in accordance with Attachment 1.

D. Switchyard breaker 52-2 or 52-3 must be closed in order to reset the Startup Xfrmr lockout relay.

39. Given the following conditions:

- A Loss of Off-Site power has occurred.
- All equipment is operating as designed.
- Prior to the trip, 'A' Reactor Water Makeup Pump was running.

Which ONE (1) of the following describes the operation of "A" Reactor Water Makeup Pump during this event?

"A" RW Makeup Pump...

A. must be reset by placing the control switch in OFF prior to restarting.

B. will remain running because it was sequenced back on after the EDG output breaker closed.

C. will remain running because it did not receive a load shed signal on the loss of off-site power.

D. will NOT be running unless bus 1A1 has been reenergized.

40. Given the following conditions:

- Failure of several cards in the Condensate Booster Pump controller cabinet has resulted in loss of all speed control of the 'B' Condensate Booster Pump from the MCB.
- Electrical power has been removed from the VSF coupling controller.
- You have been sent to take local manual control of the 'B' CBP scoop tube actuator.

Which ONE (1) of the following describes how to take local control of the "B" CBP scoop tube actuator?

A. Momentarily position the selector lever to AUTOMATIC then release it to NEUTRAL. Then use the RAISE and/or LOWER pushbuttons on the actuator to adjust CBP speed.

B. Position the selector lever to MANUAL and hold it in MANUAL. Then use the RAISE and/or LOWER pushbuttons on the CBP actuator to adjust CBP speed.

C. Hold the selector lever to MANUAL while turning the hand crank to engage, then release to NEUTRAL. Then use the actuator hand crank to adjust CBP speed.

D. Position the selector lever to MANUAL and hold it in MANUAL. Then use the actuator hand crank to adjust CBP speed while holding the lever in MANUAL.

41. The following conditions exist:

- A plant startup is in progress.
- Reactor power is currently 7%.
- A loss of Instrument Bus SII occurs.

Which ONE (1) of the following describes the effect on the plant?

A. Reactor trips due to loss of one Source Range instrument.

B. Source Range instruments energize prematurely.

C. Reactor trips due to loss of one Intermediate Range instrument.

D. Intermediate Range high flux reactor trip will NOT actuate if required.

42. Given the following conditions:

- REM-01SW-3500A, SW from WPB to Circ Water radiation monitor is in alarm.
- Chemistry sample verifies high activity in the piping monitored by REM-01SW-3500A

Which ONE (1) of the following describes the action required, and the reason for that action, in accordance with AOP-005, Radiation Monitoring System?

A. Isolate Service Water to and from the WPB to determine the location of the leak. Place both trains of ESW in service to ensure cooling of essential plant equipment.

B. Direct the Radwaste Operator to initiate isolation of individual components to locate the leak, and isolate Service Water to and from the WPB.

C. Isolate Service Water to and from the WPB to determine the location of the leak. Place the running train of ESW in standby and shut down the standby train of ESW.

D. Initiate a plant shutdown in accordance with GP-006. When the reactor is tripped, isolate Service Water to and from the WPB to minimize any radiological releases.

43. Given the following conditions:

- A reactor trip occurred from 35% power.
- The crew is performing EPP-004, Reactor Trip Response.
- All equipment has responded as designed.
- RCS Tavg is 558 degrees F.
- The BOP determines that an increase in Main Feedwater flow is desired to maintain SG levels at 50% NR.

Which ONE of the following describes the method used to increase Main Feedwater flow?

A. Raising the automatic setpoint of the Main Feedwater Regulating Valve controllers

B. Manually adjusting the Main Feedwater Regulating Valve position

C. Raising the automatic setpoint of the Feed Reg Bypass valve controllers

D. Manually adjusting the Feed Reg Bypass valve position

44. Given the following conditions:

- The plant has experienced a loss of offsite power.
- Both EDGs are running.
- All three AFW pumps are running with all six FCVs throttled to 20%.

Which ONE (1) of the following describes how a loss of the B EDG would affect the AFW system?

A. Loss of the B MDAFW pump only.

B. Loss of the B MDAFW pump and the TDAFW pump only.

C. Loss of the B MDAFW pump and power to Main Steam C to Aux FW turbine, 1MS-72 SB.

D. Loss of the B MDAFW pump and a full open signal to all six FCVs.

45. Given the following conditions:

- The plant is at 100% power.
- Recovery from a Loss of Instrument Bus 1DP-1A-S1 is in progress.
- The crew has de-energized the associated Process Instrumentation Cabinet in preparation for energizing Instrument Bus 1DP-1A-S1.
- The crew is evaluating bistable status prior to energizing the bus.

Which ONE (1) of the following describes the reason for checking bistable status?

A. When the Instrument Bus is energized, a reactor trip may occur due to the associated Process Instrumentation Cabinet being de-energized, if another bistable of the same parameter is tripped.

B. When the Process Instrumentation Cabinet is energized after the Instrument Bus, 'energize to actuate' bistables may experience a momentary inadvertent trip. Checking other bistables ensures an ESF actuation will not occur.

C. Bistables are checked to ensure that each parameter for Process or Protection goes to its required state when the Instrument Bus and Process Instrumentation Cabinet is energized.

D. Bistables are checked to ensure that all lights are out, verifying that the Process Instrumentation Cabinet normal and alternate supply breakers are open prior to reenergizing the Instrument Bus.

46. Given the following conditions:

- A loss of Instrument Bus Inverter SI has occurred.
- The crew is performing action contained in AOP-024, Loss of Uninterruptible Power Supply.
- Transfer of Bus SI to the alternate supply is required in accordance with OP-156.02, AC Electrical Distribution.

Which ONE (1) of the following describes how improper sequencing of the Instrument Bus is prevented for this transfer?

A. The inverter will not allow transfer to the alternate supply if it is out of synch with the normal supply

B. The bus must be deenergized and a kirk key used for the alternate supply breaker prior to reenergization of the bus

C. The bus transfer switch is a 'break before make' contactor that will not allow two power sources to simultaneously supply the bus

D. The normal and alternate supply breakers are electrically interlocked so that only one may be closed at a time

47. Following a loss of Emergency DC bus 1B-SB, which of the following components would have power available?

A. 1MS-72 SB, Main Steam C to Aux FW Turbine

B. Emergency Load Sequencer 1B-SB

C. TDAFW Pump control panel

D. RM-1CR-3561B-SB, CNMT Ventilation Isolation Radiation Monitor

48. Given the following conditions:

- The unit is operating at 25% power.
- Emergency Diesel Generator (EDG) A-SA is loaded to 3800 KW while operating in parallel with the grid during the performance of OST-1013, "A-SA Emergency Diesel Generator Operation."
- A loss of off-site power occurs.

Which ONE (1) of the following describes the operation of EDG A-SA output breaker and the action required to initiate load sequencing?

A. Remains closed with EDG A-SA load less than 3800 KW. Trip the EDG to initiate load sequencing.

B. Remains closed with EDG A-SA load greater than 3800 KW. Trip the EDG to initiate load sequencing.

C. Opens and then recloses to allow the sequencer to load. Verify automatic load sequencing occurs.

D. Opens and remains open. Reset and restart the EDG to initiate automatic load sequencing.

49. Given the following conditions:

- EDG 1A-SA is operating in parallel with its associated bus with voltage and frequency control in AUTO.
- Current parameters are as follows:

  -Voltage and current are normal.
  -The EDG is loaded to 3.2 MW
  -Reactive load is 0.8 MVAR

If a 150 HP motor is started on the bus, which ONE (1) of the following describes the EDG parameters from steady state to steady state operation?

A. Voltage and frequency are reduced

B. Voltage is reduced, frequency remains the same

C. MW output and MVAR output are raised

D. MW output is raised, MVAR output remains the same.

50. Given the following conditions:

- The plant is at 80% power.
- A Loss of Instrument Air has occurred.
- Instrument Air pressure is 80 psig and lowering slowly.
- The crew has entered AOP-017, Loss of Instrument Air.

Which ONE (1) of the following describes the plant conditions that will require an immediate reactor trip?

A. Loss of Instrument Air pressure to Containment

B. Any SG level below 30% with loss of feedwater control

C. Loss of VCT makeup capability with VCT level below 20%

D. Loss of any 2 Instrument Air Compressors

51. Given the following conditions:

- A LOCA has occurred.
- Due to several component failures, the crew was required to perform EPP-012, Loss of Emergency Coolant Recirculation.
- The Crew is now entering FRP-J.1, Response to High Containment Pressure.
- Containment pressure is 45 psig and STABLE.
- BOTH Containment Spray Pumps are OFF.
- RWST Level is 2%.

Which ONE (1) of the following describes the actions required and the reason for the current strategy for reducing Containment Pressure?

A. START both Containment Spray Pumps in accordance with FRP-J.1. RED CSF conditions take precedence over EPP-012 actions.

B. OPERATE Containment Spray Pumps in accordance with the guidance in EPP-012, as directed by FRP-J.1. Conservation of RWST inventory takes precedence over Containment heat removal concerns.

C. Perform ONLY the FRP-J.1 actions that do NOT conflict with or undo the action taken in EPP-012. Two Containment Fan Coolers will provide adequate depressurization to meet the Containment Safety Function requirements.

D. Do NOT perform actions of FRP-J.1 until the RWST EMPTY alarm is clear and Containment Spray Pumps may be restarted. Ensure all other automatic actions related to containment isolation have occurred as required to ensure maintenance of minimum safety function.

52. Which ONE (1) of the following will automatically occur when a high alarm on RM-1CR-3561A-D, Containment Ventilation Isolation Area Radiation Monitors, is received?

A. Containment Vacuum Relief Isolation Valves receive a CLOSE signal.

B. Airborne Radioactivity Removal (ARR) fans S-1A and B receive a TRIP signal.

C. Containment Isolation Phase "A" isolation valves receive a CLOSE signal.

D. Containment Fan Coil Units AH-37, 38, and 39 receive a TRIP signal.

53. Which ONE (1) of the following describes the automatic action that occurs in response to a high radiation (red) alarm on the TB drain monitor?

A. 1MD-285, Indus Waste to the Oil Separator, SHUTS; TB condensate pump area sump pumps TRIP

B. 1SWT-420, Indus Waste to LC Hold-Up Tank Isol Vlv, SHUTS; TB condensate pump area sump pumps TRIP

C. 1SWT-420, Indus Waste to LC Hold-Up Tank Isol Vlv, SHUTS; industrial waste sump pumps TRIP

D. 1MD-285, Indus Waste to the Oil Separator, SHUTS; tank area drain transfer pumps TRIP

54. Given the following conditions:

- The plant is at 100 percent power with the following SW alignment:
  - "A" and "B" Emergency Service Water Pumps are off.
  - "A" & "B" Emergency Service Water header supplied from Normal Service Water.
  - "A" Normal Service Water Pump running.
  - "B" Normal Service Water Pump off.
- Power is lost to Bus 1A-SA.
- The A EDG starts, re-energizes the bus, and sequences loads as designed.

Which ONE (1) of the following describes the effect on Service Water system alignment?

A. "A" NSW Pump remains as the only pump in service since Bus 1A remained energized.

B. The B NSW pump is now running with the same alignment.

C. The A ESW pump is now running supplying the A ESW header.

D. The B ESW pump started on low pressure and is supplying the B ESW header.

55. Given the following conditions:

A reactor trip and safety injection actuation have occurred.

Which one of the following sets of components are being supplied by the Emergency Service Water system?

A. Containment fan coolers (AH-1, 2, 3, 4)
CSIP oil coolers
RHR heat exchangers

B. RCP bearing oil coolers
Diesel Generator coolers
CCW heat exchangers

C. AFW pump emergency makeup
CSIP oil coolers
CCW heat exchangers

D. Containment fan coil units (AH-37, 38, 39),
AFW pump emergency makeup,
Diesel Generator coolers.

56. Given the following conditions:

- A rapid load reduction from 100% power to 65% power was performed approximately 3 hours ago.
- The RCS Gross Failed Fuel detector is in alarm.
- Charging Pump Room Fuel Breach Area Radiation Monitors are in alarm.
- Chemistry confirms RCS activity exceeds Technical Specification limits.

The USCO directs a plant shutdown be performed.

Which ONE (1) of the following actions is directed to limit the release of radioactivity in the event of a subsequent SGTR?

A. MSIVs are closed.

B. All SG PORV setpoints are raised.

C. RCS is cooled down below 500°F.

D. Maximum number of Condensate Polishing Demineralizers are placed in service.

57. Which one of the following statements correctly describes how to locally shut the MSIVs from outside the Control Room?

A. On the 236 level in the RAB, isolate air by closing 1IA-814, then remove cap and open drain valve 1IA-1876

B. On the 236 level in the RAB, remove the cap and open the drain for valve on 1IA-1876 then isolate air by closing 1IA-814.

C. On the 261 level in the RAB, isolate air by closing 1IA-814, then remove cap and open drain valve 1IA-1876

D. On the 261 level in the RAB, remove the cap and open the drain for valve on 1IA-1876 then isolate air by closing 1IA-814.

58. Given the following conditions:

- The plant is in Mode 5.
- Containment Pre-Entry Purge Makeup and Exhaust is in operation.
- The Personnel Airlock and Equipment Hatch are closed.
- The Containment Pre-Entry Purge Exhaust Isolation valve is inadvertently closed.
- NO other components reposition.

Which ONE (1) of the following describes the containment parameter affected by this failure and how the parameter is affected?

A. Pressure RISES

B. Temperature LOWERS

C. Radiation Level RISES

D. Humidity Level LOWERS

59. Given the following conditions:

- A LOCA has occurred.
- RCS pressure is 300 psig and stable.
- Containment pressure is 16 psig and lowering slowly.
- All equipment is operating as designed.
- The crew is performing actions contained in PATH-1, preparing to reset ESF Actuation signals.

Which ONE (1) of the following describes the conditions required to be met, if any, to reset Containment Isolation Phase A and B?

A. Phase A and Phase B may be reset manually without additional conditions.

B. Phase A may be reset manually at this time. Containment Spray must be reset prior to resetting Phase B.

C. Phase B will NOT reset until Phase A is reset. Phase A may be reset at this time.

D. Phase A will NOT reset until Safety Injection is reset. Phase B will NOT reset until containment pressure is below the actuation setpoint.

60. Which ONE (1) of the following describes the preferred method of operating RCPs and the reason during performance of EPP-009, Post LOCA Cooldown and Depressurization?

A. Starting any RCP is undesirable because starting an RCP during Natural Circulation may cause a SG safety valve to lift.

B. Starting one RCP is desirable to provide pressurizer spray flow and mix the RCS.

C. Starting any RCP is undesirable because the heat input will delay RCS cooldown.

D. Starting 2 or more RCPs is desirable because it collapses RCS voids and allows true measurement of RCS inventory.

61. Given the following conditions:

- A LOCA outside containment has occurred.
- The crew is performing the actions in EPP-013, LOCA Outside Containment.

Which ONE of the following indications is used to determine if the leak has been isolated in accordance with EPP-013?

A. RCS pressure, because SI flow will repressurize the RCS with the break isolated.

B. Pressurizer level, because with the break isolated, RCS inventory will rapidly rise.

C. RVLIS indication, because as RCS inventory and pressure rise, vessel head and plenum voiding will immediately be reduced.

D. Safety injection flow, because when the break is isolated, it is the first parameter that will change.

62. Given the following conditions:

- A Loss of Heat Sink has occurred.
- The crew is establishing RCS 'Bleed and Feed' in accordance with FRP-H.1, Loss of Secondary Heat Sink.
- The RO opens one PRZ PORV. He reports that NEITHER of the other two PORVs will open.

Which ONE (1) of the following describes the consequences of the PORV failures?

A. A Red Path on the Core Cooling CSF will develop due to loss of RCS Inventory with no available makeup.

B. RCS 'Feed and Bleed' cooling must be established to ensure sufficient SI flow at the operable PORV setpoint.

C. The RCS may not depressurize quickly enough to ensure sufficient SI flow to provide RCS heat removal, and other RCS openings may have to be established.

D. 'Bleed and Feed' cooling of the RCS must be terminated and secondary depressurization to inject Condensate pump flow must be immediately initiated.

63. Given the following conditions:

- A MANUAL reactor trip was initiated due to Component Cooling Water problems.
- All RCP's are stopped.
- The crew has transitioned to EPP-004, REACTOR TRIP RESPONSE.

Which ONE (1) of the following pairs of parameters is indicative that natural circulation cooling is occurring?

A. SG pressure stable and CET's decreasing.

B. SG pressure stable and Thot increasing.

C. SG pressure increasing and RCS subcooling decreasing.

D. SG pressure increasing and Tcold trending to saturation for SG pressure.

64. Given the following conditions:

- A LOCA has occurred.
- Multiple failures have resulted in a transition to EPP-012, Loss of Emergency Coolant Recirculation.
- RWST level is 4%.
- The crew is preparing to make up to the RWST per EPP-012.

Which ONE (1) of the following describes the effect on the plant of the RO resetting the SI Auto Suction Switchover in accordance with EPP-012?

A. Allows resetting of the SI signal and manual realignment of safeguards equipment.

B. Allows manual operation of Containment Spray pump discharge and chemical addition valves

C. Defeats the automatic open and shut features of the RHR Pump Miniflow Isolation Valves.

D. Defeats the automatic open and shut features of the CSIP Alternate Miniflow Isolation Valves.

65. In procedure EPP-015, Uncontrolled Depressurization of All Steam Generators, the Operator is directed to establish feed flow to all three Steam Generators.

    What is the setpoint and basis for establishing flow in this range?

    A. 12.5 KPPH, maintain minimum feed flow to ensure CST inventory is maintained until RHR can be placed in service.

    B. 210 KPPH, maintain a minimum required feed flow to ensure adequate heat sink is maintained.

    C. 12.5 KPPH, establish a minimum verifiable flow to ensure components remain wet so that thermal stresses are minimized upon a feed flow increase.

    D. 210 KPPH, establish a minimum verifiable flow to ensure components remain wet so that thermal stresses are minimized upon a feed flow increase.

66. The plant is operating at 100% power.

    Which ONE (1) of the following requires the EARLIEST action in accordance with Technical Specifications?

    A. One Containment Isolation Valve is declared inoperable.

    B. Containment Average Air Temperature is 122 degrees F.

    C. Containment Vacuum is -1.2 inches water gauge.

    D. Containment Pressure is 1.2 psig.

67. While implementing an AOP, the crew encounters a step that directs them to 'REFER TO' a different procedure.

    At this point the crew will...

    A. exit the current AOP and immediately transition to the new procedure and perform applicable actions.

    B. complete the procedure in progress and refer to the other procedure after the exit conditions are met.

    C. perform actions of the other procedure as necessary in conjunction with the procedure in effect.

    D. perform and complete the referenced procedure as written prior to performing actions of any other procedures.

68. The plant is in Mode 3.

    Based on the current plant conditions, which ONE (1) of the following is NOT a task that the RO may direct an STA to perform?

    A. Silence control room annunciators

    B. Operate Radiation Monitoring System controls

    C. Operate the Source Range Audio Count Rate Drawer

    D. Operate the Metal Impact Monitoring System (MIMS)

69. Given the following conditions:

- A reactor startup is being performed 90 hours after a plant trip.
- Critical boron concentration is determined to be 80 ppm.
- The estimated critical rod position is Control Bank D at 100 steps.

Which of the following identifies the - 500 PCM and + 500 PCM rod positions for these conditions?

	- 500 PCM	+ 500 PCM
A.	Bank D @ 37 Steps	Bank D @ 175 Steps
B.	Bank D @ 47 Steps	Bank D @ 180 Steps
C.	Bank D @ 57 Steps	Bank D @ 182 Steps
D.	Bank D @ 62 Steps	Bank D @ 190 Steps

70. Maintaining the Refueling boron concentration greater than that required by the Core Operating Limit Report (COLR) ensures the reactor remains shutdown by at least ...

A. 1.3%.

B. 2.0%.

C. 2.5%.

D. 5.0%.

71. Given the following conditions:

- A 25 year old male started working for the Operations Department at Harris on June 2nd of this year.
- He previously worked at Millstone Unit 3 as part of the Maintenance Department.
- His exposure for this year at Millstone was 1600 mRem.
- He has received NO Progress Energy management exposure extensions and NO emergency exists.

Which one of the following is the ADDITIONAL Total Effective Dose Equivalent exposure that the individual can receive WITHOUT management concurrence at Harris this year?

A. 400 mRem.

B. 2000 mRem.

C. 2400 mRem.

D. 3400 mRem.

72. A job must be performed under the following conditions:

- Dose rate at job location is 90 mrem/hr.
- Airborne Radioactivity Area from particulates due to weld grinding:
  - Total Internal dose for the job if respirator is worn is 0 mrem.
  - Total Internal dose for the job if no respirator is worn is 82 mrem.
- Time to complete job while wearing a respirator is 3.5 hours.
- Time to complete job without wearing a respirator is 2.75 hours.

Which ONE (1) of the following describes whether a respirator will be worn, and why?

A. No, wearing a respirator will raise total exposure.

B. Yes, wearing a respirator will lower total exposure.

C. No, wearing a respirator will make no difference to the total exposure.

D. Yes, a respirator must be worn anytime airborne radiation is present.

73. The following conditions exist:

-A fire has been identified and verified in the Reactor Auxiliary Building.

Which ONE (1) of the following is NOT an action the Control Room Operator is required to perform in accordance with FPP-002, "Fire Emergency"?

A. notify the S-SO

B. coordinate Fire Brigade efforts to protect potentially affected safety-related equipment.

C. review the appropriate Fire Preplan List.

D. sound the fire alarm and announce the location of the fires.

74. During performance of AOP-004, Remote Shutdown, which ONE (1) of the following describes the responsibility of the RO?

A. Monitor and control plant conditions from the Auxiliary Control Panel (ACP)

B. Align plant equipment at the Auxiliary Transfer Panel (ATP) and Switchgear Rooms to facilitate control of plant equipment from outside the control room

C. Start and control EDGs locally to provide safety-related power

D. Locally operate and control CSIPs for RCS Makeup

75. After a loss of power to 60 KVA NNS UPP-1, what method of communication will be used between the MCR and plant personnel?

A. Plant PA

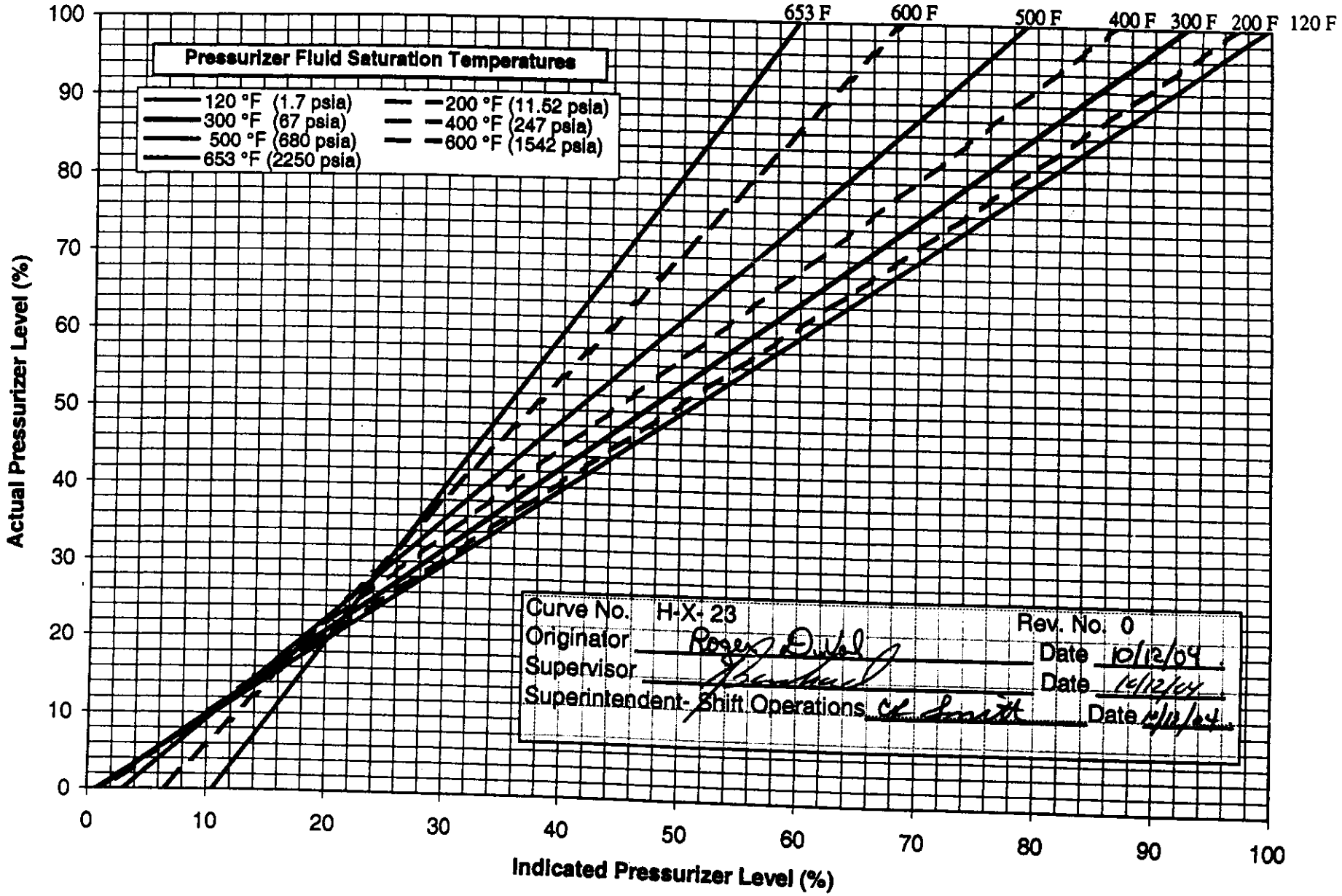
B. Radios

C. Telephones

D. Sound Powered Phones

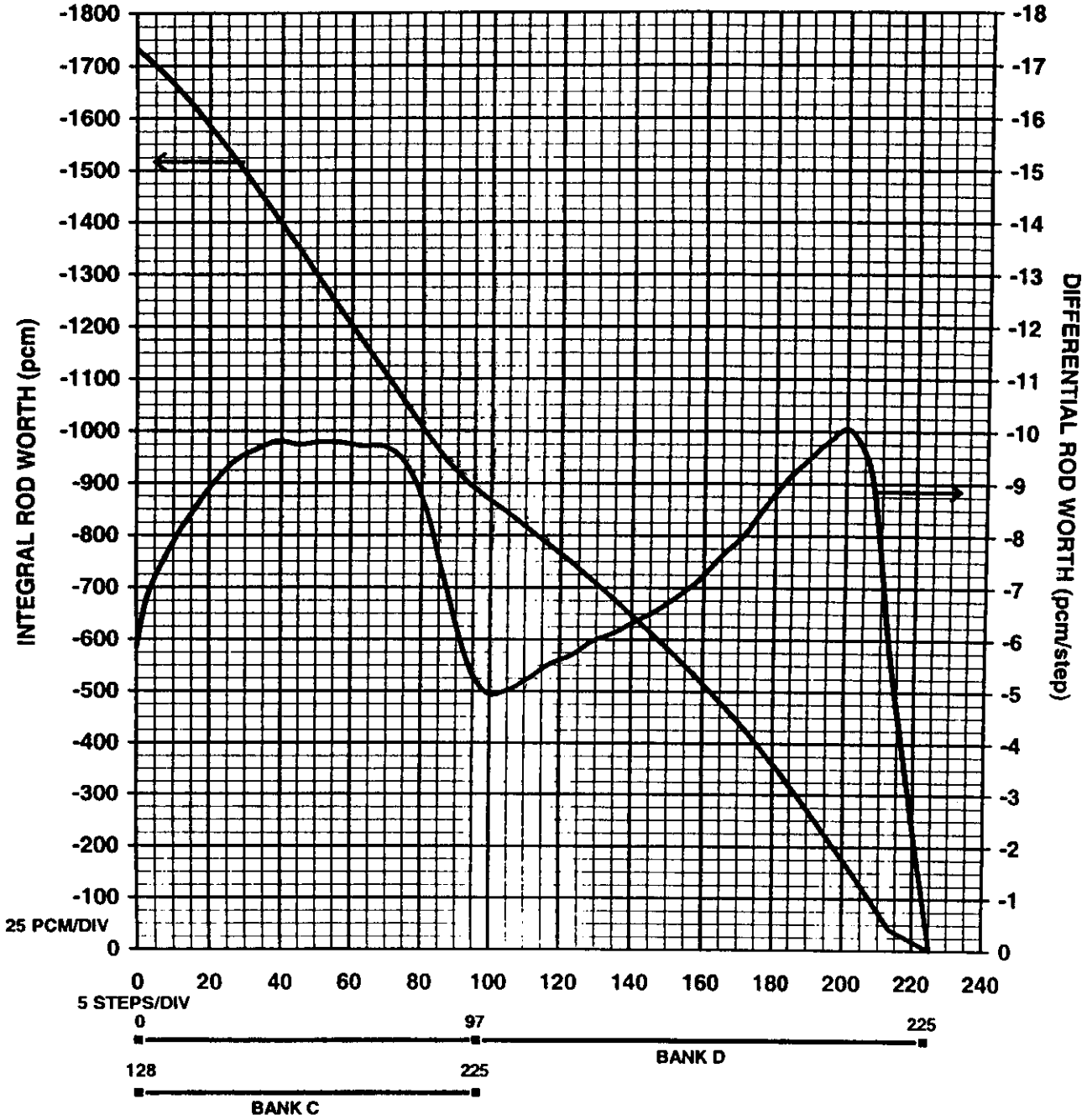
You have completed the test!

Pressurizer Level Cold Calibrated Channel (LI-462)
Indicated Level versus Actual Water Level at Various Saturation Temperatures



HARRIS UNIT 1 CYCLE 13
DIFFERENTIAL AND INTEGRAL
ROD WORTH CONTROL BANKS D and C
MOVING WITH 97 STEP OVERLAP

BOL (0 ≤ EFPD ≤ 161), HZP, WITH NO XENON



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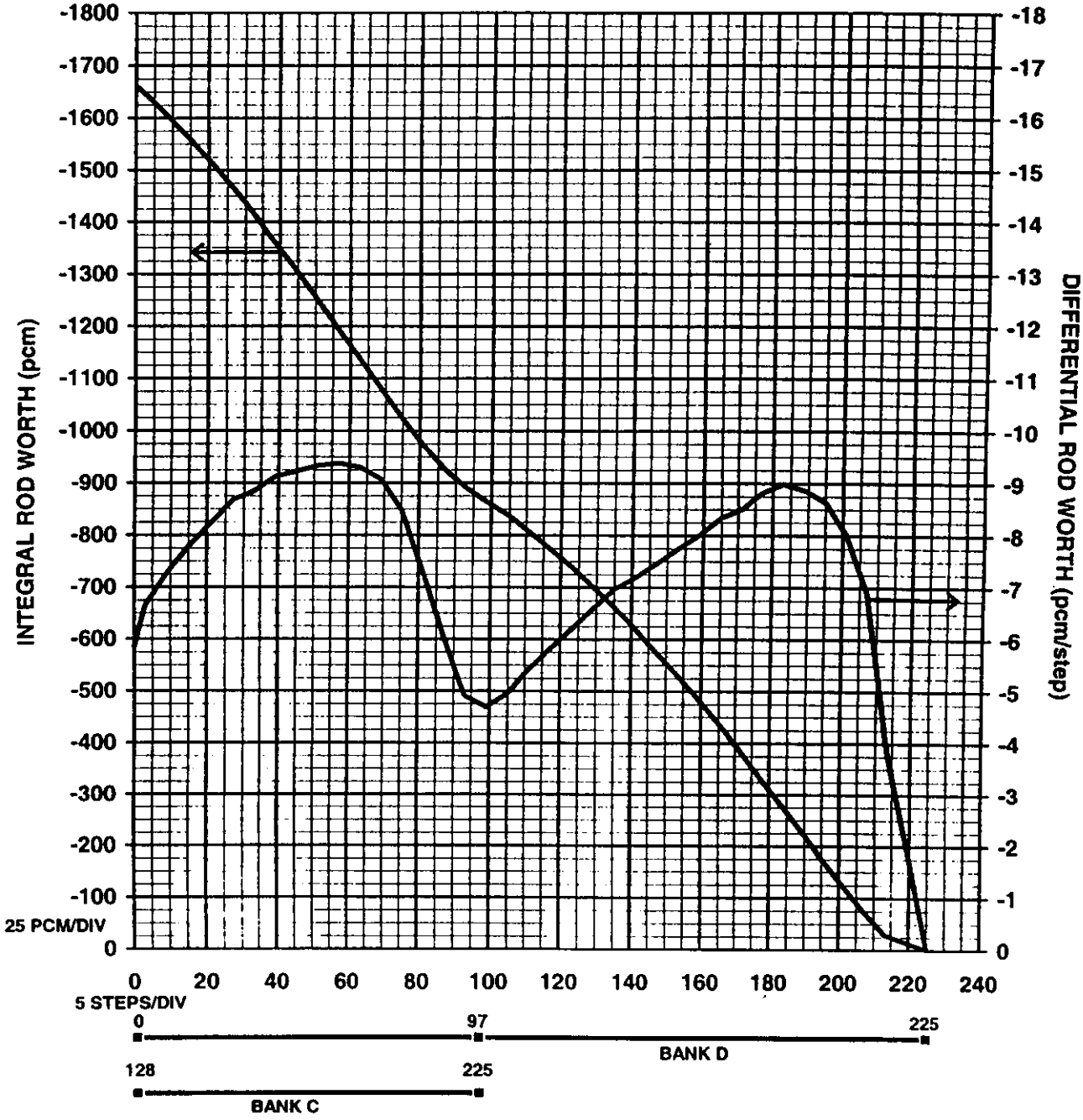
SUPERVISOR	[illegible]	DATE	10/23/04
SUPERINTENDENT - SHIFT OPERATIONS	CR Smith	DATE	10/24/04

HARRIS UNIT 1 CYCLE 13
DIFFERENTIAL AND INTEGRAL
ROD WORTH CONTROL BANKS D and C
MOVING WITH 97 STEP OVERLAP

MOL (161 < EFPD ≤ 333), HZP, WITH NO XENON



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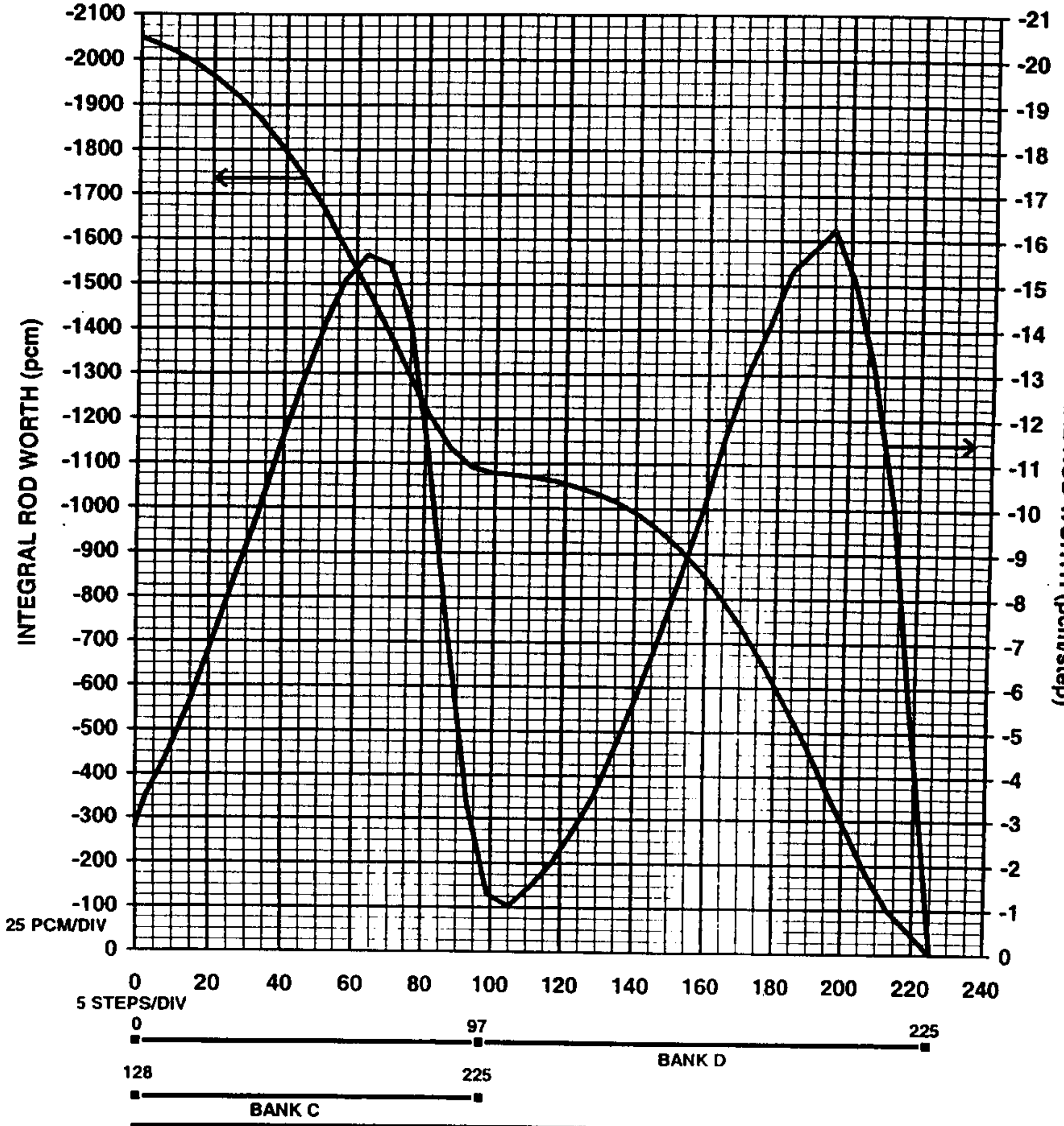
SUPERVISOR	[signature]	DATE	10/23/04
SUPERINTENDENT - SHIFT OPERATIONS	C R Smith	DATE	10/24/04

HARRIS UNIT 1 CYCLE 13
DIFFERENTIAL AND INTEGRAL
ROD WORTH CONTROL BANKS D and C
MOVING WITH 97 STEP OVERLAP

EOL (333 < EFPD ≤ 517), HZP, WITH NO XENON



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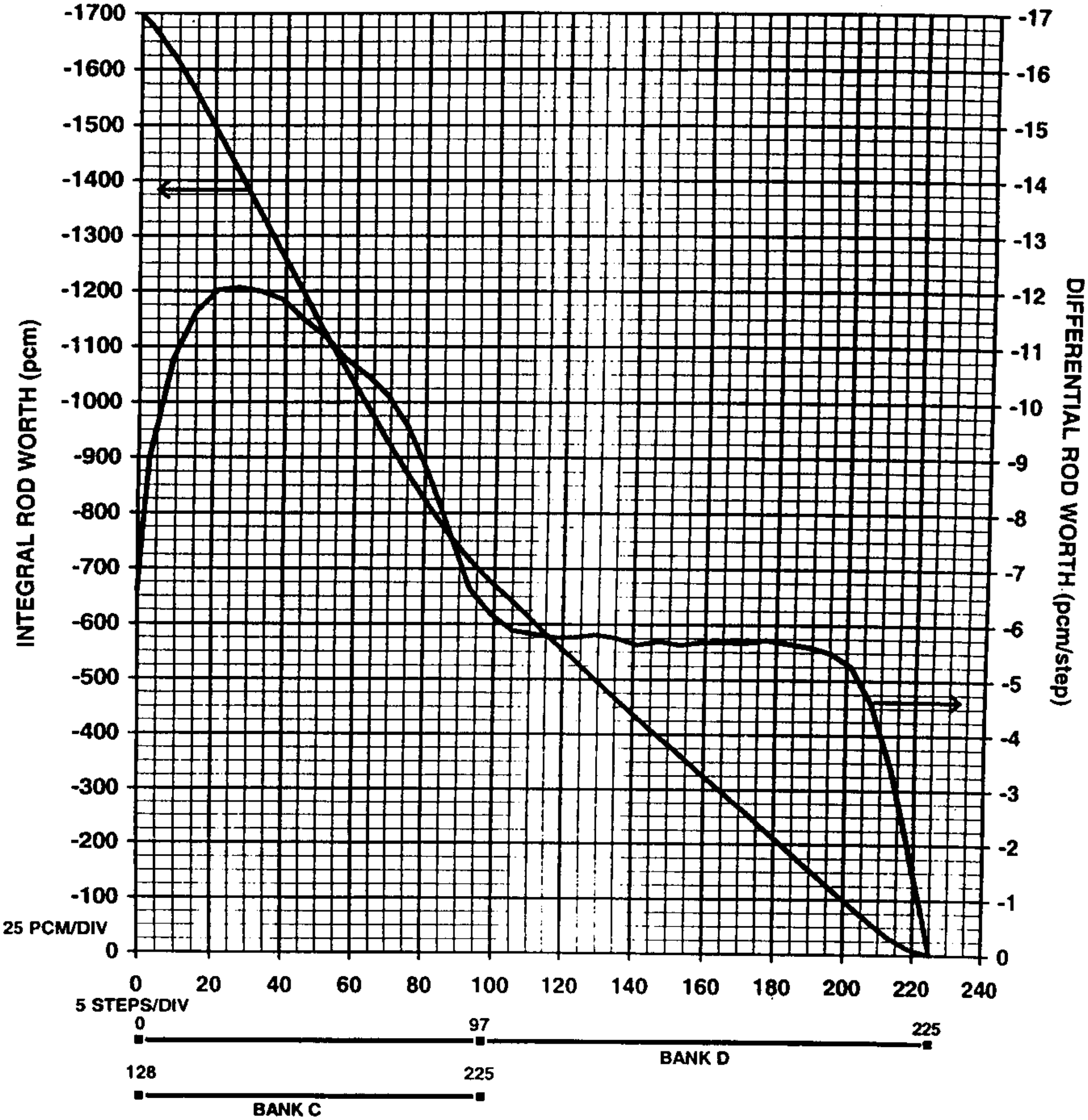
SUPERVISOR	*[signature]*	DATE	10/23/04
SUPERINTENDENT - SHIFT OPERATIONS	CR Smith	DATE	10/24/04

HARRIS UNIT 1 CYCLE 13
DIFFERENTIAL AND INTEGRAL
ROD WORTH CONTROL BANKS D and C
MOVING WITH 97 STEP OVERLAP

BOL (0 ≤ EFPD ≤ 161), HFP, EQUILIBRIUM XENON



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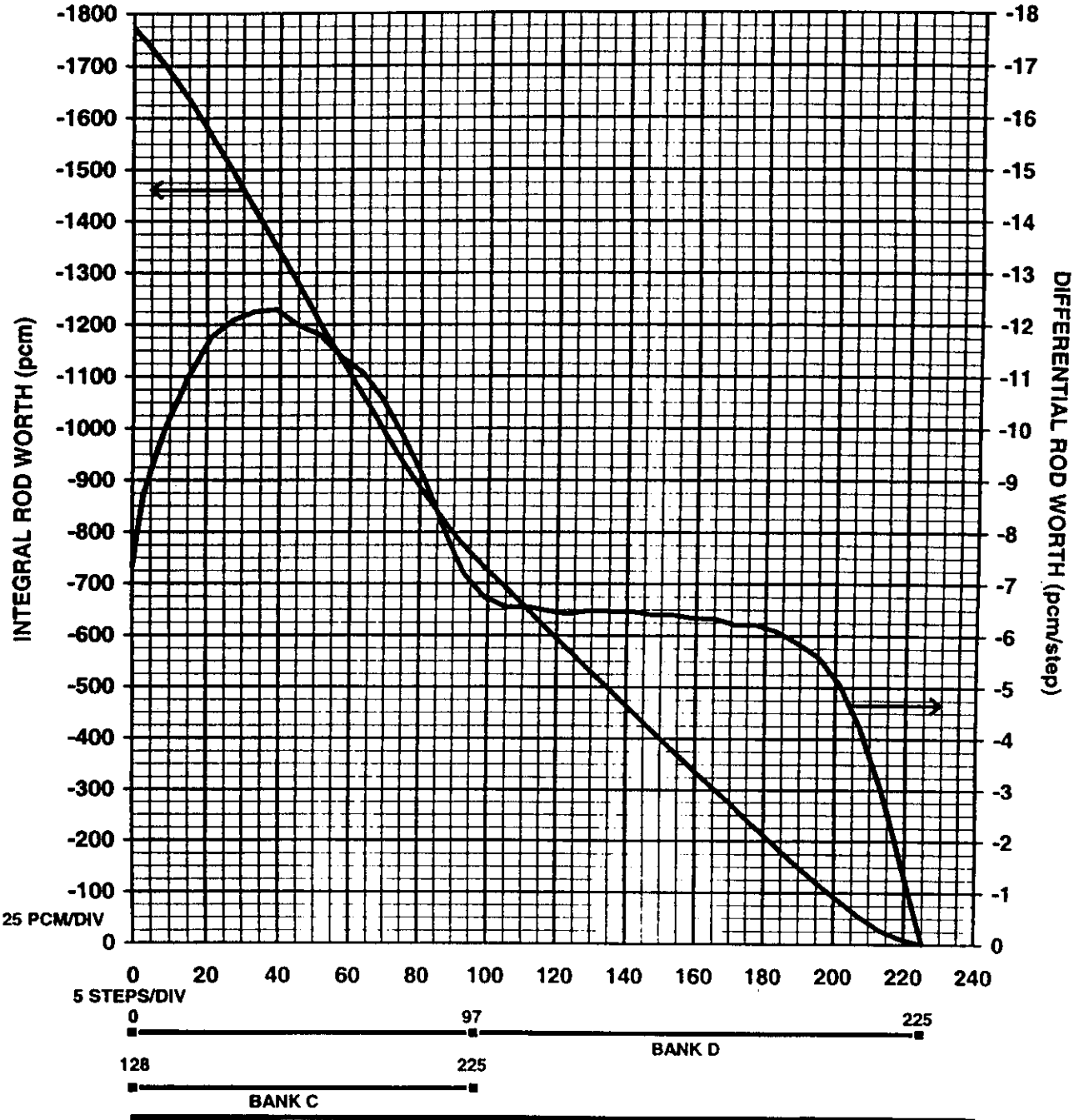
SUPERVISOR	*[signature]*	DATE	10/23/04
SUPERINTENDENT - SHIFT OPERATIONS	CR Smith	DATE	10/24/04

HARRIS UNIT 1 CYCLE 13
DIFFERENTIAL AND INTEGRAL
ROD WORTH CONTROL BANKS D and C
MOVING WITH 97 STEP OVERLAP

MOL (161 < EFPD ≤ 333), HFP, EQUILIBRIUM XENON



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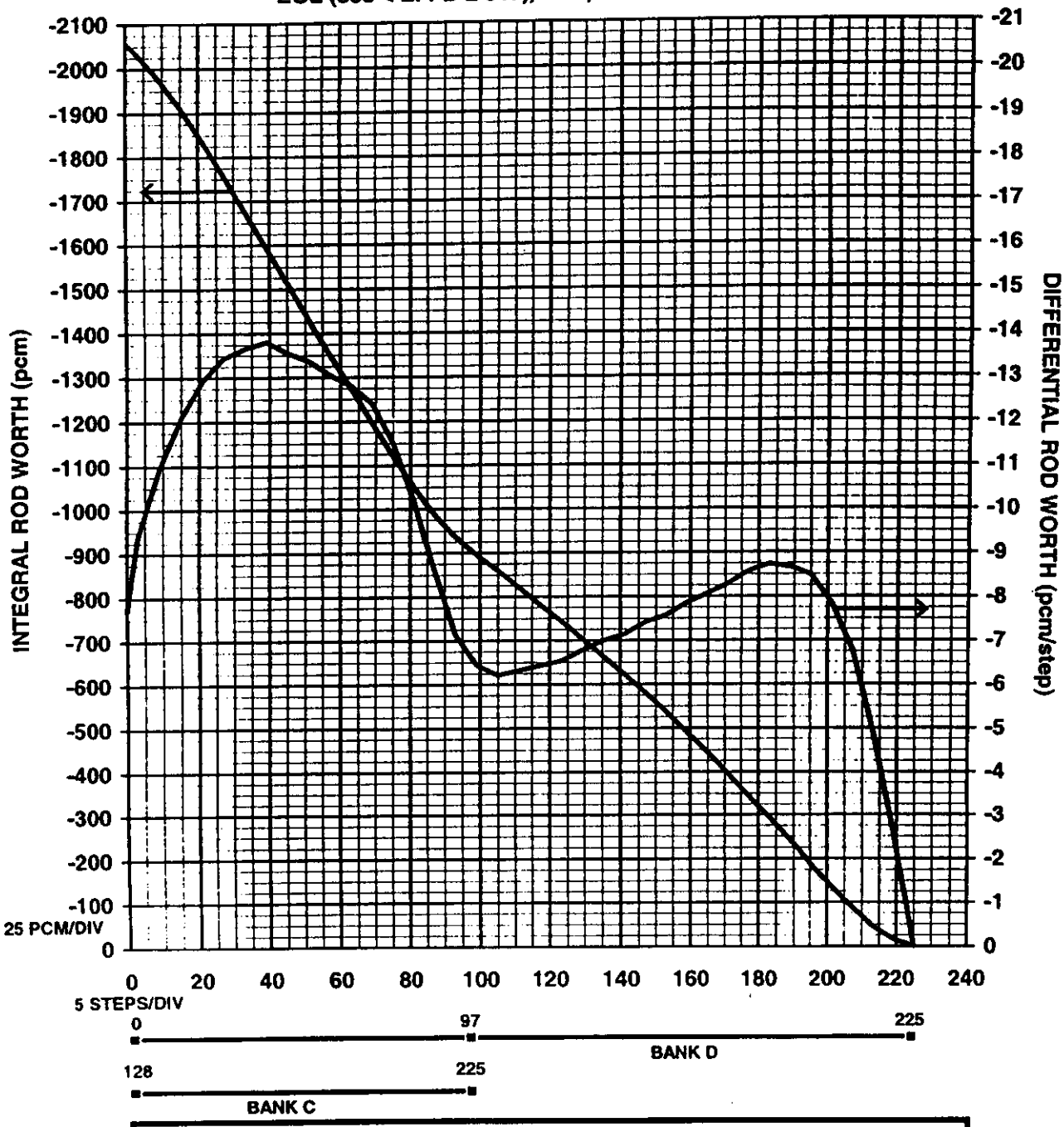
SUPERVISOR	[signature]	DATE	10/23/04
SUPERINTENDENT - SHIFT OPERATIONS	CR Smith	DATE	10/24/04

HARRIS UNIT 1 CYCLE 13
DIFFERENTIAL AND INTEGRAL
ROD WORTH CONTROL BANKS D and C
MOVING WITH 97 STEP OVERLAP

EOL (333 < EFPD ≤ 517), HFP, EQUILIBRIUM XENON



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ORIGINATOR	Charles Tiffin	DATE	10/14/04 10/17/04
SUPERVISOR	W. Richard Allen	DATE	10/23/04
SUPERINTENDENT - SHIFT OPERATIONS	CR Smith	DATE	10/20/04

Attachment 1
Sheet 1 of 6

Primary-To-Secondary Leak

INSTRUCTIONS	RESPONSE NOT OBTAINED

1. **NOTIFY** Chemistry to implement CRC-804, Primary-To-Secondary Leak Rate Monitoring, to accomplish the following: **[A.2]**

☐ • quantify leak rate

☐ • quantify leak rate trend

☐ • determine leaking SG

NOTE

Condenser Vacuum Pump radiation monitor indication is sensitive to high temperature and may read higher than actual when the monitor cooler is not in service. The cooling water alignment is located in OP-139, Service Water System.

☐ 2. **ESTIMATE** Primary-To-Secondary leak rate every 15 minutes based on ONE of the following (no preferred method): **[C.5, 7]**

	Method
(1)	• Condenser Vacuum Pump Rad Monitor, REM-01TV-3534 (Grid 2) • Curve H-X-15a, H-X-15b or H-X-15c (depending on the status of motivating air)
(2)	OSI PI plot (Chemistry tab) for Curve H-X-15a, H-X-15b or H-X-15c
(3)	Condenser Vacuum Pump Rad Monitor, REM-01TV-3534 (Grid 2) and conversion factor (Attachment 20), after Chemistry sampling has commenced

Attachment 1
Sheet 2 of 6

Primary-To-Secondary Leak

INSTRUCTIONS	RESPONSE NOT OBTAINED

☐ **3.** **IF** measured leak rate becomes stable for one hour (less than or equal to 10% change in 1-hour), **THEN REDUCE** monitoring frequency to once every 2-hours or more frequently, as directed by the Unit SCO.

4. **DETERMINE** leaking SG(s) using the following information:

☐ • Individual SGBD samples

☐ • Main steam line radiation monitor levels

☐ • Local surveys of SGBD lines

Attachment 1
Sheet 3 of 6
Primary-To-Secondary Leak

INSTRUCTIONS	RESPONSE NOT OBTAINED
✱ 5. **CHECK** the following radiation monitor readings indicating NOT IN ALARM:	5. **PERFORM** the following:
☐ • RM-01MS-3591 SB, Main Steam Line A	a. **NOTIFY** Health Physics to survey the following outside the RCA:
☐ • RM-01MS-3592 SB, Main Steam Line B	☐ • SG Blowdown piping ☐ • Vicinity of Main Steam piping
☐ • RM-01MS-3593 SB, Main Steam Line C	b. **IF** ANY monitor is in HIGH ALARM, **THEN PERFORM** the following:
☐ • REM-01TV-3534, Condenser Vacuum Pump Effluent (Group 16 RM-11)	☐ (1) **SOUND** the local evacuation alarm.
☐ • REM-1BD-3527, Steam Generator Blowdown (Group 16 RM-11)	☐ (2) **ANNOUNCE** evacuation of the following areas: • Steam Tunnel • SG PORVs/SG Safety valves area • Turbine Building 314' elevation
☐ • RM-1TV-3536-1, Turbine Building Vent Stack Effluent (Group 16 RM-11)	☐ (3) **REPEAT** sounding the local evacuation alarm AND the announcement.
	☐ (4) **IF** ANY Main Steam Line Monitor is in HIGH ALARM, **THEN PERFORM** an Offsite Dose Calculation (refer to PEP-340, Dose Assessment).

Attachment 1
Sheet 4 of 6
Primary-To-Secondary Leak

INSTRUCTIONS	RESPONSE NOT OBTAINED
✸ 6. **CHECK** BOTH of the following: ☐ • Turbine Building vent stack radiation monitor reading below the high alarm setpoint ☐ • SG tube leakage is less than Tech Spec limits.	☐ 6. **START** CVPETS (refer to OP-133, Main Condenser Air Removal System).
✸ 7. **CHECK** the following radiation monitor reading indicating NOT IN ALARM: ☐ • REM-21AC-3525, Aux Steam Condensate Tank (Group 4, RM-11) ☐ • REM-21AC-3543A, WPB Aux Stm Condensate (Group 19, RM-11) ☐ • REM-21AC-3543B, WPB Aux Stm Condensate (Group 19, RM-11)	7. **NOTIFY** Radwaste to perform the following: a. **VERIFY** the following valves are SHUT: ☐ • 1AC-151, AS Condensate Return to Condenser MOV ☐ • 1AC-371, Aux Condensate Return to Aux Boiler MOV b. **VERIFY** the following pumps are STOPPED: ☐ • WPB Auxiliary Condensate Pump 1-4A (216' elev. WPB) ☐ • WPB Auxiliary Condensate Pump 1-4B (216' elev. WPB) ☐ • RAB Auxiliary Condensate Pump 1-2A (216' elev. RAB, access to FHB south) ☐ • RAB Auxiliary Condensate Pump 1-2B (216' elev. RAB, access to FHB south)

Attachment 1
Sheet 5 of 6

Primary-To-Secondary Leak

INSTRUCTIONS	RESPONSE NOT OBTAINED

☐ **8.** **NOTIFY** Chemistry to sample the Auxiliary Steam System for activity.

☐ **9.** **IF** Chemistry reports activity, **THEN ISOLATE** the Auxiliary Steam System to minimize contamination (refer to OP-130.01, Auxiliary Steam and Condensate System).

Attachment 1
Sheet 6 of 6

Primary-To-Secondary Leak

INSTRUCTIONS | **RESPONSE NOT OBTAINED**

NOTE

For initial leakage reports, where no previous leakage existed, leakage should be assumed to have changed from zero to the current value in the last hour.

✸ **10. MONITOR** BOTH of the following:

☐ • Primary-to-Secondary leak rate

☐ • Rate of increase reports from Chemistry

AND PERFORM the required actions based on the following: **[C.5, 7]**

Leak Rate (gpd) in any SG	+	Rate of Increase (gpd/hr) in any SG	=	Required Action
Increased Monitoring				
5 to less than 30	+	N/A	=	• Perform Attachment 9
Action Level 1				
30 to less than 75	+	N/A	=	• Perform Attachment 10
Action Level 2				
Greater than or equal to 75 sustained for 1 hour	+	Less than 30	=	• Perform Attachment 11 • Be in Mode 3 within 24 hours
Action Level 3				
Greater than or equal to 75	+	Greater than or equal to 30	=	• Perform Attachment 11 • Reduce power to 50% within 1 hour • Be in Mode 3 within the next 2 hours (3 hours total time)
Greater than or equal to 75 **AND** LOSS of REM-01TV-3534, Condenser Vacuum Pump Rad Monitor (Grid 2)	+	N/A	=	• Perform Attachment 11 • Be in Mode 3 in less than 6 hours
Greater than or equal to 150	+	Less than 30	=	• Perform Attachment 11 • Be in Mode 3 in less than 6 hours • Be in Mode 5 within the next 30 hours (36 hours total)

-- END OF ATTACHMENT 1 --

3/4.3.3 MONITORING INSTRUMENTATION

RADIATION MONITORING FOR PLANT OPERATIONS

LIMITING CONDITION FOR OPERATION

3.3.3.1 The radiation monitoring instrumentation channels for plant operations shown in Table 3.3-6 shall be OPERABLE with their Alarm/Trip Setpoints within the specified limits.

APPLICABILITY: As shown in Table 3.3-6.

ACTION:

a. With a radiation monitoring channel Alarm/Trip Setpoint for plant operations exceeding the value shown in Table 3.3-6, adjust the Setpoint to within the limit within 4 hours or declare the channel inoperable.

b. With one or more radiation monitoring channels for plant operations inoperable, take the ACTION shown in Table 3.3-6.

c. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.1 Each radiation monitoring instrumentation channel for plant operations shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and DIGITAL CHANNEL OPERATIONAL TEST for the MODES and at the frequencies shown in Table 4.3-3.

TABLE 3.3-6

RADIATION MONITORING INSTRUMENTATION FOR PLANT OPERATIONS

INSTRUMENT	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	ACTION
1. Containment Radioactivity--					
a. Containment Ventilation Isolation Signal Area Monitors	2	3	1, 2, 3, 4, 6	#	27
b. Airborne Gaseous Radioactivity					
1) RCS Leakage Detection	1	1	1, 2, 3, 4	$\leq 1.0 \times 10^{-3}$ μCi/ml	26, 27
2) Pre-entry Purge	1	1	##	$\leq 2.0 \times 10^{-3}$ μCi/ml	30
c. Airborne Particulate Radioactivity					
1) RCS Leakage Detection	1	1	1, 2, 3, 4	$\leq 4.0 \times 10^{-8}$ μCi/ml	26, 27
2) Pre-entry Purge	1	1	##	$\leq 1.5 \times 10^{-8}$ μCi/ml	30
2. Spent Fuel Pool Area-- Fuel Handling Building Emergency Exhaust Actuation					
a. Fuel Handling Building Operating Floor--South Network	1/train***	1/train 2 trains	**	$\leq$ 100 mR/hr	28
b. Fuel Handling Building Operating Floor--North Network	1/train***	1/train 2 trains	*	$\leq$ 100 mR/hr	28
3. Control Room Outside Air Intakes--					
a. Normal Outside Air Intake Isolation	1	2	1,2,3,4,5,6 and during movement of irradiated fuel assemblies and movement of loads over spent fuel pools.	$\leq 4.9 \times 10^{6}$ μCi/ml	29

TABLE 3.3-6 (Continued)

RADIATION MONITORING INSTRUMENTATION FOR PLANT OPERATIONS

INSTRUMENT	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	ACTION
3 Control Room Outside Air Intakes-- (Continued)					
b. Emergency Outside Air Intake Isolation--South Intake	1	2	1,2,3,4,5,6 and during movement of irradiated fuel assemblies and movement of loads over spent fuel pools.	$\leq 4.9 \times 10^{-6}$ μCi/ml	29
c. Emergency Outside Air Intake Isolation--North Intake	1	2	1,2,3,4,5,6 and during movement of irradiated fuel assemblies and movement of loads over spent fuel pools.	$\leq 4.9 \times 10^{-6}$ μCi/ml	29

TABLE 3.3-6 (Continued)

TABLE NOTATIONS

* With irradiated fuel in the Northend Spent Fuel Pool or transfer of irradiated fuel from or to a spent fuel shipping cask.

** With irradiated fuel in the Southend Spent Fuel Pool or New Fuel Pool.

*** Each channel consists of 3 detectors with 1 of 3 logic. A channel is OPERABLE when 1 or more of the detectors are OPERABLE.

\# For MODES 1, 2, 3 and 4, the setpoint shall be less than or equal to three times detector background at RATED THERMAL POWER. During fuel movement the setpoint shall be less than or equal to 150 mR/hr.

\#\# Required OPERABLE whenever pre-entry purge system is to be used.

ACTION STATEMENTS

ACTION 26 - Must satisfy the ACTION requirement for Specification 3.4.6.1.

ACTION 27 - With less than the Minimum Channels OPERABLE requirement, operation may continue provided the containment purge makeup and exhaust isolation valves are maintained closed.

ACTION 28 - With less than the Minimum Channels OPERABLE requirement, declare the associated train of Fuel Handling Building Emergency Exhaust inoperable and perform the requirements of Specification 3.9.12.

ACTION 29 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, within 1 hour initiate isolation of the respective air intake. With no outside air intakes available, maintain operation of the Control Room Emergency Filtration System in the Recirculation Mode of Operation.

ACTION 30 - With less than the Minimum Channels OPERABLE requirement, pre-entry purge operations shall be suspended and the containment pre-entry purge makeup and exhaust valves shall be maintained closed.

REFUELING OPERATIONS

3/4.9.12 FUEL HANDLING BUILDING EMERGENCY EXHAUST SYSTEM

LIMITING CONDITION FOR OPERATION

3.9.12 Two independent Fuel Handling Building Emergency Exhaust System Trains shall be OPERABLE.*

APPLICABILITY: Whenever irradiated fuel is in a storage pool.

ACTION:

a. With one Fuel Handling Building Emergency Exhaust System Train inoperable, fuel movement within the storage pool or crane operation with loads over the storage pool may proceed provided the OPERABLE Fuel Handling Building Emergency Exhaust System Train is capable of being powered from an OPERABLE emergency power source and is in operation and discharging through at least one train of HEPA filters and charcoal adsorber.

b. With no Fuel Handling Building Emergency Exhaust System Trains OPERABLE, suspend all operations involving movement of fuel within the storage pool or crane operation with loads over the storage pool until at least one Fuel Handling Building Emergency Exhaust System Train is restored to OPERABLE status.

c. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.12 The above required Fuel Handling Building Emergency Exhaust System trains shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 continuous hours with the heaters operating;

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following significant painting, fire, or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the unit flow rate is 6000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1980;

* The Fuel Handling Building Emergency Exhaust System boundary may be opened intermittently under administrative control.

SURVEILLANCE REQUIREMENTS (Continued)

4.9.12 (Continued)

2. Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, has a methyl iodide penetration of ≤ 2.5% when tested at a temperature of 30°C and at a relative humidity of 70% in accordance with ASTM D3803-1989.

c. After every 720 hours of charcoal adsorber operation by verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, has a methyl iodide penetration of ≤ 2.5% when tested at a temperature of 30°C and at a relative humidity of 70% in accordance with ASTM D3803-1989.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber bank is not greater than 4.1 inches water gauge while operating the unit at a flow rate of 6600 cfm ± 10%.

2. Verifying that, on a High Radiation test signal, the system automatically starts and directs its exhaust flow through the HEPA filters and charcoal adsorber banks.

3. Verifying that the system maintains the spent fuel storage pool area at a negative pressure of greater than or equal to 1/8 inch water gauge, relative to the outside atmosphere, during system operation at a flow rate of 6600 cfm ± 10%.and

4 Deleted

5. Verifying that the heaters dissipate 40 ± 4 kW when tested in accordance with ANSI N510-1980.

e. After each complete or partial replacement of a HEPA filter bank, by verifying that the unit satisfies the in-place penetration leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 for a DOP test aerosol while operating the unit at a flow rate of 6600 cfm ± 10%.

ANSWER KEY REPORT

for Harris RO NRC Exam 2006 Test Form: 0

	ID	Points	Type	Answers 0
	003 A2.03 1	1.00	MCS	D
2	004 A1.07 1	1.00	MCS	B
3	004 K5.02 1	1.00	MCS	C
4	005 K6.03 1	1.00	MCS	D
5	006 A1.06 1	1.00	MCS	B
6	006 A4.06 2	1.00	MCS	A
7	007 EK1.04 1	1.00	MCS	B
8	007 K4.01 2	1.00	MCS	A
9	008 AK2.01 1	1.00	MCS	A
10	008 K1.05 1	1.00	MCS	A
11	009 EA2.22 1	1.00	MCS	C
12	010 K2.04 1	1.00	MCS	A
13	010 K3.01 1	1.00	MCS	D
14	012 K5.01 1	1.00	MCS	C
15	013 A2.05 2	1.00	MCS	B
16	015 G2.1.14 3	1.00	MCS	B
17	015 K5.02 1	1.00	MCS	B
18	016 K4.01 1	1.00	MCS	C
19	017 K3.01 2	1.00	MCS	D
20	022 A3.01 4	1.00	MCS	D
21	022 K1.01 1	1.00	MCS	B
22	024 AK1.02 1	1.00	MCS	D
	025 G2.1.30 2	1.00	MCS	B
	026 AA1.02 1	1.00	MCS	B
25	026 K1.01 1	1.00	MCS	C
26	027 A4.04 1	1.00	MCS	C
27	027 AK2.03 2	1.00	MCS	C
28	028 AA2.13 1	1.00	MCS	A
29	029 EA1.12 1	1.00	MCS	D
30	032 AK3.01 1	1.00	MCS	D
31	034 K6.02 1	1.00	MCS	A
32	035 A1.02 1	1.00	MCS	B
33	037 AA2.01 1	1.00	MCS	A
34	039 K3.03 2	1.00	MCS	B
35	040 AK3.04 1	1.00	MCS	C
36	041 G2.4.50 1	1.00	MCS	D
37	054 AK1.02 2	1.00	MCS	B
38	055 EA2.06 1	1.00	MCS	B
39	056 AA2.76 1	1.00	MCS	D
40	056 G2.1.30 2	1.00	MCS	C
41	057 AA2.19 1	1.00	MCS	C
42	059 AK3.01 1	1.00	MCS	B
43	059 K4.17 1	1.00	MCS	D
44	061 K2.02 1	1.00	MCS	A
	062 A1.03 1	1.00	MCS	B
	062 A2.03 1	1.00	MCS	B

ANSWER KEY REPORT

for Harris RO NRC Exam 2006 Test Form: 0

	ID	Points	Type	Answers 0
	063 K2.01 2	1.00	MCS	D
48	064 A2.16 1	1.00	MCS	C
49	064 A3.05 1	1.00	MCS	C
50	065 AA2.06 1	1.00	MCS	B
51	069 AK3.01 1	1.00	MCS	B
52	072 K1.02 1	1.00	MCS	A
53	073 K4.01 1	1.00	MCS	A
54	075 A4.01 2	1.00	MCS	C
55	076 A3.02 2	1.00	MCS	C
56	076 AA2.02 1	1.00	MCS	C
57	078 K1.05 1	1.00	MCS	C
58	103 A1.01 1	1.00	MCS	A
59	103 A4.04 1	1.00	MCS	A
60	E03 EK3.4 1	1.00	MCS	B
61	E04 EK3.1 1	1.00	MCS	A
62	E05 EK2.1 1	1.00	MCS	C
63	E09 EA1.3 1	1.00	MCS	A
64	E11 EK2.1 1	1.00	MCS	D
65	E12 EK3.1 1	1.00	MCS	C
66	G2.1.11 4	1.00	MCS	C
67	G2.1.23 1	1.00	MCS	C
[illegible]	G2.1.9 1	1.00	MCS	D
	G2.2.1 1	1.00	MCS	C
[illegible]	G2.2.26 2	1.00	MCS	D
71	G2.3.10 3	1.00	MCS	B
72	G2.3.2 1	1.00	MCS	B
73	G2.4.27 2	1.00	MCS	B
74	G2.4.34 1	1.00	MCS	B
75	G2.4.43 2	1.00	MCS	D
SECTION 1 (75 items)		**75.00**		

1. Given the following conditions:

   - The unit is at 100% power
   - One Control Rod in Bank (D) Group (1) was found stuck at 190 steps an hour ago.
   - While aligning the remainder of the rods in Bank (D) to 190 steps an additional Control Rod in Bank (D) Group (2) was found stuck at 210 steps.
   - It has been determined that both rods are mechanically bound.

   In accordance with Technical Specifications, which one of the following describes the action required within one hour?

   A. Determine that QPTR requirements are satisfied or enter the applicable action statement.

   B. Align the remainder of rods in the affected banks within 12 steps of the stuck rod.

   C. Determine that Shutdown Margin requirements are satisfied.

   D. Determine that Axial Flux Difference requirements are satisfied or enter the applicable action statement.

2. Given the following conditions:

   - The plant is in MODE 1, 100% power.
   - The "B" RHR Pump was taken OOS yesterday for maintenance.
   - "A" CSIP is declared INOPERABLE due to NPSH calculation concerns.
   - "B" CSIP and "A" RHR pumps are OPERABLE

   Which ONE (1) of the following describes the required actions for these conditions?

   LCO...

   A. 3.5.2 must be entered. Restore one ECCS Train to service within 6 hours.

   B. 3.5.2 must be entered. Restore both ECCS Trains to service within 72 hours.

   C. 3.0.3 must be entered. Place the plant in Mode 3 within 7 hours.

   D. 3.0.3 must be entered. Place the plant in Mode 3 within 13 hours.

3. Chemistry sample has determined the following:

   - "A" SI Accumulator boron concentration is 2466 ppm.
   - "B" SI Accumulator boron concentration is 2402 ppm.
   - "C" SI Accumulator boron concentration is 2577 ppm.
   - RWST boron concentration is 2388 ppm.

   Which ONE (1) of the following describes the impact of this condition, and the action required?

A. RWST Boron concentration may not adequately counterract the reactivity effects of an uncontrolled RCS cooldown. Immediately initiate a plant shutdown in accordance with GP-006, Plant Shutdown to Hot Standby.

B. RWST Boron concentration may not adequately counterract the reactivity effects of an uncontrolled RCS cooldown. Restore boron concentration within limits in 1 hour or initiate a plant shutdown in accordance with GP-006, Plant Shutdown to Hot Standby.

C. "C" SI Accumulator Boron solubility concerns may adversely affect ECCS flow analysis assumptions. Immediately initiate a plant shutdown in accordance with GP-006, Plant Shutdown to Hot Standby.

D. "C" SI Accumulator Boron solubility concerns may adversely affect ECCS flow analysis assumptions. Restore boron concentration within limits in 1 hour or initiate a plant shutdown in accordance with GP-006, Plant Shutdown to Hot Standby.

4. Given the following conditions:

- A manual reactor trip was performed.
- All DRPI indication is extinguished.
- Reactor Trip breakers indicate red lights on, green lights off.
- Power Range indication is 8%.
- Intermediate Range indication is 2×10^{-5} amps.
- Intermediate Range Start Up Rate (SUR) is + 0.1 dpm.

Which one of the following describes the plant condition and the action required?

A. The reactor is tripped. Continue in PATH-1 to determine if SI is required.

B. The reactor is tripped. Transition to EPP-004, Reactor Trip Response.

C. The reactor is NOT tripped. Continue in PATH-1.

D. The reactor is NOT tripped. Transition to FRP-S.1, Response to Nuclear Power Generation/ATWS.

5. Given the following conditions:

   - A LOCA has occurred
   - The crew is performing PATH-1
   - The following parameters exist:

     - All SG pressures – 800 psig and slowly trending down
     - All SG levels – being controlled at 42% NR
     - PRZ level – off-scale high
     - RVLIS Upper Head indicates 20%
     - Containment Pressure – 8 psig
     - RWST level – 74% and decreasing slowly
     - ONE CSIP has been stopped in accordance with PATH-1
     - RCS pressure – 950 psig and decreasing

   Based on these indications, which ONE (1) of the following procedures will the crew enter next?

   A. EPP-008, "SI Termination" to stop ECCS pumps

   B. EPP-009, "Post-LOCA Cooldown and Depressurization" to cooldown and reduce RCS pressure

   C. EPP-010, "Transfer to Cold Leg Recirculation" to allow for long term recirculation of the RCS

   D. EPP-012, "Loss of Emergency Coolant Recirculation" to initiate makeup and minimize SI flow

6. Given the following conditions:

   - The plant is at 100% power.
   - The following alarms are received in the sequence listed, approximately 10 seconds apart:

     - ALB-009-2-1, PRESSURIZER HIGH LEVEL DEVIATION AND HEATERS ON
     - ALB-009-4-1, PRESSURIZER HIGH LEVEL
     - ALB-009-4-2, PRESSURIZER HIGH LEVEL ALERT

   The RO determines that PRZ Level indicates the following:

     - LI-459 indicates 95% and rising
     - LI-460 indicates 56% and lowering
     - LI-461 indicates 55% and lowering

   Which ONE (1) of the following actions will be directed by the USCO?

A. Trip the reactor and go to PATH-1.

B. Lower Charging flow and select unaffected PRZ level channels in accordance with the applicable alarm response procedures.

C. Raise Charging flow and select unaffected PRZ level channels in accordance with the applicable alarm response procedures.

D. Isolate Letdown and control Charging as necessary to maintain PRZ level in accordance with OP-107, Charging and Volume Control System.

7. Given the following conditions:

   - The Unit is at 100% power.
   - All systems are in normal alignments.
   - A Steam Line Break occurs downstream of MSIV "A".
   - A Main Steam Line Isolation Signal is generated.

   Which ONE (1) of the following describes the maximum allowable closure time of the MSIVs and the associated reason?

   A. The MSIVs must close within 5 seconds to minimize the reactivity effects of the RCS cooldown.

   B. The MSIVs must close within 5 seconds to limit the pressure rise inside Containment.

   C. The MSIVs must close within 30 seconds to limit the pressure rise inside Containment.

   D. The MSIVs must close within 30 seconds to minimize the reactivity effects of the RCS cooldown.

8. Given the following conditions:

   - The plant is at 100% power.
   - RCP "B" seal No. 1 leakoff high-low flow alarm is in.
   - "B" RCP No. 1 seal leakoff flow indicates 7 gpm.
   - NLO has been sent to read "B" RCP #2 seal leakoff flow.
   - VCT pressure is 26 psig.
   - "B" RCP seal injection flow is 9.5 gpm.
   - "B" RCP No. 2 seal leakoff high flow alarm has just been received.

   Which ONE (1) of the following describes the action required?

   A. Trip the reactor and go to EOP-Path -1.

   B. Reduce power to less than 49% and secure the "B" RCP within 4 hours.

   C. Power operation may continue provided that seal injection flow to "B" RCP is maintained greater than 9 gpm.

   D. Initiate a plant shutdown per GP-006, stop "B" RCP within 8 hours.

9. Given the following conditions:

- The plant is initially operating at 70% Power.
- ALB-009-3-2, PRESSURIZER HIGH PRESS DEVIATION CONTROL is received.
- Pressurizer Pressure Indicator PI-444 indicates 2320 psig and INCREASING.
- Pressurizer Pressure Indicator PI-445.1 indicates 2225 psig and DECREASING.

Based on the indications above, which ONE (1) of the following describes plant status and what actions are immediately required?

A. Reactor power is 0%. Enter and perform actions of PATH-1. When directed by PATH-1, CLOSE PORVs 445A and 445B AND/OR their associated Block Valves.

B. Reactor power remains at approximately 70%. Place Master Pressure Controller PK-444A in Manual and raise controller output to restore RCS pressure IAW APP-ALB-009-3-2.

C. Reactor power is 0%. Enter and perform actions of PATH-1. When directed by PATH-1, ensure PORVs 445A and 445B close when pressure is reduced below the setpoint, OR close PORV Block Valves IAW APP-ALB-009-3-2.

D. Reactor power remains at approximately 70%. Enter AOP-019, Malfunction of RCS Pressure Control, and place Master Pressure Controller PK-444A in Manual, reducing controller output to close spray valves and PORV 444B.

10. Given the following conditions:

- The plant is at 100 % power.
- The following conditions have been observed:
  - Condenser Vacuum Pump Rad monitor (REM-01TV-3534) went into alert 4 and 1/2 hours ago.
  - Primary to Secondary leakage into "B" SG has been identified as follows:
    - 21 gallons per day 4 hours ago.
    - 41 gallons per day 3 hours ago.
    - 62 gallons per day 2 hours ago.
    - 82 gallons per day for the last 60 minutes.

Based on the above conditions, which ONE (1) of the following describes the required actions?

A. Hold power stable while performing AOP-016, Excessive Primary Plant Leakage, Attachment 10

B. Perform AOP-016, Attachment 11, and shutdown the plant in accordance with GP-006. Be in Mode 3 within 24 hours

C. Perform AOP-016, Attachment 11, and shutdown the plant in accordance with GP-006. Be in Mode 3 in less than 6 hours

D. Perform AOP-016, Attachment 11, and reduce power to 50% within 1 hour in accordance with GP-006. Be in Mode 3 within the the next 2 hours

11. Given the following conditions:

- The plant is operating at 100% power.
- The following alarm and condition are observed in the control room:
  - ALB-022-4-3, GENERATOR VOLT/FREQ RATIO HIGH OR UNDER FREQ
  - Main Generator frequency has dropped to 58.2 Hz.

Based on the above conditions, which ONE (1) of the following actions is required?

A. Reduce Turbine Load to maintain reactor power less than 100% IAW AOP-028, Grid Instability.

B. Raise Generator Excitation to maintain within the limits of the generator capability curve IAW AOP-028.

C. Monitor the low frequency condition, and if it exists for 5 minutes, initiate a reactor shutdown IAW GP-006, Normal Plant Shutdown from Power Operation to Hot Standby.

D. Immediately trip the reactor and enter PATH-1.

12. Given the following conditions:

- The plant is at 69% power.
- Plant load increase is in progress in accordance with GP-005.
- The following alarms are received:
  - ALB-020-2-4A, CONDSR PRE TRIP LOW VACUUM
  - ALB-021-8-5, COMPUTER ALARM CIRC WATER SYSTEMS
- The BOP determines that condenser backpressure is 6.6 inches Hg in Zone 2 and rising slowly.
- Computer alarm indicates Vacuum Pump "A" Vibration HIGH.

Which ONE (1) of the following actions is required?

A. Reduce turbine load to less than 60% in accordance with GP-006 to stabilize condenser vacuum.

B. Enter AOP-012, Partial Loss of Condenser Vacuum, to perform actions for vacuum restoration.

C. Trip the reactor and enter PATH-1

D. Trip the turbine and enter AOP-006, Turbine Generator Trouble

13. Given the following conditions:

- The plant was operating at 95 percent power, steady state conditions, when multiple feed system annunciators were received.
- The following plant conditions are observed and communicated by the BOP operator:
  - "A" MFP control switch indicates green
  - ALB-016-1-4, FW PUMP A/B O/C TRIP-GND OR BKR FAIL TO CLOSE, is lit
  - ALB-020-2-2, TURBINE RUNBACK OPERATIVE, is lit
  - Steam Generator Levels 52 percent and lowering
  - FRV M/A controllers output rising
  - Reactor power at 93 percent and lowering.

Which ONE (1) of the following actions is the USCO required to perform?

A. Enter AOP-010, Feedwater Malfunctions. Direct the RO to trip the reactor and go to EOP-PATH-1.

B. Enter AOP-010, Feedwater Malfunctions. Direct performance of Section 3.2, Loss of Running Pumps.

C. Enter AOP-010, Feedwater Malfunctions, and direct the BOP to isolate SG Blowdown

D. Enter AOP-006, Turbine Generator Trouble. Direct the crew to manually control SG levels 52 percent to 62 percent in accordance with OP-134.01, Feedwater System.

14. Given the following plant conditions:

- The plant is operating at 55% power.
- The following annunciators are received in the Control Room:
  - ALB-002-7-2, SERV WTR PUMPS DISCHARGE LOW PRESS
  - ALB-002-6-1, SERV WTR SUPPLY HEADER A LOW PRESS
  - ALB-002-5-5, SERV WTR HEADER A HIGH/LOW FLOW
- The BOP notes that Cooling Tower Basin Level is decreasing.
- "A" ESW Pump automatically starts.
- ALB-002-7-2, SERV WTR PUMPS DISCHARGE LOW PRESS alarm clears.
- Cooling Tower Basin level stabilizes.

The crew enters AOP-022, Loss of Service Water and completes the immediate actions.

Which ONE (1) of the following describes the action required, if any, based on current plant conditions?

A. Trip the reactor and go to PATH-1. Ensure the Emergency Service Water system is aligned in accordance with PATH-1

B. Locate and isolate the leak on ESW Train "A". When the leak is isolated, restore "A" ESW header to service using ESW or NSW in accordance with OP-139, Service Water System.

C. Locate and isolate the leak on the NSW header. When the leak is isolated, shutdown Train "A" ESW and restore normal NSW flow in accordance with OP-139, Service Water System.

D. No additional actions are required because the leak is isolated. Verify ESW is properly aligned to equipment listed in AOP-022, Attachment 1, Equipment Alignment due to Loss of an ESW Header.

15. Given the following conditions:

- A release of Treated Laundry and Hot Shower Tank "A" is in progress.
- A HIGH ALARM is received on REM-*1WL-3540, Treated Laundry and Hot Shower Tank Pump discharge radiation monitor.
- Discharge flow indicated on the Waste Processing computer is approximately 28 GPM.

Which ONE (1) of the following describes the action required for the above plant conditions?

A. The release must be manually terminated. Isolate the release path in accordance with AOP-008, Accidental Release of Liquid Waste, and/or AOP-005, Radiation Monitoring.

B. The release was automatically terminated. Waste Processing computer indication is a setpoint, not actual flow, indicated by the liquid waste release permit. Verify isolation in accordance with AOP-005, Radiation Monitoring.

C. The release may continue because the release permit provides actual sample data of the tank contents. Determine cause of the alarm in accordance with OP-119, Radwaste Radiation Monitoring System.

D. The release may continue provided 2 independent samples of the release are taken and analyzed by qualified individuals and verified to be within limits.

16. Given the following conditions:

- The plant is at 100% power.
- The Compressed Air System (CAS) Control Panel is set for 1C Air Compressor in LEAD (Sequence 3).
- A Valve Shift Error occurs on Air Dryer 1C-NNS.
- Instrument Air Header pressure indicates 110 psig.

Which ONE (1) of the following describes the impact of this failure, and the action required?

A. High Air Dryer DP may cause a Loss of Instrument Air. Bypass Air Dryer 1C-NNS in accordance with AOP-017, Loss of Instrument Air.

B. Instrument Air may have a higher than desired moisture content. Shift the CAS Control Panel to 1A Air Compresor in LEAD (Sequence 1) and isolate Air Dryer 1C-NNS in accordance with OP-151.01, Compressed Air.

C. Instrument Air may have a higher than desired moisture content. Isolate Air Dryer 1C-NNS and place Air Dryer 1A-NNS in service on Air Compressor 1C in accordance with OP-151.01, Compressed Air.

D. High Air Dryer DP may cause a Loss of Instrument Air. Manually perform the valve shift on Air Dryer 1C-NNS in accordance with AOP-017, Loss of Instrument Air.

17. Given the following conditions:

- A LOCA Outside Containment has occurred.
- The crew has completed performing the actions of EPP-013, LOCA Outside Containment.
- RCS pressure is 1450 psig and lowering slowly.

Which ONE (1) of the following describes the action that will be performed?

A. Return to EPP-013, Step 1, and repeat steps to isolate the leak

B. Return to PATH-1, entry point C, to rediagnose the event in progress.

C. Transition to EPP-009, Post LOCA Cooldown and Depressurization.

D. Transition to EPP-012, Loss of Emergency Coolant Recirculation

18. Given the following conditions:

- A reactor trip has occurred due to a loss of offsite power.
- The operating crew is performing actions of EPP-005, Natural Circulation Cooldown.
- Train "A" of RVLIS is out of service.
- The crew has commenced RCS cooldown and depressurization.

- RCS pressure is 1780 psig and trending DOWN.
- RCS Tavg is 448 deg. F and trending DOWN.
- RCS cooldown rate MUST be performed at approximately 60 deg F/Hr. due to secondary inventory concerns.
- Pressurizer level is 35% and trending UP slowly.

Which one of the following actions will be required in accordance with EPP-005?

A. Repressurize the RCS to minimize void growth.

B. Actuate safety injection and transition to EPP-014, Faulted Steam Generator Isolation.

C. Transition to EPP-007, Natural Circulation Cooldown With Steam Void In Vessel (Without RVLIS).

D. Transition to EPP-006, Natural Circulation Cooldown With Steam Void In Vessel (With RVLIS).

19. Given the following conditions:

- The plant was operating at 100% power when a reactor trip occurred on low pressurizer pressure.
- "C" S/G Tube Rupture was diagnosed, and PATH-2 was entered.
- RCS Cooldown and Depressurization is complete.

Given the following control room indications:

- SG "C" level is 32% and decreasing.
- SG "A" and "B" levels are stable.
- PRZ level is 63% and increasing.

Which ONE (1) of the following describes the required operator action IAW PATH-2?

A. Increase Charging Flow and Depressurize RCS.

B. Decrease Charging flow.

C. Energize Pressurizer heaters.

D. Depressurize RCS and Decrease Charging flow.

20. EXCLUDING any unexpected absences, which ONE (1) of the following describes the MINIMUM shift crew composition required by Technical Specifications in MODE 3 for the positions listed?

	S-SO	USCO	RO	AO
A.	0	1	2	2
B.	1	1	2	2
C.	1	0	2	1
D.	1	1	1	2

21. Which ONE of the below is a responsibility of the WCC-SRO concerning a Temporary Change (Plant Modification) in accordance with EGR-NGGC-0005, Engineering Change?

A. Identify the placement of Temporary Change Tags.

B. Verify proper annotation of affected Priority 0 drawings.

C. Initiate the Temporary Change Log (Form 2)

D. Perform a periodic audit verifying the hanging of the Temporary Change Tags and the state of the Temporary Change Tag integrity

22. A male employee who is 20 years old has received the following exposure:

-Current Total Effective Dose Equivalent (TEDE) for the year to date is 4200 mrem.
-Current Deep Dose Equivalent (DDE) for the year to date is 700 mrem.
-Current Committed Effective Dose Equivalent (CEDE) for the year to date is 3500 mrem.
-Current Total Organ Dose Equivalent (TODE) for the year to date is 300 mrem.

Assuming his exposure is properly documented and appropriate management approval is received, which of the following is the MAXIMUM additional whole body exposure the operator can receive this year without exceeding his 10CFR20 exposure limits?

A. 800 mrem

B. 1200 mrem

C. 500 mrem

D. 1500 mrem

23. A Normal Containment Purge is planned following an outage.

Which ONE (1) of the following describes the release permit requirements for the planned evolution?

A. A Batch Release Permit MUST be prepared per CRC-853.

B. If the purge is within 30 days of the Pre-Entry Purge, the release permit for Pre-Entry Purge may be used.

C. If all 4 Containment Ventilation Isolation monitors and both RCS leak detection monitors are OPERABLE, a Batch Release Permit is NOT required.

D. A Batch Release Permit must ONLY be prepared if the previous purge was secured for radiological reasons. If not, a release permit is NOT required.

24. Given the following conditions:

- A loss of Component Cooling Water has occurred.
- The reactor was tripped in accordance with AOP-014, Loss of Component Cooling Water.
- The crew has entered PATH-1.

Which ONE (1) of the following describes the continued use of AOP-014, Loss of Component Cooling Water?

A. Use of AOP-014 is NOT allowed during EOP performance.

B. May ONLY be used concurrently with actions of PATH-1, and ONLY where directed by the procedure.

C. May be used concurrently with EOPs ONLY if referring to the AOP does NOT result in delaying accident mitigation

D. May be used concurrently as necessary under all conditions of EOP use.

25. Given the following conditions:

- The plant is operating at 100% power.
- EDG 1B-SB is out of service and is expected to return to service in two (2) hours.
- Subsequently, the following events occur:
  - A loss of offsite power occurs.
  - The reactor is tripped and the crew enters PATH-1
  - SI is NOT actuated.
  - The crew made a transition to FRP-H.1, Loss Of Secondary Heat Sink based on a CSFST RED Path.

Subsequently, EDG 1A-SA output breaker trips on a bus fault.

Which ONE (1) of the following describes the actions that will be taken?

A. Immediately transition to EPP-001, Loss Of All AC Power to 1A-SA and 1B-SB Buses.

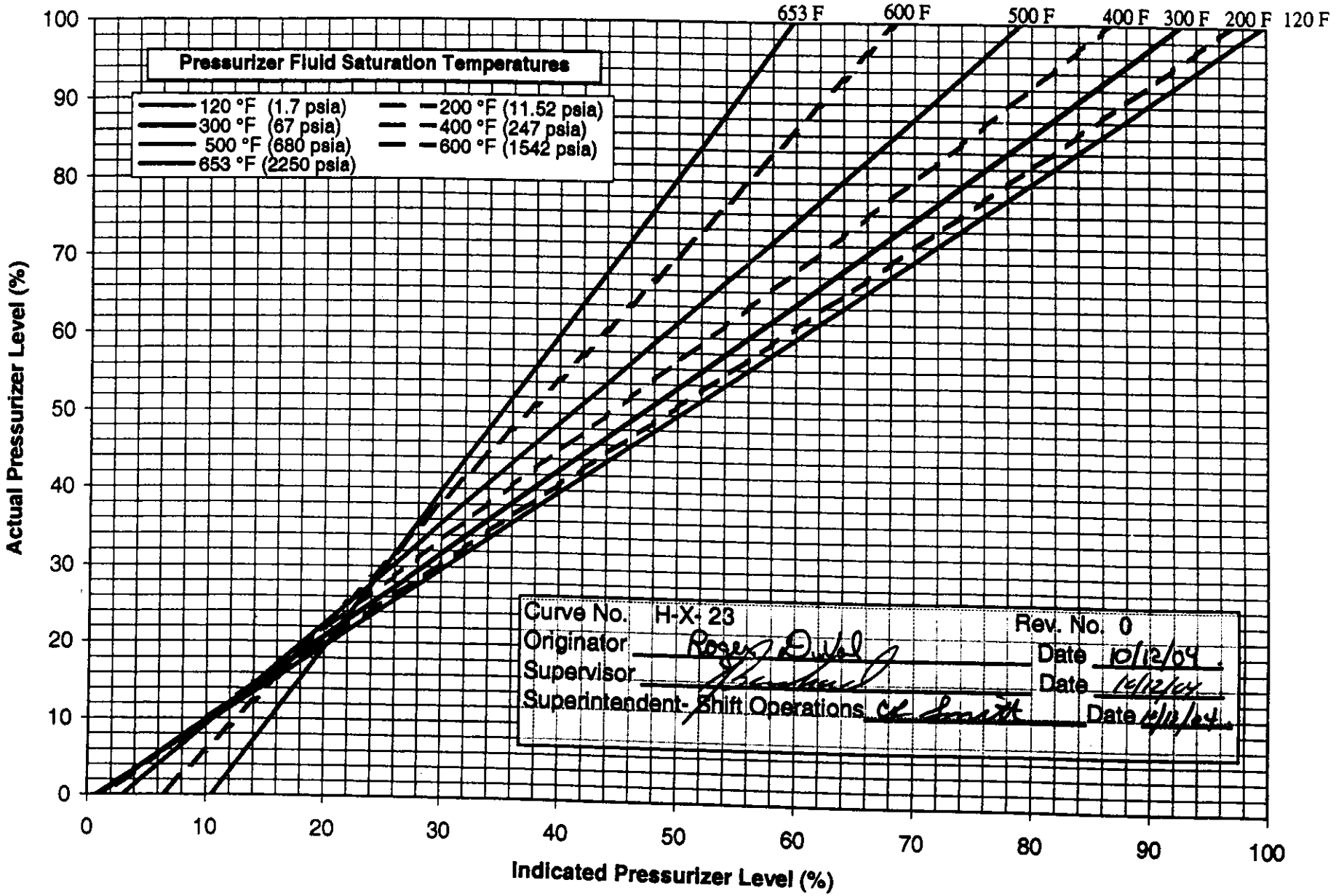
B. Restore feed in accordance with FRP-H.1, and then return to PATH-1 to restore EDG 1A-SA.

C. Remain in FRP-H.1 until directed to return to procedure in effect, and then transition to EPP-001.

D. Remain in FRP-H.1 unless a higher priority RED condition is observed. When directed to return to procedure in effect, return to PATH-1. Restore EDG 1A-SA or 1B-SB in EPP-004, Reactor Trip Response.

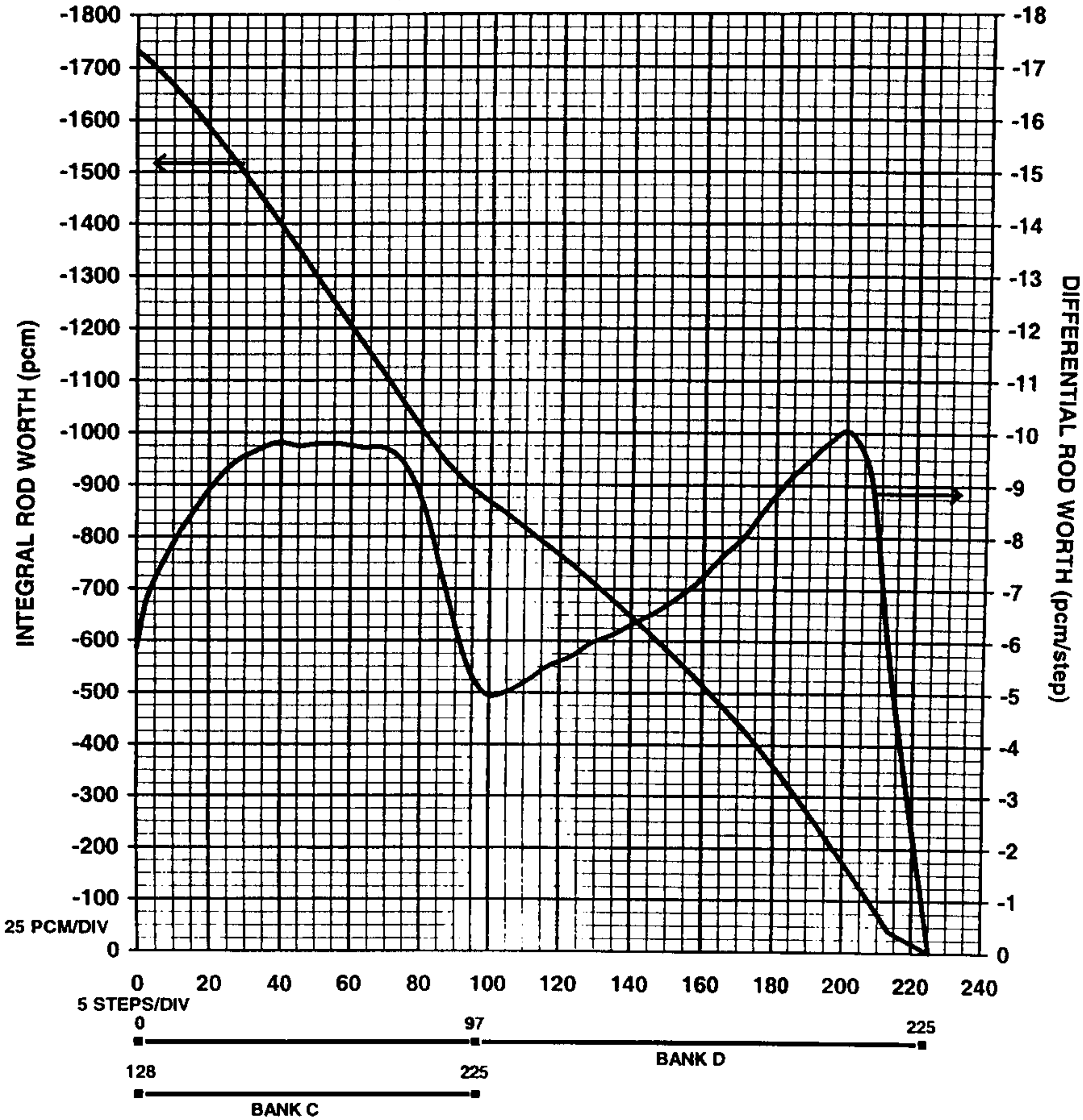
You have completed the test!

Pressurizer Level Cold Calibrated Channel (LI-462)
Indicated Level versus Actual Water Level at Various Saturation Temperatures



HARRIS UNIT 1 CYCLE 13
DIFFERENTIAL AND INTEGRAL
ROD WORTH CONTROL BANKS D and C
MOVING WITH 97 STEP OVERLAP

BOL (0 ≤ EFPD ≤ 161), HZP, WITH NO XENON



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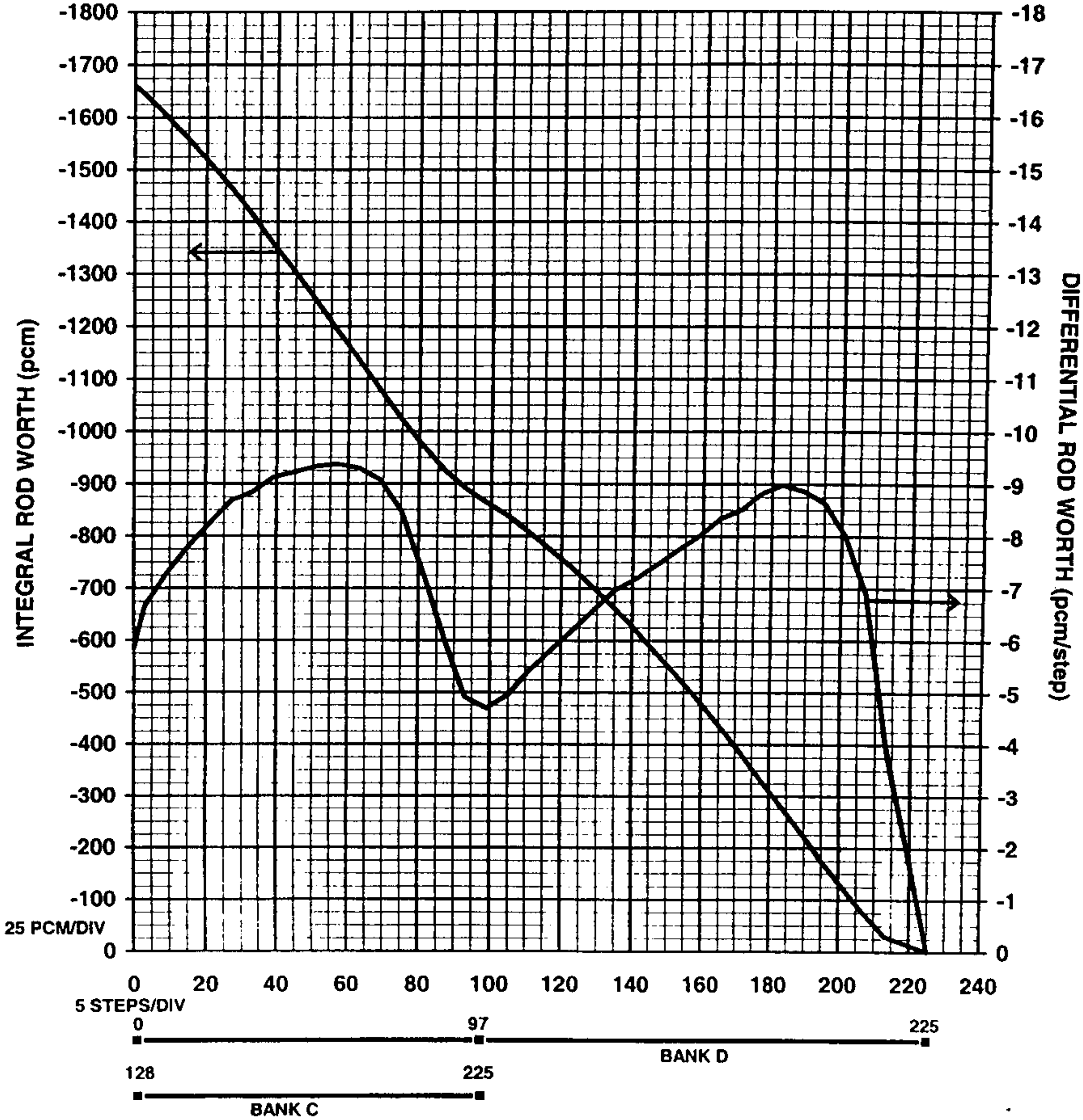
ORIGINATOR	[illegible]	DATE	10/14/04 [illegible]
SUPERVISOR	[illegible]	DATE	10/23/04
SUPERINTENDENT - SHIFT OPERATIONS	CR Smith	DATE	10/24/04

HARRIS UNIT 1 CYCLE 13
DIFFERENTIAL AND INTEGRAL
ROD WORTH CONTROL BANKS D and C
MOVING WITH 97 STEP OVERLAP

MOL (161 < EFPD ≤ 333), HZP, WITH NO XENON



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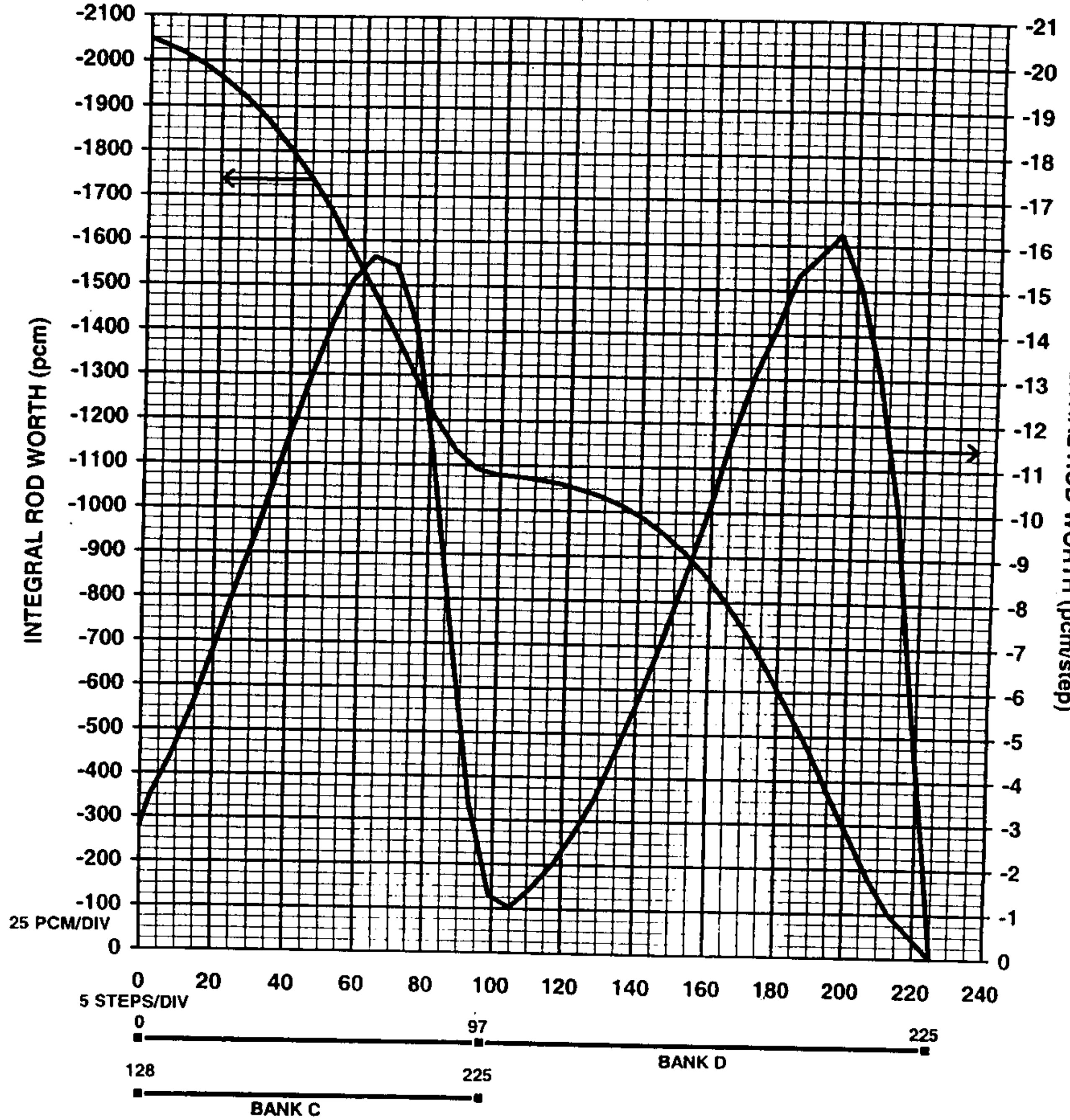
SUPERVISOR	[signature]	DATE	10/23/04
SUPERINTENDENT - SHIFT OPERATIONS	C R Smith	DATE	10/24/04

HARRIS UNIT 1 CYCLE 13
DIFFERENTIAL AND INTEGRAL
ROD WORTH CONTROL BANKS D and C
MOVING WITH 97 STEP OVERLAP

EOL (333 < EFPD ≤ 517), HZP, WITH NO XENON



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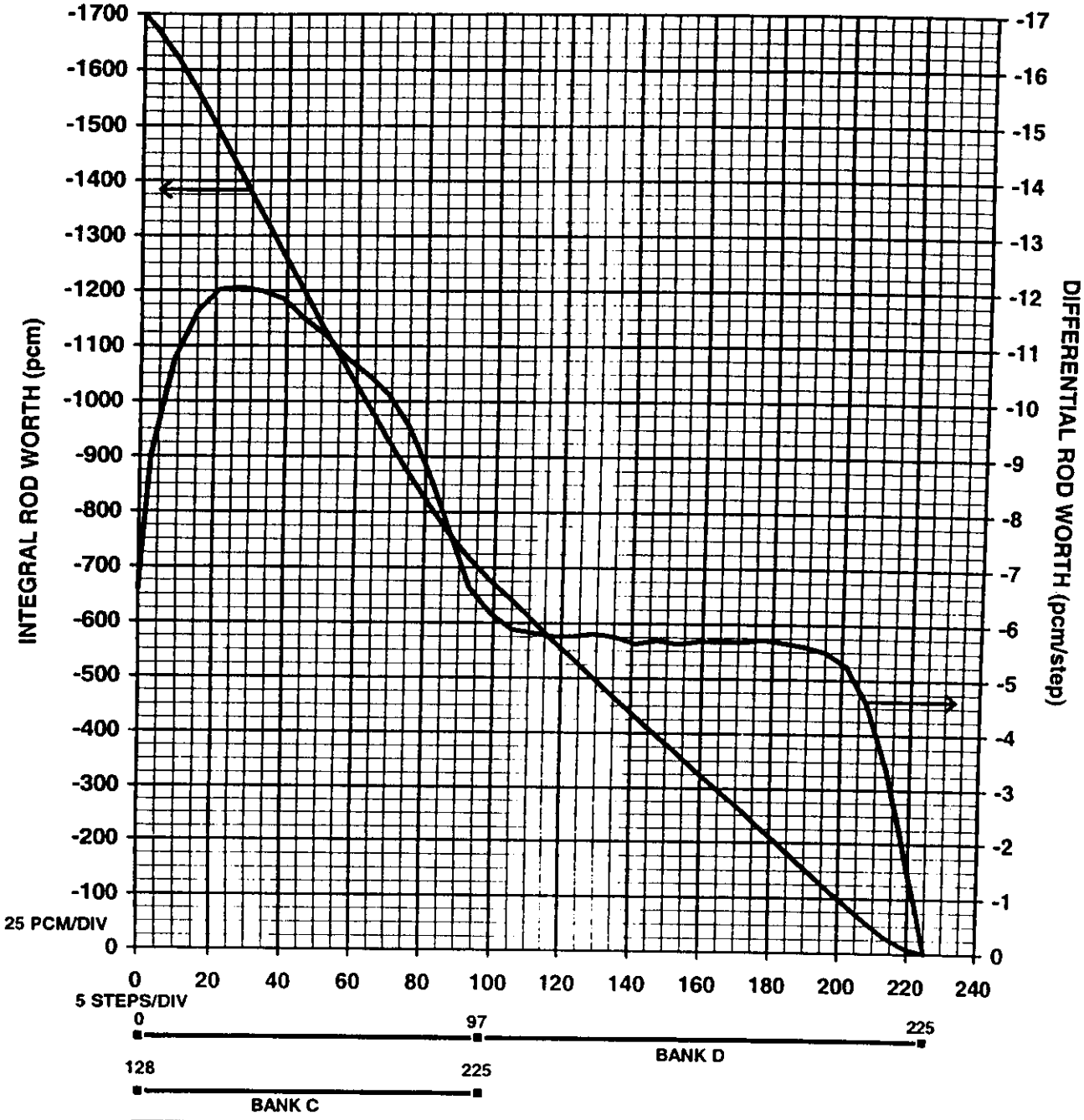
SUPERVISOR	*[signature]*	DATE	10/23/04
SUPERINTENDENT - SHIFT OPERATIONS	CR Smith	DATE	10/24/04

HARRIS UNIT 1 CYCLE 13
DIFFERENTIAL AND INTEGRAL
ROD WORTH CONTROL BANKS D and C
MOVING WITH 97 STEP OVERLAP

BOL (0 ≤ EFPD ≤ 161), HFP, EQUILIBRIUM XENON



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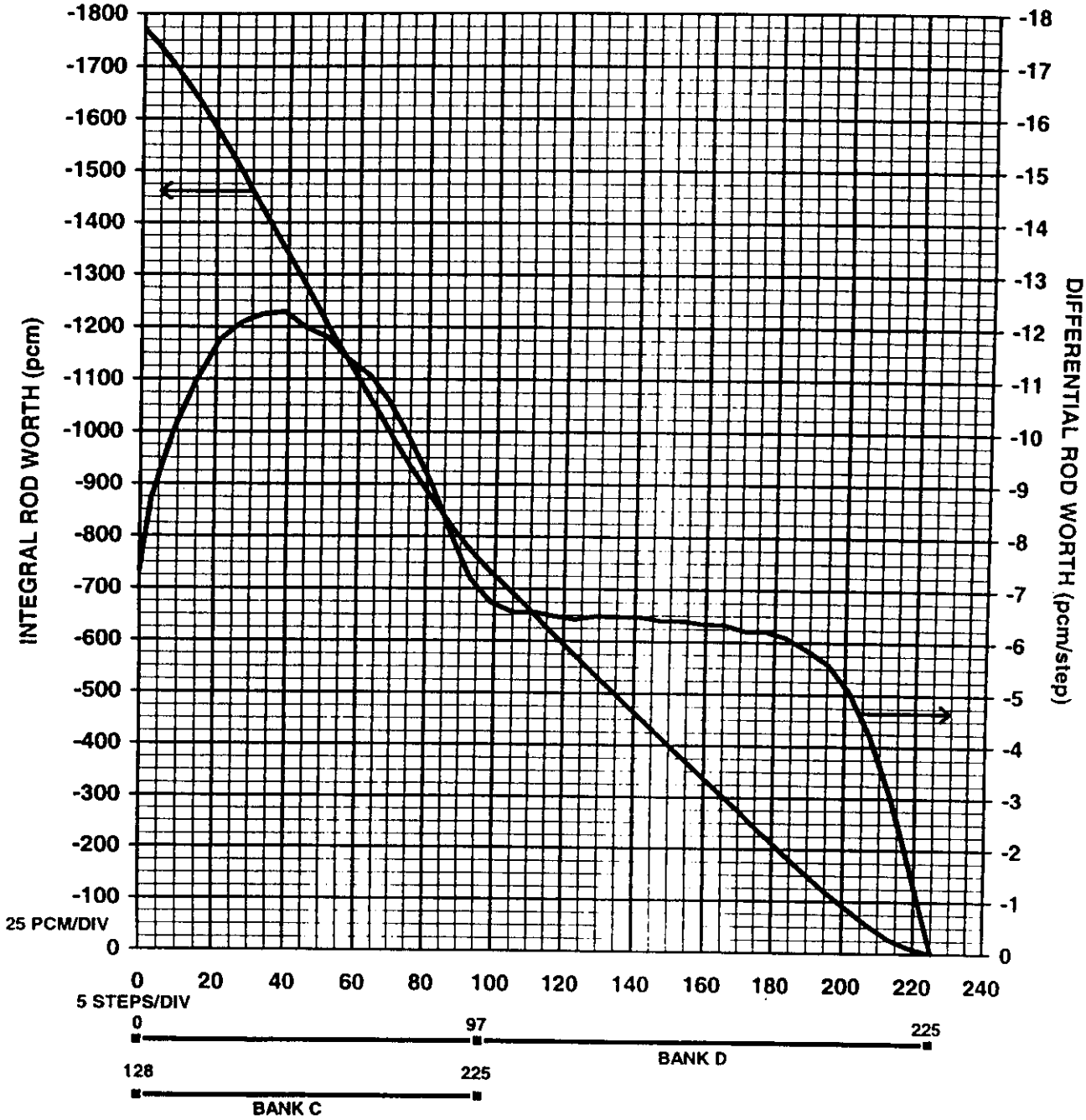
SUPERVISOR	[signature]	DATE	10/23/04
SUPERINTENDENT - SHIFT OPERATIONS	CR Smith	DATE	10/24/04

HARRIS UNIT 1 CYCLE 13
DIFFERENTIAL AND INTEGRAL
ROD WORTH CONTROL BANKS D and C
MOVING WITH 97 STEP OVERLAP

MOL (161 < EFPD ≤ 333), HFP, EQUILIBRIUM XENON



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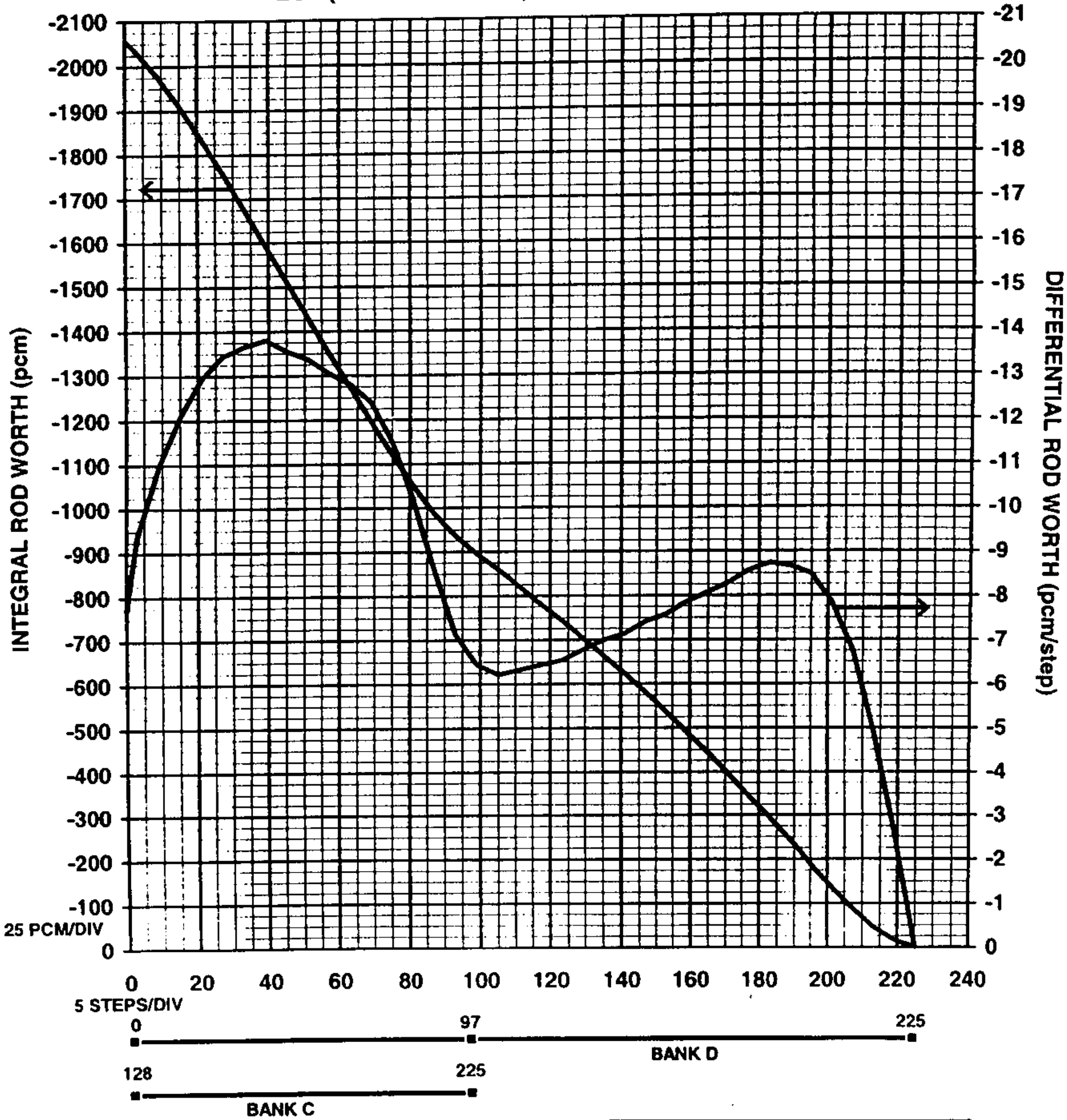
SUPERVISOR	[signature]	DATE	10/23/04
SUPERINTENDENT - SHIFT OPERATIONS	CR Smith	DATE	10/24/04

HARRIS UNIT 1 CYCLE 13
DIFFERENTIAL AND INTEGRAL
ROD WORTH CONTROL BANKS D and C
MOVING WITH 97 STEP OVERLAP

EOL (333 < EFPD ≤ 517), HFP, EQUILIBRIUM XENON



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SUPERVISOR	[signature]	DATE	10/23/04
SUPERINTENDENT - SHIFT OPERATIONS	[signature]	DATE	10/24/04

Attachment 1
Sheet 1 of 6

Primary-To-Secondary Leak

INSTRUCTIONS	RESPONSE NOT OBTAINED

1. **NOTIFY** Chemistry to implement CRC-804, Primary-To-Secondary Leak Rate Monitoring, to accomplish the following: **[A.2]**

☐ • quantify leak rate

☐ • quantify leak rate trend

☐ • determine leaking SG

NOTE

Condenser Vacuum Pump radiation monitor indication is sensitive to high temperature and may read higher than actual when the monitor cooler is not in service. The cooling water alignment is located in OP-139, Service Water System.

☐ 2. **ESTIMATE** Primary-To-Secondary leak rate every 15 minutes based on ONE of the following (no preferred method): **[C.5, 7]**

	Method
(1)	• Condenser Vacuum Pump Rad Monitor, REM-01TV-3534 (Grid 2) • Curve H-X-15a, H-X-15b or H-X-15c (depending on the status of motivating air)
(2)	OSI PI plot (Chemistry tab) for Curve H-X-15a, H-X-15b or H-X-15c
(3)	Condenser Vacuum Pump Rad Monitor, REM-01TV-3534 (Grid 2) and conversion factor (Attachment 20), after Chemistry sampling has commenced

Attachment 1
Sheet 2 of 6

Primary-To-Secondary Leak

INSTRUCTIONS	RESPONSE NOT OBTAINED

☐ **3.** **IF** measured leak rate becomes stable for one hour (less than or equal to 10% change in 1-hour),
THEN REDUCE monitoring frequency to once every 2-hours or more frequently, as directed by the Unit SCO.

4. **DETERMINE** leaking SG(s) using the following information:

☐ • Individual SGBD samples

☐ • Main steam line radiation monitor levels

☐ • Local surveys of SGBD lines

Attachment 1
Sheet 3 of 6
Primary-To-Secondary Leak

INSTRUCTIONS	RESPONSE NOT OBTAINED
✸ 5. **CHECK** the following radiation monitor readings indicating NOT IN ALARM:	5. **PERFORM** the following:
☐ • RM-01MS-3591 SB, Main Steam Line A	a. **NOTIFY** Health Physics to survey the following outside the RCA:
☐ • RM-01MS-3592 SB, Main Steam Line B	☐ • SG Blowdown piping ☐ • Vicinity of Main Steam piping
☐ • RM-01MS-3593 SB, Main Steam Line C	b. **IF** ANY monitor is in HIGH ALARM, **THEN PERFORM** the following:
☐ • REM-01TV-3534, Condenser Vacuum Pump Effluent (Group 16 RM-11)	☐ (1) **SOUND** the local evacuation alarm.
☐ • REM-1BD-3527, Steam Generator Blowdown (Group 16 RM-11)	☐ (2) **ANNOUNCE** evacuation of the following areas: • Steam Tunnel • SG PORVs/SG Safety valves area • Turbine Building 314' elevation
☐ • RM-1TV-3536-1, Turbine Building Vent Stack Effluent (Group 16 RM-11)	☐ (3) **REPEAT** sounding the local evacuation alarm AND the announcement.
	☐ (4) **IF** ANY Main Steam Line Monitor is in HIGH ALARM, **THEN PERFORM** an Offsite Dose Calculation (refer to PEP-340, Dose Assessment).

Attachment 1
Sheet 4 of 6

Primary-To-Secondary Leak

INSTRUCTIONS	RESPONSE NOT OBTAINED
✸ **6. CHECK** BOTH of the following:	☐ **6. START** CVPETS (refer to OP-133, Main Condenser Air Removal System).
☐ • Turbine Building vent stack radiation monitor reading below the high alarm setpoint	
☐ • SG tube leakage is less than Tech Spec limits.	
✸ **7. CHECK** the following radiation monitor reading indicating NOT IN ALARM:	**7. NOTIFY** Radwaste to perform the following:
☐ • REM-21AC-3525, Aux Steam Condensate Tank (Group 4, RM-11)	**a. VERIFY** the following valves are SHUT:
☐ • REM-21AC-3543A, WPB Aux Stm Condensate (Group 19, RM-11)	☐ • 1AC-151, AS Condensate Return to Condenser MOV
☐ • REM-21AC-3543B, WPB Aux Stm Condensate (Group 19, RM-11)	☐ • 1AC-371, Aux Condensate Return to Aux Boiler MOV
	b. VERIFY the following pumps are STOPPED:
	☐ • WPB Auxiliary Condensate Pump 1-4A (216' elev. WPB)
	☐ • WPB Auxiliary Condensate Pump 1-4B (216' elev. WPB)
	☐ • RAB Auxiliary Condensate Pump 1-2A (216' elev. RAB, access to FHB south)
	☐ • RAB Auxiliary Condensate Pump 1-2B (216' elev. RAB, access to FHB south)

Attachment 1
Sheet 5 of 6
Primary-To-Secondary Leak

INSTRUCTIONS	RESPONSE NOT OBTAINED
☐8. **NOTIFY** Chemistry to sample the Auxiliary Steam System for activity.	
☐9. **IF** Chemistry reports activity, **THEN ISOLATE** the Auxiliary Steam System to minimize contamination (refer to OP-130.01, Auxiliary Steam and Condensate System).	

Attachment 1
Sheet 6 of 6

Primary-To-Secondary Leak

INSTRUCTIONS	RESPONSE NOT OBTAINED

NOTE

For initial leakage reports, where no previous leakage existed, leakage should be assumed to have changed from zero to the current value in the last hour.

✱ **10. MONITOR** BOTH of the following:

☐ • Primary-to-Secondary leak rate

☐ • Rate of increase reports from Chemistry

AND PERFORM the required actions based on the following: **[C.5, 7]**

Leak Rate (gpd) in any SG	+	Rate of Increase (gpd/hr) in any SG	=	Required Action
Increased Monitoring				
5 to less than 30	+	N/A	=	• Perform Attachment 9
Action Level 1				
30 to less than 75	+	N/A	=	• Perform Attachment 10
Action Level 2				
Greater than or equal to 75 sustained for 1 hour	+	Less than 30	=	• Perform Attachment 11 • Be in Mode 3 within 24 hours
Action Level 3				
Greater than or equal to 75	+	Greater than or equal to 30	=	• Perform Attachment 11 • Reduce power to 50% within 1 hour • Be in Mode 3 within the next 2 hours (3 hours total time)
Greater than or equal to 75 **AND** LOSS of REM-01TV-3534, Condenser Vacuum Pump Rad Monitor (Grid 2)	+	N/A	=	• Perform Attachment 11 • Be in Mode 3 in less than 6 hours
Greater than or equal to 150	+	Less than 30	=	• Perform Attachment 11 • Be in Mode 3 in less than 6 hours • Be in Mode 5 within the next 30 hours (36 hours total)

-- END OF ATTACHMENT 1 --

Instructions	Response Not Obtained

39. Control RCS Pressure AND Charging Flow To Minimize RCS-To-Secondary Leakage Using Table:

REQUIRED ACTION FOR PRESSURE CONTROL

Priority for RCS depressurization:

1. Normal spray
2. IF letdown in service, THEN use auxiliary spray.
3. One PRZ PORV

PRZ LEVEL	Ruptured SG Level		
	INCREASING	DECREASING	OFFSCALE HIGH
Less than 25% [40%]	Increase charging flow Depressurize RCS.	Increase charging flow	Increase charging flow Maintain RCS AND ruptured SG pressures equal.
Between 25% and 50% [40% and 50%]	Depressurize RCS.	Energize PRZ heaters.	Maintain RCS AND ruptured SG pressures equal.
Between 50% and 75% [50% and 60%]	Decrease charging flow Depressurize RCS.	Energize PRZ heaters.	Maintain RCS AND ruptured SG pressures equal.
Greater than 75% [60%]	Decrease charging flow	Energize PRZ heaters.	Maintain RCS AND ruptured SG pressures equal.

3/4.3.3 MONITORING INSTRUMENTATION

RADIATION MONITORING FOR PLANT OPERATIONS

LIMITING CONDITION FOR OPERATION

3.3.3.1 The radiation monitoring instrumentation channels for plant operations shown in Table 3.3-6 shall be OPERABLE with their Alarm/Trip Setpoints within the specified limits.

APPLICABILITY: As shown in Table 3.3-6.

ACTION:

a. With a radiation monitoring channel Alarm/Trip Setpoint for plant operations exceeding the value shown in Table 3.3-6, adjust the Setpoint to within the limit within 4 hours or declare the channel inoperable.

b. With one or more radiation monitoring channels for plant operations inoperable, take the ACTION shown in Table 3.3-6.

c. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.1 Each radiation monitoring instrumentation channel for plant operations shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and DIGITAL CHANNEL OPERATIONAL TEST for the MODES and at the frequencies shown in Table 4.3-3.

TABLE 3.3-6

RADIATION MONITORING INSTRUMENTATION FOR PLANT OPERATIONS

INSTRUMENT	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	ACTION
1 Containment Radioactivity--					
a. Containment Ventilation Isolation Signal Area Monitors	2	3	1, 2, 3, 4, 6	#	27
b. Airborne Gaseous Radioactivity					
1) RCS Leakage Detection	1	1	1, 2, 3, 4	$\leq 1.0 \times 10^{-3}$ μCi/ml	26, 27
2) Pre-entry Purge	1	1	##	$\leq 2.0 \times 10^{-3}$ μCi/ml	30
c. Airborne Particulate Radioactivity					
1) RCS Leakage Detection	1	1	1, 2, 3, 4	$\leq 4.0 \times 10^{-8}$ μCi/ml	26, 27
2) Pre-entry Purge	1	1	##	$\leq 1.6 \times 10^{-8}$ μCi/ml	30
2 Spent Fuel Pool Area-- Fuel Handling Building Emergency Exhaust Actuation					
a. Fuel Handling Building Operating Floor--South Network	1/train***	1/train 2 trains	**	$\leq$ 100 mR/hr	28
b. Fuel Handling Building Operating Floor--North Network	1/train***	1/train 2 trains	*	$\leq$ 100 mR/hr	28
3 Control Room Outside Air Intakes--					
a. Normal Outside Air Intake Isolation	1	2	1,2,3,4,5,6 and during movement of irradiated fuel assemblies and movement of loads over spent fuel pools	$\leq 4.9 \times 10^{-8}$ μCi/ml	29

TABLE 3.3-6 (Continued)

RADIATION MONITORING INSTRUMENTATION FOR PLANT OPERATIONS

INSTRUMENT	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	ACTION
3. Control Room Outside Air Intakes-- (Continued)					
b. Emergency Outside Air Intake Isolation--South Intake	1	2	1,2,3,4,5,6 and during movement of irradiated fuel assemblies and movement of loads over spent fuel pools	$\leq 4.9 \times 10^{-6}$ μCi/ml	29
c. Emergency Outside Air Intake Isolation--North Intake	1	2	1,2,3,4,5,6 and during movement of irradiated fuel assemblies and movement of loads over spent fuel pools	$\leq 4.9 \times 10^{-6}$ μCi/ml	29

TABLE 3.3-6 (Continued)

TABLE NOTATIONS

* With irradiated fuel in the Northend Spent Fuel Pool or transfer of irradiated fuel from or to a spent fuel shipping cask.

** With irradiated fuel in the Southend Spent Fuel Pool or New Fuel Pool.

*** Each channel consists of 3 detectors with 1 of 3 logic. A channel is OPERABLE when 1 or more of the detectors are OPERABLE.

\# For MODES 1, 2, 3 and 4, the setpoint shall be less than or equal to three times detector background at RATED THERMAL POWER. During fuel movement the setpoint shall be less than or equal to 150 mR/hr.

\#\# Required OPERABLE whenever pre-entry purge system is to be used.

ACTION STATEMENTS

ACTION 26 - Must satisfy the ACTION requirement for Specification 3.4.6.1.

ACTION 27 - With less than the Minimum Channels OPERABLE requirement, operation may continue provided the containment purge makeup and exhaust isolation valves are maintained closed.

ACTION 28 - With less than the Minimum Channels OPERABLE requirement, declare the associated train of Fuel Handling Building Emergency Exhaust inoperable and perform the requirements of Specification 3.9.12.

ACTION 29 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, within 1 hour initiate isolation of the respective air intake. With no outside air intakes available, maintain operation of the Control Room Emergency Filtration System in the Recirculation Mode of Operation.

ACTION 30 - With less than the Minimum Channels OPERABLE requirement, pre-entry purge operations shall be suspended and the containment pre-entry purge makeup and exhaust valves shall be maintained closed.

3/4.9.12 FUEL HANDLING BUILDING EMERGENCY EXHAUST SYSTEM

LIMITING CONDITION FOR OPERATION

3.9.12 Two independent Fuel Handling Building Emergency Exhaust System Trains shall be OPERABLE.*

APPLICABILITY: Whenever irradiated fuel is in a storage pool.

ACTION:

a. With one Fuel Handling Building Emergency Exhaust System Train inoperable, fuel movement within the storage pool or crane operation with loads over the storage pool may proceed provided the OPERABLE Fuel Handling Building Emergency Exhaust System Train is capable of being powered from an OPERABLE emergency power source and is in operation and discharging through at least one train of HEPA filters and charcoal adsorber.

b. With no Fuel Handling Building Emergency Exhaust System Trains OPERABLE, suspend all operations involving movement of fuel within the storage pool or crane operation with loads over the storage pool until at least one Fuel Handling Building Emergency Exhaust System Train is restored to OPERABLE status.

c. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.12 The above required Fuel Handling Building Emergency Exhaust System trains shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS by initiating from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 continuous hours with the heaters operating;

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following significant painting, fire, or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the unit flow rate is 6600 cfm ± 10% during system operation when tested in accordance with ANSI N510-1980

* The Fuel Handling Building Emergency Exhaust System boundary may be opened intermittently under administrative controls.

SURVEILLANCE REQUIREMENTS (Continued)

4.9.12 (Continued)

2. Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, has a methyl iodide penetration of $\leq$ 2.5% when tested at a temperature of 30°C and at a relative humidity of 70% in accordance with ASTM D3803-1989.

c. After every 720 hours of charcoal adsorber operation by verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, has a methyl iodide penetration of $\leq$ 2.5% when tested at a temperature of 30°C and at a relative humidity of 70% in accordance with ASTM D3803-1989.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber bank is not greater than 4.1 inches water gauge while operating the unit at a flow rate of 6600 cfm ± 10%.

2. Verifying that, on a High Radiation test signal, the system automatically starts and directs its exhaust flow through the HEPA filters and charcoal adsorber banks.

3. Verifying that the system maintains the spent fuel storage pool area at a negative pressure of greater than or equal to 1/8 inch water gauge, relative to the outside atmosphere, during system operation at a flow rate of 6600 cfm ± 10%, and

4. Deleted

5. Verifying that the heaters dissipate 40 ± 4 kW when tested in accordance with ANSI N510-1980.

e. After each complete or partial replacement of a HEPA filter bank, by verifying that the unit satisfies the in-place penetration leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 for a DOP test aerosol while operating the unit at a flow rate of 6600 cfm ± 10%.

ANSWER KEY REPORT

for Harris SRO NRC Exam 2006 Test Form: 0

	ID	Points	Type	Answers 0
	005 AA2.03 1	1.00	MCS	C
2	005 G2.1.12 2	1.00	MCS	C
3	006 A2.10 1	1.00	MCS	B
4	007 EA2.04 1	1.00	MCS	D
5	008 G2.4.4 2	1.00	MCS	B
6	011 G2.1.7 1	1.00	MCS	C
7	013 G2.2.22 1	1.00	MCS	A
8	015 G2.1.23 2	1.00	MCS	A
9	027 AA2.09 1	1.00	MCS	D
10	037 G2.1.2 2	1.00	MCS	B
11	045 G2.1.23 1	1.00	MCS	D
12	051 G2.4.45 1	1.00	MCS	B
13	059 G2.4.49 2	1.00	MCS	A
14	062 AA2.03 2	1.00	MCS	B
15	068 A2.04 1	1.00	MCS	A
16	078 A2.01 1	1.00	MCS	B
17	E04 G2.1.20 1	1.00	MCS	D
18	E10 EA2.1 1	1.00	MCS	D
19	G2.1.25 2	1.00	MCS	C
20	G2.1.4 1	1.00	MCS	B
21	G2.2.11 2	1.00	MCS	B
22	G2.3.1 3	1.00	MCS	A
	G2.3.9 1	1.00	MCS	A
24	G2.4.11 1	1.00	MCS	C
25	G2.4.6 1	1.00	MCS	A
SECTION 1 (25 items)		**25.00**		

1. 003 A2.03 001

Given the following conditions:

- The plant is at 40% power.
- The crew has entered AOP-018, RCP Abnormal Conditions, due to temperature alarms on RCP "A".
- The following ERFIS indications currently exist for RCP "A":

• Upper and Lower Thrust Bearing temperatures	182 deg F
• Upper and Lower Radial Bearing temperatures	186 deg F
• Motor Stator Winding Temperature	306 deg F
• Motor Current Fluctuations Peak to Peak	25 Amps

Which ONE (1) of the following describes the impact of these indications, and the action required in accordance with AOP-018?

A. Thrust bearing temperatures exceed allowable limits. Trip the reactor and trip RCP "A".

B. Radial bearing temperatures exceed allowable limits. Trip RCP "A".

C. Motor current fluctuations exceed allowable limits. Trip the reactor and trip RCP "A".

D. Motor stator winding temperature exceeds allowable limits. Trip RCP "A".

A, B, and C are all near but not exceeding allowable limits. D is correct.
No requirement to trip the reactor below 49% power.

Common 1

Tier 2 Group 1
K/A Importance Rating - RO 2.7

Ability to (a) predict the impacts of the following malfunctions or operations on the RCPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Problems associated with RCP motors, including faulty motors and current, and winding and bearing temperature problems.

Reference(s) - AOP-018, attachment 1
Proposed References to be provided to applicants during examination - NONE
Learning Objective - AOP-LP-3.18, Obj 3
Question Source - New
Question History -
Question Cognitive Level - HIgher
10 CFR Part 55 Content - 41(b).10
Comments -

2. 004 A1.07 001

Given the following conditions:

- The plant is at 100% power.
- All control systems are in their normal alignments.

Which ONE (1) of the following describes the maximum allowable amount of Letdown flow to prevent receiving alarm ALB-007-3-4, LOW PRESSURE LETDOWN HIGH FLOW?

A. 105 GPM

B. ✓ 120 GPM

C. 150 GPM

D. 165 GPM

B is correct. Normally there are 2 letdown orifi in service. 45 GPM and 60 GPM for a total of 105 GPM. Placing the 3rd orifice in service will raise letdown flow by 45 GPM, for a total of 165 GPM at NOP, NOT. Alarm is set at 130 GPM
Common 2

Tier 2 Group 1
K/A Importance Rating - RO 2.7

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CVCS controls including: Maximum specified letdown flow.

Reference(s) - CVCS SD-107, Pg 15 ALB-007-3-4
Proposed References to be provided to applicants during examination - None
Learning Objective - LP CVCS3-0, Obj 2.a
Question Source - New
Question History -
Question Cognitive Level - HIGHER
10 CFR Part 55 Content - 41(b).3
Comments -

3. 004 K5.02 001

Which ONE (1) of the following describes the parameter limit that will prevent an explosive atmosphere in the VCT?

A. Nitrogen concentration is maintained less than 4%.

B. Hydrogen concentration is maintained greater than 4%.

C. Oxygen concentration is maintained less than 4%.

D. Hydrazine concentration is maintained greater than 4%.

C is correct. O2 is maintained <4%
Nitrogen is used to act as a buffer between O2 and H2. Hydrazine is used below 180 degrees F but no limit on minimum concentration
Common 3

Tier 2 Group 1
K/A Importance Rating - RO 3.5

Knowledge of the operational implications of the following concepts as they apply to the CVCS: Explosion hazard associated with hydrogen containing systems.

Reference(s) - OP-107, P&L 4.0 #4, Initial Condition 8.1.1 #2
Proposed References to be provided to applicants during examination - None
Learning Objective - LP CVCS3-0, Obj. AO 4.a
Question Source - New
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).10
Comments -

4. 005 K6.03 001

Given the following conditions:

- The plant is in Mode 4.
- RHR Train "A" is in service.
- The Instrument Air supply line to Heat Exchanger Flow Control Valve 1RH-30 becomes severed and is completely detached.

Which ONE (1) of the following describes the effect on the RHR system?

A. The operating RHR pump will cavitate.

B. The operating RHR pump will operate at shutoff head.

C. RHR Heat Exchanger outlet temperature indication rises.

D. RHR Heat Exchanger outlet temperature indication lowers.

D is correct. Air to flow control valve failing - Valve fails open. Therefore, more flow through heat exchanger, but total flow is maintained by the bypass valve, which will throttle closed when HX outlet flow rises.
Common 4

Tier 2 Group 1
K/A Importance Rating - RO 2.5

Knowledge of the effect of a loss or malfunction on the following will have on the RHRS: RHR heat exchanger.

Reference(s) - SD-111 section 3.4
Proposed References to be provided to applicants during examination - none
Learning Objective - LP RHRS2-0, Obj 6.e, f
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).5
Comments -

5. 006 A1.06 001

Given the following conditions:

- A small break LOCA has occurred. The crew is in EPP-009, Post LOCA Cooldown and Depressurization.
- One RCP is operating.
- Two CSIPs are operating.
- RCS subcooling is 72 degrees F. The crew has determined that one CSIP can be stopped.

Which ONE (1) of the following describes the system response after the crew stops one CSIP?

A. RCS break flow remains constant while ECCS flow decreases and RCS subcooling decreases.

B. RCS pressure decreases in response to reduced ECCS flow and RCS subcooling decreases.

C. RCS subcooling remains the same and flow from the running CSIP increases, reaching a balance with break flow.

D. RCS temperature and pressure increase in response to the reduced ECCS flow and RCS subcooling remains the same.

A-Incorrect. Break flow is dependent on the DP across the break. With less makeup volume, DP will go down
B-Correct.
C-Incorrect. Flow from the running CSIP will not make up for the CSIP that was turned off, that's why subcooling must be elevated prior to turning off a pump
D-Incorrect. System is subcooled, distractor describes characteristics of a saturated system
Question 024
Tier 2 / Group 1
K/A Importance Rating - RO 3.6

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ECCS controls including: Subcooling margin.

Reference(s) - EPP-009 and basis
Proposed References to be provided to applicants during examination - None
Learning Objective - LP EOP3-5, Obj 5.b
Question Source - Bank
Question History - 2002 Salem NRC exam
Question Cognitive Level - Memory
10 CFR Part 55 Content - 41(b).5
Comments -

6. 006 A4.06 002

Which one of the following conditions will exist in the associated train when the SSPS "OPERATE/TEST MODE SELECTOR" switch is in the TEST position?

A. ✔ ESF actuations will be inhibited and reactor trip signals will be available

B. ESF actuations will be available and reactor trip signals will be inhibited

C. Both ESF actuations and reactor trip signals will be inhibited

D. Both ESF actuations and reactor trip signals will be available

When the ESFAS OPERATE/TEST switch is placed in TEST, ESFAS signals are blocked, but RPS signals are not blocked.
Common 5

Tier 2 Group 1
K/A Importance Rating - RO 4.4

Ability to manually operate and/or monitor in the control room: ESF control panel.

Reference(s) - ESFAS LP 3.0
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LP ESFAS3-0, Obj 6
Question Source - Bank
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b) .7
Comments -

7. 007 EK1.04 001

Which ONE (1) of the following describes the Nuclear Instrumentation response from the time control rods begin to drop due to a reactor trip from 100% power until the Source Range instruments energize?

A. Prompt Drop of approximately 3 decades, followed by a -1/3 DPM startup rate for approximately 20 minutes.

B. Prompt Drop to approximately 5% power, followed by a -1/3 DPM startup rate for approximately 20 minutes.

C. Prompt Drop of approximately 3 decades, followed by a -1/3 DPM startup rate for approximately 3-4 hours.

D. Prompt Drop to approximately 5% power, followed by a -1/3 DPM startup rate for approximately 3-4 hours.

Prompt drop of 3 decades would almost put unit in source range within approximately 5-6 minutes. Actual prompt drop is less than 1 decade. 3-4 hours used as distractor because it is the approximate time that power will be decreasing noticeably.
Common 39

Tier 1 Group 1
K/A Importance Rating - RO 3.6

Knowledge of the operational implications of the following concepts as they apply to the reactor trip: Decrease in reactor power following reactor trip (prompt drop and subsequent decay).

Reference(s) - T&AA
Proposed References to be provided to applicants during examination - NONE
Learning Objective - Reactor Theory Obj 22
Question Source - Bank
Question History - 2005 SONGS Audit 39
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).1
Comments -

8. 007 K4.01 002

Which of the following describes how the Pressurizer Relief Tank (PRT) is cooled in accordance with OP-100, "Reactor Coolant System"?

A. Recirculate the PRT through the Reactor Coolant Drain Tank heat exchanger using Component Cooling Water to cool the heat exchanger

B. Recirculate the PRT through the Reactor Coolant Drain Tank heat exchanger using Service Water to cool the heat exchanger

C. Drain the PRT to the Reactor Coolant Drain Tank while making up to the PRT from the Demineralized Water Storage Tank

D. Drain the PRT to the Containment Sump while making up to the PRT from the Reactor Makeup Water Storage Tank

Cooling for RCDT is by CCW. The PRT is circulated through the RCDT HX. Other methods describe a Bleed and Feed of the PRT. Service Water does not cool the RCDT HX. DWST does not supply makeup water to the PRT
Common 6

Tier 2 Group 1
K/A Importance Rating - RO 2.6

Knowledge of PRTS design feature(s) and/or interlock(s) which provide for the following: Quench tank cooling.

Reference(s) - APP-ALB-009, OP-100
Proposed References to be provided to applicants during examination - NONE
Learning Objective - PZR-3.0-3
Question Source - Bank
Question History - 2004 NRC RO 23
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).10
Comments -

9. 008 AK2.01 001

Given the following conditions:

- A reactor trip and safety injection have occurred.
- RCS pressure is 1200 psig and lowering.
- Tavg is 550 degrees F and lowering slowly.
- PRZ level is 65% and rising.
- Containment pressure is 2 psig and rising.

Which ONE (1) of the following describes the cause of this event?

A. A stuck open pressurizer PORV.

B. Large break on an RCS cold leg.

C. Small break on an RCS hot leg.

D. A stuck open pressurizer spray valve.

A is correct. A LOCA is occurring, due to RCS pressure lowering and Containment pressure rising.
D is incorrect because spray valve failure would not result in containment pressure rising
B and C are incorrect because PRZ level would be lowering or off-scale low if either of these events occurred.
Common 40

Tier 1 Group 1
K/A Importance Rating - RO 2.7

Knowledge of the interrelations between the Pressurizer Vapor Space Accident and the following: Valves.

Reference(s) - T&AA
Proposed References to be provided to applicants during examination - None
Learning Objective - BD-LP-3-3, Obj 1.f
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).5
Comments -

10. 008 K1.05 001

Which ONE (1) of the following states the NORMAL and ALTERNATE sources of makeup water to the CCW Surge Tank?

	NORMAL	ALTERNATE
A.	Demineralized Water System	Primary Makeup Water System
B.	Condensate Storage Tank	Demineralized Water System
C.	Potable Water System	Condensate Storage Tank
D.	Primary Makeup Water System	Potable Water System

A is correct. The CST and Potable Water systems do not provide CCW Surge Tank makeup water.
Common 7

Tier 2 Group 1
K/A Importance Rating - RO 3.0

Knowledge of the physical connections and/or cause-effect relationships between the CCWS and the following systems: Sources of makeup water.

Reference(s) - SD-145 Page 6
Proposed References to be provided to applicants during examination - None
Learning Objective - LP CCWS3-0, Obj 3
Question Source - New
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).8
Comments -

11. 009 EA2.22 001

Given the following conditions:

- A small break LOCA is in progress.
- All equipment responded as designed.
- RCS pressure is 1450 psig and stable.
- Containment pressure is 2.5 psig and rising slowly.

Which ONE (1) of the following describes the trend on MCR Charging flow indication FI-122.A1 and the computer trend during this event?

A. Charging flow indication stable prior to reactor trip, and rises to a stable higher value after reactor trip.

B. Charging flow indication rising prior to reactor trip, and goes off-scale high upon safety injection actuation.

C. Charging flow indication rising prior to reactor trip, and lowers to zero upon safety injection actuation.

D. Charging flow indication stable prior to reactor trip, and lowers to zero upon safety injection actuation.

C is correct. Charging flow rises as PRZ level goes below program. When SI actuates, SI through FV-122 is isolated to direct all CSIP flow through the BIT
Common 41

Tier 1 Group 1
K/A Importance Rating - RO 3.0

Ability to determine or interpret the following as they apply to a small break LOCA: Charging flow trend recorder.

Reference(s) - SD-110, Figure 7.2
Proposed References to be provided to applicants during examination - None
Learning Objective - LP CVCS3-0, Obj 8.b
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).5
Comments -

12. 010 K2.04 001

Which ONE (1) of the following combinations of pressurizer heater groups may be powered from Emergency Diesel Generators following a Loss of Off-Site Power?

A. Groups A and B

B. Groups A and C

C. Groups B and D

D. Groups C and D

A is correct. Backup heater groups A and B are safety related. C is the control group and D is the non-safety related backup group
Common 8

Tier 2 Group 1
K/A Importance Rating - RO 3.0

Knowledge of bus power supplies to the following: Pressurizer Heaters.

Reference(s) - SD-100.03
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LP PZRPC3-0 Obj 7.a
Question Source - New
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).3
Comments -

13. 010 K3.01 001

Given the following conditions:

- The plant is at 100% power.
- All control systems are in their normal alignments, with the exception of the Pressurizer Pressure Master Controller, which is in MANUAL.
- The Pressurizer Pressure Master Controller output fails HIGH.

Which ONE (1) of the following describes the effect on RCS pressure and the reason for that effect?

A. RCS pressure rises due to PRZ spray valves closing and pressurizer control group heater energization.

B. RCS pressure rises due to PRZ spray valves closing and pressurizer backup group heater energization.

C. RCS pressure lowers due to pressurizer heater deenergization, PRZ spray valve operation, and operation of all 3 PRZ PORVs.

D. RCS pressure lowers due to pressurizer heater deenergization, PRZ spray valve operation, and operation of 1 PRZ PORV.

D is correct. As output is raised, it is calling for pressure to be reduced. Pressure will be reduced by heaters turning off, and subsequently, spray valve operation. Two PORVs are controlled from Pressure transmitters, which will be lowering. However, PORV 444B is controlled from the master controller, and it will open with no action

If setpoint (not output) was raised, then heaters would turn on
Common 9

Tier 2 Group 1
K/A Importance Rating - RO 3.8

Knowledge of the effect that a loss or malfunction of the PZR PCS will have on the following: RCS.

Reference(s) - SD-100.03
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LPPZRPC3-0, Obj. 3.j
Question Source - Modified
Question History - PZRPC-R5-001
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).7
Comments -

14. 012 K5.01 001

Which one of the following reactor trip signals provides protection against DNB (Departure from Nucleate Boiling)?

A. High pressurizer level

B. Overpower Delta T

C.✔ RCP underfrequency

D. Steam generator low-low water level

High PZR level is a backup for High RCS pressure. OP Delta T is for overpower events, fuel degradation. SG LO-LO level is also a backup for RCS pressure transients
Common 10

Tier 2 Group 1
K/A Importance Rating - RO 3.3

Knowledge of the operational implications of the following concepts as the apply to the RPS: DNB.

Reference(s) - TS LSSS
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LP TS2-0, Obj 5
Question Source - Bank
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).3
Comments -

15. 013 A2.05 002

Given the following conditions:

- The plant is currently at full power.
- The following sequence of events occurred:

  0200 The normal feeder breaker to 6.9kV bus 1A-SA (Bkr 105) tripped open.
  The 1A-SA EDG started and the sequencer correctly loaded all loads.
  0215 The 1A-SA EDG tripped.
  0220 The 1A-SA DC bus was lost.

- NO operator actions have been taken.
- The 1A-SA normal feeder (Bkr 105) has been repaired.

What is the current status of the load breakers on 6.9kV bus 1A-SA AND what action, if any, is required prior to re-energizing the bus?

A. Closed; Open all load breakers on 6.9kV bus 1A-SA from the MCB.

B. Closed; Open all load breakers on 6.9kV bus 1A-SA locally at the switchgear.

C. Open; DC Bus 1A-SA must be reenergized prior to restoring Bus 1A-SA.

D. Open; no additional action is necessary.

Load breakers do not trip open on loss of control power, and they cannot be operated remotely without control power. The loads must be manually stripped prior to placing the DG back on the bus

Common 11

Tier 2 Group 1
K/A Importance Rating - RO 3.7

Ability to (a) predict the impacts of the following malfunctions or operations on the ESFAS; and (b) based Ability on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations; Loss of dc control power.

Reference(s) - AOP-025 Basis Document p. 2
AOP-025 step 45.a - first Caution at step 45
Proposed References to be provided to applicants during examination - None
Learning Objective - LPAOP3-25 Obj 5
Question Source - Bank
Question History - AOP-3.25-R3 004
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).7
Comments -

16. 015 G2.1.14 003

Given the following conditions:

- The following alarm is received in the control room:
  - ALB-010-1-1B, RCP A UPPER OIL RSVR LOW LEVEL
- The crew reduces power from 65% to 47% in the last 30 minutes in accordance with AOP-038, Rapid Downpower, to remove RCP A from service.

In accordance with AOP-038, which of the following plant personnel must be notified?

A. Health Physics

B. Chemistry

C. Plant Manager

D. Operations Manager

Chemistry must be notified due to a load change greater then 15% in one hour. The other personnel may be notified in accordance with OMM-001, but will not be notified as directed by the AOP
Common 42

Tier 1 Group 1
K/A Importance Rating - RO 2.5

Conduct of Operations: Knowledge of system status criteria which require the notification of plant personnel.

Reference(s) - AOP-038, OMM-001
Proposed References to be provided to applicants during examination - None
Learning Objective - LPAOP38-0, Obj 3
Question Source - New
Question History -
Question Cognitive Level - HIGHER
10 CFR Part 55 Content - 41(b).10
Comments -

17. 015 K5.02 001

Which one of the following contains BOTH conditions that will result in indicated reactor power being LOWER than actual reactor power?

A. Source Range pulse height discrimination set too LOW
Intermediate Range Compensating voltage set too LOW

B. Source Range pulse height discrimination set too HIGH
Intermediate Range Compensating voltage set too HIGH

C. Source Range pulse height discrimination set too LOW
Intermediate Range Compensating voltage set too HIGH

D. Source Range pulse height discrimination set too HIGH
Intermediate Range Compensating voltage set too LOW

A. Incorrect. If pulse height discrimination is set too low, then more gamma pulses will be counted, resulting in an indicated reading higher than actual. If IR compensating voltage is set too low, the detector will have a higher output, resulting in a higher power indication

B. Correct.

C. Incorrect. See explanation for 'A' above

D. Incorrect. See explanation for 'A' above

Common 36

Tier 2 Group 2
K/A Importance Rating - RO 2.7

Knowledge of the operational implication of the following concepts as they apply to the NIS: Discrimination/compensation operation.

Reference(s) - SD-105
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LP NIS3-0, Obj 4
Question Source - Bank
Question History - BVPS-1 2002 NRC
Question Cognitive Level - HIGHER
10 CFR Part 55 Content - 41(b).1
Comments -

18. 016 K4.01 001

Which ONE (1) of the following describes the Steam Generator level indication that is available on the Auxiliary Control Panel?

A. One channel of SG narrow range per SG

B. Two channels of SG narrow range per SG

C. One channel of SG wide range per SG

D. Two channels of SG wide range per SG

C is correct. No narrow range level available on ACP. 1 wide range level serves as secondary inventory indication, and trend determines AFW flow availability
Common 29

Tier 2 Group 2
K/A Importance Rating - RO 2.8

Knowledge of NNIS design feature(s) and/or interlock(s) which provide for the following: Reading of NNIS channel values outside control room.

Reference(s) - TS 3.3.3.5.a
Proposed References to be provided to applicants during examination - None
Learning Objective -
Question Source - New
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).7
Comments -

19. 017 K3.01 002

Given the following conditions:

- Following a plant trip, EPP-004, "Reactor Trip Response," is being performed.
- The crew is verifying Natural Circulation conditions as a result of a loss of power to all RCPs.
- Five (5) core exit thermocouples are failed.

How do the failed core exit thermocouples affect indications used to verify Natural Circulation?

A.
- The Core Exit Temperature indications will be HIGHER than actual
- RCS Subcooling will indicate MORE subcooling than actual

B.
- The Core Exit Temperature indications will be HIGHER than actual
- RCS Subcooling will indicate LESS subcooling than actual

C.
- Core Exit Temperature indications will indicate LOWER than actual
- RCS Subcooling will indicate MORE subcooling than actual

D.
- Core Exit Temperature indications will indicate the SAME as actual
- RCS Subcooling will indicate the SAME subcooling as actual

Failed CETs will show as low indications (50 deg F). Therefore, the 5 highest will not include the 5 failed CETs. Subcooling is determined by using the average of the 5 highest CETs
Common 30

Tier 2 Group 2
K/A Importance Rating - RO 3.5

Knowledge of the effect that a loss or malfunction of the ITM system will have on the following: Natural circulation indications.

Reference(s) - SD-106
Proposed References to be provided to applicants during examination - NONE
Learning Objective - ICCM-3.0-R6
Question Source - Bank
Question History - 2004 NRC RO 70
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).7
Comments -

20. 022 A3.01 004

Given the following conditions:

- A small break LOCA has occurred.
- Containment pressure is 3.8 psig and increasing.
- Containment temperature is 137°F and increasing.

The expected Containment Cooling Fan alignment will be one (1) fan in each Containment Fan Cooler Unit running in ...

A. high speed with the post-accident dampers shut.

B. high speed with the post-accident dampers open.

C. low speed with the post-accident dampers shut.

D. low speed with the post-accident dampers open.

A. Plausible since this alignment is an alignment that would be used following a loss of offsite power, but the SI alignment has the fans in low speed.
B. Plausible since this alignment is an alignment that would be used following a loss of offsite power with the dampers aligned for the SI alignment, but the SI alignment has the fans in low speed.
C.Plausible since the fans are aligned per the SI alignment, but the dampers are aligned per the loss of offsite power alignment.
D. Correct

Common 13

Tier 2 Group 1
K/A Importance Rating - RO 4.1

Ability to monitor automatic operation of the CCS, including: Initiation of safeguards mode of operation.

Reference(s) - SD-169
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LPCCS3-0, R2
Question Source - Bank
Question History - 2004 NRC
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).8
Comments -

21. 022 K1.01 001

Which ONE (1) of the following describes the cooling water provided to the following Containment Cooling System components?

	Containment Fan Coil Units	Containment Fan Coolers
A.	Normal Service Water	Normal Service Water
B.	Normal Service Water	Emergency Service Water
C.	Emergency Service Water	Normal Service Water
D.	Emergency Service Water	Emergency Service Water

B is correct. The Containment Fan Coil Units are supplied by normal service water and are not designed for post-accident operation. The Containment Fan Coolers are required for post-accident operation and must be supplied by safety grade service water.
Common 12

Tier 2 Group 1
K/A Importance Rating - RO 3.5

Knowledge of the physical connections and/or cause-effect relationships between the CCS and the following systems: SWS/cooling system.

Reference(s) - SD-169
Proposed References to be provided to applicants during examination - None
Learning Objective - LPCCS3-0, A2
Question Source - New
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).8
Comments -

22. 024 AK1.02 001

Given the following conditions:

- Emergency Boration is required.
- Boric Acid Pump "B" is operating

Which ONE (1) of the following alignments results in the FASTEST reactor power reduction in accordance with AOP-002, "Emergency Boration"?

A. Open both 1CS-283, Boric Acid To Boric Acid Blender FCV-113A and 1CS-155, Make Up To VCT FCV-114A

B. Open both 1CS-283, Boric Acid To Boric Acid Blender FCV-113A and 1CS-156, Make Up To CSIP Suction FCV-113B

C. Open either 1CS-291, Suction From RWST LCV-115B or 1CS-292, Suction From RWST LCV-115D

D. Open 1CS-278, Emergency Boric Acid Addition

First action for emergency boration is to open 1CS-278. This is the most direct method of shutting down the reactor. each of the other methods is an alternative to the first method
Common 57

Tier 1 Group 2
K/A Importance Rating - RO 3.6

Knowledge of the operational implications of the following concepts as they apply to Emergency Boration: Relationship between boron addition and reactor power.

Reference(s) - AOP-002
Proposed References to be provided to applicants during examination - None
Learning Objective - AOP-3.2-2
Question Source - Modified
Question History - AOP-3.2-2 001
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).8
Comments -

23. 025 G2.1.30 002

Given the following conditions:

- The plant was operating with the Reactor Coolant System in a reduced inventory condition, with the "B" RHR train in service.
- RCS level was 85 inches below the reactor vessel flange.
- "B' RHR Pump exhibited signs of cavitation, and RHR Cooling was lost.
- The crew entered AOP-020, Loss of RCS Inventory or Residual Heat Removal while Shutdown.
- The cause of the Loss of Inventory has been corrected.

Which ONE (1) of the following actions is required to restore RHR flow using Train "B" in accordance with AOP-020?

A. Raise CCW flow to Train "B" RHR heat exchanger to ensure adequate heat removal and maintain RCS temperature below 200 degrees F.

B. ✔ Restore RCS inventory and vent the "B" RHR Pump at 190' RAB and 236' RAB in accordance with AOP-020, Attachment 1, RHR Venting.

C. Refill the RCS to greater than 55 inches below the reactor vessel flange, start "B" RHR Pump, and maintain RHR flow less than 3500 GPM.

D. Restore RCS inventory and start "B" RHR Pump at greater than 3500 GPM to sweep voids from the RHR system.

For the reduced inventory conditions provided, the requirement is to stop the running RHR pump and vent the pump prior to restart. This is due to the possibility that air binding of the pump may have occurred.
Common 43

Tier 1 Group 1
K/A Importance Rating - RO 3.9

Conduct of Operations: Ability to locate and operate components, including local controls.

Reference(s) - AOP-020
Proposed References to be provided to applicants during examination - None
Learning Objective - LPAOP3-20, Obj 4
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).10
Comments -

24. 026 AA1.02 001

Given the following conditions:

- The plant is at 80% power.
- A Loss of Component Cooling Water has occurred.
- The crew is performing actions of AOP-014.
- The USCO has directed isolation of the non-essential CCW header to isolate the leak.

Which ONE (1) of the following describes the effect on the plant?

A. Letdown and Charging must be stopped. RCPs may only run for up to 10 minutes due to loss of thermal barrier cooling flow.

B. Letdown and Charging must be stopped. RCPs may only run for up to 10 minutes due to loss of motor oil cooling.

C. Letdown and Charging are unaffected. RCPs may only be run for up to 10 minutes due to loss of thermal barrier cooling flow.

D. Letdown and Charging are unaffected. RCPs may only be run for up to 10 minutes due to loss of motor oil cooling.

B is correct per AOP. Loss of thermal barrier cooling is a concern if seal injection is also lost. Letdown is supplied from the non-essential header. It must be isolated, then charging isolated, if no cooling is available. RCP run time is 10 minutes due to loss of motor cooling
Common 44

Tier 1 Group 1
K/A Importance Rating - RO 3.2

Ability to operate and / or monitor the following as they apply to the Loss of Component Cooling Water: Loads on the CCW system in the control room

Reference(s) - AOP-014
Proposed References to be provided to applicants during examination - None
Learning Objective - LPAOP3-14, Obj 6
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).7
Comments -

25. 026 K1.01 001

With an SI signal present and both Containment Spray pumps in service, the Spray pump suctions are _____ aligned to the Containment Sump upon receipt of a _____ condition.

A. manually; lo-lo RWST level

B. manually; high Containment Sump level

C. ✔ automatically; lo-lo RWST level

D. automatically; high Containment Sump level

Automatic swapover occurs at Lo-Lo RWST level. Containment sump level is going to be high, but it does not provide the actual signal for swapover. This signal automatically actuates.
Common 14

Tier 2 Group 1
K/A Importance Rating - RO 4.2

Knowledge of the physical connections and/or cause-effect relationships between the CSS and the following systems: ECCS.

Reference(s) - SD-112
Proposed References to be provided to applicants during examination - None
Learning Objective - LPCSS3-0, R2d
Question Source - Bank
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).7
Comments -

26. 027 A4.04 001

Given the following conditions:

- The plant is at 50% power.
- ARR Fan S-1A is in operation in Containment.
- The following sequence of events occur:
  - ALB-028-1-4, CNMT BLDG ARR CHAR FILTER TROUBLE, is received
  - ARR Fan S-1A control switch indication is OFF

Which ONE (1) of the following describes the cause of the condition above?

A. High charcoal filter DP.

B. ARR Fan S-1A electrical overload

C. ✓ High charcoal filter temperature

D. Loss of power to ARR Fan S-1A

IAW APP-ALB-28, indication of filter trouble is cused by high temperature. Window 1-5 would alarm if fan overload occurred. High DP would alarm window 1-2
Common 31

Tier 2 Group 2
K/A Importance Rating - RO 2.8

Ability to manually operate and/or monitor in the control room: Filter temperature.

Reference(s) - APP-ALB-28-1-4
Proposed References to be provided to applicants during examination - None
Learning Objective - LPCVS3-0, R3a
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).7
Comments -

27. 027 AK2.03 002

Given the following conditions:

- The unit is in Mode 3 at normal operating pressure.
- Pressurizer Pressure Control is in AUTO.
- Pressurizer Pressure Channel PT-445 fails high.

- PRZ Pressure Channel indications are:
  - PI-444 2025 psig
  - PI-445 2500 psig
  - PI-455 1975 psig
  - PI-456 2025 psig
  - PI-457 1975 psig

Assuming NO operator actions, which of the following describes the position of the PRZ PORVs and Spray Valves for the current plant conditions?

A.
- PRZ PORV PCV-444B closed
- PRZ PORVs PCV-445B and PCV-445A open
- PRZ Spray Valves PCV-444C and PCV-444D open

B.
- PRZ PORV PCV-444B open
- PRZ PORVs PCV-445B and PCV-445A closed
- PRZ Spray Valves PCV-444C and PCV-444D open

C✓
- PRZ PORV PCV-444B closed
- PRZ PORV PCV-445B and PCV-445A closed
- PRZ Spray Valves PCV-444C and PCV-444D closed

D.
- PRZ PORV PCV-444B open
- PRZ PORVs PCV-445B and PCV-445A closed
- PRZ Spray Valves PCV-444C and PCV-444D closed

For pressure less than P-11, (2 of 3 < 2000 psig), all PORVs will receive a close signal. PT-444 inputs to master controller, keeping spray valves closed.

Common 45

Tier 1 Group 1
K/A Importance Rating - RO 2.6

Knowledge of the interrelations between the Pressurizer Pressure Control Malfunctions and the following: Controllers and positioners.

Reference(s) - SD-100.03, Pg 12, 16, 38-39
Proposed References to be provided to applicants during examination - None
Learning Objective - PZRPC-3.0-3
Question Source - Modified
Question History - 2004 NRC RO 32
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).7
Comments -

28. 028 AA2.13 001

Given the following conditions:

- The plant is at 100% power.
- Pressurizer Level indication LT-459, 460, and 461 failed a channel check in accordance with OST-1021, Daily Surveillance Requirements.
- The USCO directs verification of actual pressurizer level using Cold-Calibrated channel LI-462.

Assuming actual pressurizer level is on program, which ONE (1) of the following describes the indication on LI-462 if it is indicating as designed?

A. 40%

B. 44%

C. 54%

D. 60%

A is correct. See graph.
B and C are other cross points on the same graph.
D is the normal hot calibrated level for 100% power.
Common 58

Tier 1 Group 2
K/A Importance Rating - RO 2.9

Ability to determine and interpret the following as they apply to the Pressurizer Level Control Malfunctions: The actual PZR level, given uncompensated level with an appropriate graph.

Reference(s) - Curve H-X-23
Proposed References to be provided to applicants during examination - Curve H-X-23
Learning Objective - LPPZRLC R4
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).7
Comments -

29. 029 EA1.12 001

Given the following conditions:

- An ATWS has occurred.
- Actions of FRP-S.1 are in progress.
- Reactor Trip Breakers indicate CLOSED.
- The RO is inserting control rods.

Which ONE (1) of the following describes ALL of the methods that may be attempted to locally cause control rods to insert?

A. Open Reactor Trip Breakers only.

B. Open Reactor Trip Breakers or one Rod Drive MG Set output breaker.

C. Open Reactor Trip Breakers or both Rod Drive MG Set supply breakers.

D. Open Reactor Trip Breakers, or both Rod Drive MG Set output breakers, or both Rod Drive MG Set supply breakers

In accordance with FRP-S.1, locally operating these controls in the order listed is required. The MG set motor breakers are operated last because they will not immediately deenergize MG sets to drop rods. There is a coastdown time for the MG set
Common 46

Tier 1 Group 1
K/A Importance Rating - RO 4.1

Ability to operate and monitor the following as they apply to a ATWS: M/G set power supply and reactor trip breakers.

Reference(s) - FRP-S.1
Proposed References to be provided to applicants during examination - None
Learning Objective - LPEOP3-15, 3a
Question Source - New
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).10
Comments -

30. 032 AK3.01 001

Given the following conditions:

- A reactor startup is in progress.
- Both Intermediate Range channels indicate approximately 5 E -11 amps.
- Source Range Channel N-31 fails DOWNSCALE.

Which one of the following describes the required operator response and the reason for the response?

A. Continue the reactor startup; with only one source range channel operable; 48 hours is allowed to restore two channels to service.

B. Suspend the reactor startup; source range channels are not required to trip the reactor; however, the source range monitoring functions must be available.

C. Continue the reactor startup; the Intermediate Range Neutron Flux Trip and the Power Range Neutron Flux-Low Trip provide the necessary core protection.

D. Suspend the reactor startup; with only one source range channel operable, the minimum required Source Range High Flux Trip protection is not met.

A Incorrect. Cannot continue to Mode 1 or go above P-6.
B Incorrect. Source Range is required for Rx Trip.
C Incorrect. May not continue, and PR High Flux Low Setpoint is not enabled.

Common 59

Tier 1 Group 2
K/A Importance Rating - RO 3.2

Knowledge of the reasons for the following responses as they apply to the Loss of Source Range Nuclear Instrumentation: Startup termination on source-range loss.

Reference(s) - TS
Proposed References to be provided to applicants during examination - None
Learning Objective - LPNIS3-0, obj 12
Question Source - Bank
Question History - 46445, BVPS-1 2002 NRC
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).10
Comments -

31. 034 K6.02 001

Given the following conditions:

- The plant is in Mode 1.
- Irradiated Fuel movement is being performed in the Spent Fuel Pool in preparation for Refueling.
- Fuel Handling Building area radiation monitor RM-*1FR-3564ASA, fails HIGH and is declared inoperable.
- The crew has determined that all plant equipment is operating as required.

Which ONE (1) of the following describes the effect on the plant and the status of fuel movement in the Spent Fuel Pool?

A. Fuel Handling Building Emergency Exhaust unit E-12 starts. Fuel movement may continue with no additional actions required.

B. Fuel Handling Building Emergency Exhaust unit E-12 starts. Fuel movement may continue ONLY as long as BOTH Control Room Outside Air Intake radiation monitors remain operable

C. Fuel Handling Building Emergency Exhaust unit E-12 must be declared inoperable. Fuel movement must be suspended until Fuel Handling Building Emergency Exhaust unit E-13 is placed in service in the recirculation mode.

D. Fuel Handling Building Emergency Exhaust unit E-12 must be declared inoperable. Fuel movement must be suspended until both trains of Fuel Handling Building Emergency Exhaust are operating in the recirculation mode or restored to operable.

E-12 will auto start on high radiation from 3564ASA. With other equipment operating normally, the opposite train EDG is available to supply the other FHB ventilation train. Therefore, no further actions are required. Control Room ventilation must be operable, but not the reason for the question asked here.

Common 32

Tier 2 Group 2
K/A Importance Rating - RO 2.6

Knowledge of the effect of a loss or malfunction on the following will have on the Fuel Handling System : Radiation monitoring systems.

Reference(s) - TS 3.9.12, 3.3.3.1
Proposed References to be provided to applicants during examination - TS 3.3.3.1, 3.9.12
Learning Objective - LPRMS3-0, Obj 9a
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).13
Comments -

32. 035 A1.02 001

Given the following conditions:

- A Unit startup is in progress with the MSIVs closed.
- The operating crew is preparing to warm up the main steam lines.

Which one of the following actions will cause "A" SG pressure to INCREASE in this plant configuration?

A. Decrease "A" SG PORV controller setpoint in AUTO.

B. Decrease "A" SG PORV controller output in MANUAL.

C. Decrease Steam Dump pressure controller output in STM PRESS mode.

D. Decrease Steam Dump pressure controller setpoint in STM PRESS mode.

A Incorrect. Lowering the setpoint will cause pressure to lower.
C Incorrect. Steam line warmup, condenser not yet in service.
D Incorrect. Steam line warmup, condenser not in service yet.

Common 33

Tier 2 Group 2
K/A Importance Rating - RO 3.5

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the S/GS controls including: S/G pressure.

Reference(s) - OP-126
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LP MSSS3-0 R1A
Question Source - Bank
Question History - 46414, BVPS-1 2002
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).4
Comments -

33. 037 AA2.01 001

Given the following conditions:

- REM-01TV-3534, Condenser Vacuum Pump Effluent radiation monitor, indication is rising.
- Chemistry has been directed to perform CRC-804, Primary to Secondary Leak Rate Monitoring, to quantify the leak rate

Which ONE (1) of the following indications will serve to verify the value of actual primary to secondary leak rate?

A. Condenser Vacuum Pump Effluent Monitor indication and a conversion factor

B. Local surveys of Steam Generator Blowdown Lines

C. Alarm status of Main Steam Line Radiation Monitors RM-01MS-3591 SB, 3592 SB, or 3593 SB

D. Trend on Turbine Building Vent Stack Effluent, RM-1TV-3536-1

Vacuum pump effluent radiation and a conversion factor will help determine actual leak rate. The other methods may identify the actual SG, or verify that there is a leak, but will not quantify it.
Common 60

Tier 1 Group 2
K/A Importance Rating - RO 3.0

Ability to determine and interpret the following as they apply to the Steam Generator Tube Leak: Unusual readings of the monitors; steps needed to verify readings.

Reference(s) - AOP-016
Proposed References to be provided to applicants during examination - None
Learning Objective - LPAOP3-16, Obj 5
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).7
Comments -

34. 039 K3.03 002

Given:

- A Main Steam line break has occurred.
- Steam Generator pressures are:
  - SG A - 900 psig
  - SG B - 750 psig
  - SG C - 910 psig

Under these conditions...

A. the open signal for the AFW flow control valve to SG-C will increase.

B. ✔ AFW will isolate to SG-B following the Main Steam Line Isolation signal.

C. the Turbine Driven AFW pump steam supply from SG-C will be blocked from opening.

D. AFW will isolate to all SGs.

Because SG B is at a pressure 150 psig below the other SGs, when MSLI actuates, AFW will also isolate to the SG with the low pressure. AFW isolation does not occur unless there is a 100 psi DP between 2 SGs when MSLI occurs. The SG with the lower pressure will receive the isolation signal
Common 15

Tier 2 Group 1
K/A Importance Rating - RO 3.2

Knowledge of the effect that a loss or malfunction of the MRSS will have on the following: AFW pumps.

Reference(s) - SD-137
Proposed References to be provided to applicants during examination - None
Learning Objective - LPAFS3-0, Obj 2e and 3
Question Source - Bank
Question History - AFS-R3 003
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).7
Comments -

35. 040 AK3.04 001

The crew is terminating SI in EPP-014, Faulted SG isolation.

Which ONE (1) of the following describes the reason for opening FK-122.1, Charging Flow control valve a minimal amount, prior to isolating the BIT?

A. To prevent damage to the regenerative heat exchanger due to thermal shock.

B. To maintain seal injection flow within analyzed limits by maintaining appropriate backpressure on the seal injection throttle valves.

C. To prevent 'dead-heading' the running CSIP in the case where normal miniflow valves are not available.

D. To establish and maintain stable makeup flow for RCS inventory control.

When the BIT is isolated and normal miniflow valves unavailable, there would be no Charging flow path unless FK-122 was cracked open. The RHX is designed for high Delta T, and maintaining backpressure on seal injection is accomplished with HC-182. Inventory control is required via FK 122 after isolating BIT, but not the reason for opening under these conditions
Common 47

Tier 1 Group 1
K/A Importance Rating - RO 4.5

Knowledge of the reasons for the following responses as they apply to the Steam Line Rupture: Actions contained in EOPs for steam line rupture.

Reference(s) - EPP-014 Step 18 Note
Proposed References to be provided to applicants during examination - None
Learning Objective - LPEOP3-9, Obj 2
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).10
Comments -

36. 041 G2.4.50 001

Given the following conditions:

- The plant is operating at 100% power when the following alarm is received:
  - ALB-020-2-2, TURBINE RUNBACK OPERATIVE
- RCS Tavg has risen 9 degrees F and continues to rise.
- Steam Dumps indicate CLOSED.

Which ONE (1) of the following describes an indication that will verify a runback is in progress, and what action is required for operation of the steam dumps?

A. Runback is verified by control rod insertion; Observe steam dumps opening in automatic when the C-7A bistable illuminates

B. Runback is verified by Turbine First Stage pressure reduction on PI-446 and 447; Observe steam dumps opening in automatic when the C-7A bistable illuminates.

C. Runback is verified by control rod insertion; Open steam dumps manually by placing the steam dump header pressure controller, PK-464.1, in MANUAL with the steam dump mode selector in TAVG

D. Runback is verified by Turbine First Stage pressure reduction on PI-446 and 447; Open steam dumps manually by placing the steam dump header pressure controller, PK-464.1, in MANUAL with the steam dump mode selector in STEAM PRESS.

APP-ALB-020-2-2 and AOP-015 indicate that observation of FSP will confirm the runback. Operation of rods only confirms a Tave/Tref mismatch. 9 degree difference should have started opening steam dumps already, and C-7A will not actually open the dumps, just arm them. Also, for these indications, C-7A should already be lit
Common 34

Tier 2 Group 2
K/A Importance Rating - RO 3.3

Emergency Procedures / Plan Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.

Reference(s) - APP-ALB-020-2-2, AOP-015
Proposed References to be provided to applicants during examination - None
Learning Objective - LPAOP3-15 Obj 4
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).7
Comments -

37. 054 AK1.02 002

Given the following conditions:

- FRP-H.1, "Response to a Loss of Secondary Heat Sink," is being implemented.
- RCS bleed and feed has been initiated when Auxiliary Feedwater (AFW) capability is restored.
- All SGs are completely dry and depressurized.

Which of the following describes the strategy used to re-establish feed under these conditions?

A. Feed ONLY one (1) SG to ensure RCS cooldown rates are established within Technical Specification limits

B. Feed ONLY one (1) SG to minimize thermal shock to SG components

C. Feed ALL SGs to establish subcooled conditions in the RCS as soon as possible

D. Feed ALL SGs to allow termination of RCS bleed and feed as soon as possible

One SG is fed at minimal rate to minimize thermal shock and potential damage to the SG tubesheet when SGs are hot and dry. After feeding a minimal rate, flow may be raised later. One at a time to determine if tube leakage is occurring
Common 48

Tier 1 Group 1
K/A Importance Rating - RO 3.6

Knowledge of the operational implications of the following concepts as they apply to Loss of Main Feedwater (MFW): Effects of feedwater introduction on dry S/G.

Reference(s) - FRP-H.1 Pg 47
Proposed References to be provided to applicants during examination - NONE
Learning Objective - 3.11-4
Question Source - Bank
Question History - 2004 NRC Exam RO 6
Question Cognitive Level - LOWER
10 CFR Part 55 Content - 41(b).10
Comments -

38. 055 EA2.06 001

Given the following conditions:

- A Station Blackout has occurred.
- The crew is performing actions of EPP-001, Loss of Power to 1A-SA and 1B-SB Buses.
- The USCO has directed performance of Attachment 1 to restore off-site power to emergency buses.
- The lockout relay is tripped on the Startup Xfrmr. A

Which ONE (1) of the following describes the requirement for restoring power?

A. Off-Site power may be restored without resetting the Startup Xfrmr lockout relay.

B. ✓ The Startup Xfrmr lockout must be reset after receiving permission from the Load Dispatcher.

C. The Startup Xfrmr must be isolated from the grid prior to restoration of power in accordance with Attachment 1.

D. Switchyard breaker 52-2 or 52-3 must be closed in order to reset the Startup Xfrmr lockout relay.

When the reason for the lockout is known and the System Dispatcher authorizes reset of the lockout after ensuring the fault is cleared, then it may be reset. Offsite power comes through the startup transformer, so lockouts must be cleared to close breakers. If the transformer was isolated, then off-site power could not be supplied
Common 49

Tier 1 Group 1
K/A Importance Rating - RO 3.7

Ability to determine or interpret the following as they apply to a Station Blackout: Faults and lockouts that must be cleared prior to re- energizing buses.

Reference(s) - EPP-1, Attachment 1
Proposed References to be provided to applicants during examination - None
Learning Objective - LPEOP3-7, Obj 6
Question Source - New
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).10
Comments -

39. 056 AA2.76 001

Given the following conditions:

- A Loss of Off-Site power has occurred.
- All equipment is operating as designed.
- Prior to the trip, 'A' Reactor Water Makeup Pump was running.

Which ONE (1) of the following describes the operation of "A" Reactor Water Makeup Pump during this event?

"A" RW Makeup Pump...

A. must be reset by placing the control switch in OFF prior to restarting.

B. will remain running because it was sequenced back on after the EDG output breaker closed.

C. will remain running because it did not receive a load shed signal on the loss of off-site power.

D. will NOT be running unless bus 1A1 has been reenergized.

1A24 and 1B24 energized from safety busses. They must be manually reenergized after LOOP sequencer actuation. Pumps will operate same as prior to trip and LOOP once their bus is reenergized
Common 50

Tier 1 Group 1
K/A Importance Rating - RO 2.6

Ability to determine and interpret the following as they apply to the Loss of Offsite Power: Reactor makeup water pump (running).

Reference(s) - OP-102, LP-480V3-0
Proposed References to be provided to applicants during examination - None
Learning Objective - LP480V3-0, Obj A3
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).7
Comments -

40. 056 G2.1.30 002

Given the following conditions:

- Failure of several cards in the Condensate Booster Pump controller cabinet has resulted in loss of all speed control of the 'B' Condensate Booster Pump from the MCB.
- Electrical power has been removed from the VSF coupling controller.
- You have been sent to take local manual control of the 'B' CBP scoop tube actuator.

Which ONE (1) of the following describes how to take local control of the "B" CBP scoop tube actuator?

A. Momentarily position the selector lever to AUTOMATIC then release it to NEUTRAL. Then use the RAISE and/or LOWER pushbuttons on the actuator to adjust CBP speed.

B. Position the selector lever to MANUAL and hold it in MANUAL. Then use the RAISE and/or LOWER pushbuttons on the CBP actuator to adjust CBP speed.

C.✔ Hold the selector lever to MANUAL while turning the hand crank to engage, then release to NEUTRAL. Then use the actuator hand crank to adjust CBP speed.

D. Position the selector lever to MANUAL and hold it in MANUAL. Then use the actuator hand crank to adjust CBP speed while holding the lever in MANUAL.

Must place lever in manual until it is engaged, then operate in same manner as MOV.
There are no PBs asociated with this unit
Common 35

Tier 2 Group 2
K/A Importance Rating - RO 3.9

Conduct of Operations: Ability to locate and operate components, including local controls.

Reference(s) - OP-134, section 8.12
Proposed References to be provided to applicants during examination - None
Learning Objective - LPCFW3-0, Obj 4.c
Question Source - Modified Bank
Question History - CFW-A5 001
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).4, 10
Comments -

41. 057 AA2.19 001

The following conditions exist:

- A plant startup is in progress.
- Reactor power is currently 7%.
- A loss of Instrument Bus SII occurs.

Which ONE (1) of the following describes the effect on the plant?

A. Reactor trips due to loss of one Source Range instrument.

B. Source Range instruments energize prematurely.

C. Reactor trips due to loss of one Intermediate Range instrument.

D. Intermediate Range high flux reactor trip will NOT actuate if required.

Source Range is already deenergized for this event. 1 out of 2 logic required for IR trip. Trip bistables deenergize, causing a reactor trip on IR high flux. SR would not energize prematurely, because the remaining IR is indicating properly. IR high flux does trip.
Common 51

Tier 1 Group 1
K/A Importance Rating - RO 4.0

Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: The plant automatic actions that will take place on loss of AC Instrument bus

Reference(s) - AOP-024
Proposed References to be provided to applicants during examination - None
Learning Objective - LPAOP3-24 Obj 3
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).7
Comments -

42. 059 AK3.01 001

Given the following conditions:

- REM-01SW-3500A, SW from WPB to Circ Water radiation monitor is in alarm.
- Chemistry sample verifies high activity in the piping monitored by REM-01SW-3500A

Which ONE (1) of the following describes the action required, and the reason for that action, in accordance with AOP-005, Radiation Monitoring System?

A. Isolate Service Water to and from the WPB to determine the location of the leak. Place both trains of ESW in service to ensure cooling of essential plant equipment.

B. Direct the Radwaste Operator to initiate isolation of individual components to locate the leak, and isolate Service Water to and from the WPB.

C. Isolate Service Water to and from the WPB to determine the location of the leak. Place the running train of ESW in standby and shut down the standby train of ESW.

D. Initiate a plant shutdown in accordance with GP-006. When the reactor is tripped, isolate Service Water to and from the WPB to minimize any radiological releases.

AOP-005 directs a choice of actions, depending on the rad monitor in alarm. For this monitor, WPB components will be checked for leaks and NSW stopped. Would not place ESW in service or change state because ESW does not supply WPB components. Those actions are for a different rad monitor. Shutdown not required for a leak in this location of the unit
Common 61

Tier 1 Group 2
K/A Importance Rating - RO 3.5

Knowledge of the reasons for the following responses as they apply to the Accidental Liquid Radwaste Release: Termination of a release of radioactive liquid.

Reference(s) - AOP-005, AOP-008
Proposed References to be provided to applicants during examination - None
Learning Objective - LPAOP3-5 Obj 5
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).10
Comments -

43. 059 K4.17 001

Given the following conditions:

- A reactor trip occurred from 35% power.
- The crew is performing EPP-004, Reactor Trip Response.
- All equipment has responded as designed.
- RCS Tavg is 558 degrees F.
- The BOP determines that an increase in Main Feedwater flow is desired to maintain SG levels at 50% NR.

Which ONE of the following describes the method used to increase Main Feedwater flow?

A. Raising the automatic setpoint of the Main Feedwater Regulating Valve controllers

B. Manually adjusting the Main Feedwater Regulating Valve position

C. Raising the automatic setpoint of the Feed Reg Bypass valve controllers

D. Manually adjusting the Feed Reg Bypass valve position

Above the setpoint for P-4 and Low Tave, the FRV Bypass valves will be operated to control feed flow, unless AFW is in operation. Main Feed Reg Valves will be closed.
Common 16

Tier 2 Group 1
K/A Importance Rating - RO 2.5

Knowledge of MFW design feature(s) and/or interlock(s) which provide for the following: Increased feedwater flow following a reactor trip.

Reference(s) - EPP-004
Proposed References to be provided to applicants during examination - None
Learning Objective -
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).4, 7, 10
Comments -

44. 061 K2.02 001

Given the following conditions:

- The plant has experienced a loss of offsite power.
- Both EDGs are running.
- All three AFW pumps are running with all six FCVs throttled to 20%.

Which ONE (1) of the following describes how a loss of the B EDG would affect the AFW system?

A. ✔ Loss of the B MDAFW pump only.

B. Loss of the B MDAFW pump and the TDAFW pump only.

C. Loss of the B MDAFW pump and power to Main Steam C to Aux FW turbine, 1MS-72 SB.

D. Loss of the B MDAFW pump and a full open signal to all six FCVs.

B EDG supplies B MDAFW when it is carrying bus 1B-SB. TDAFW and steam supply would be lost on loss of DC power. All 6 FCVs would fail on loss of vital instrument bus.
Common 17

Tier 2 Group 1
K/A Importance Rating - RO 3.7

Knowledge of bus power supplies to the following: AFW electric driven pumps

Reference(s) - SD-137
Proposed References to be provided to applicants during examination - None
Learning Objective -
Question Source - Bank
Question History - AFS-R2 003
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).7
Comments -

45. 062 A1.03 001

Given the following conditions:

- The plant is at 100% power.
- Recovery from a Loss of Instrument Bus 1DP-1A-S1 is in progress.
- The crew has de-energized the associated Process Instrumentation Cabinet in preparation for energizing Instrument Bus 1DP-1A-S1.
- The crew is evaluating bistable status prior to energizing the bus.

Which ONE (1) of the following describes the reason for checking bistable status?

A. When the Instrument Bus is energized, a reactor trip may occur due to the associated Process Instrumentation Cabinet being de-energized, if another bistable of the same parameter is tripped.

B. ✓ When the Process Instrumentation Cabinet is energized after the Instrument Bus, 'energize to actuate' bistables may experience a momentary inadvertent trip. Checking other bistables ensures an ESF actuation will not occur.

C. Bistables are checked to ensure that each parameter for Process or Protection goes to its required state when the Instrument Bus and Process Instrumentation Cabinet is energized.

D. Bistables are checked to ensure that all lights are out, verifying that the Process Instrumentation Cabinet normal and alternate supply breakers are open prior to reenergizing the Instrument Bus.

Directly from procedure, check bistables to ensure inadvertent actuation does not occur. A is incorrect because the concern is deenergize to actuate bistables. This would have caused a trip already. Bistables are checked for required state, but not prior to energizing a PIC. Also, breakers are checked for deenergizing PIC, not bistables

Common 18

Tier 2 Group 1
K/A Importance Rating - RO 2.5

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ac distribution system controls including: Effect on instrumentation and controls of switching power supplies.

Reference(s) - OP-156.02
Proposed References to be provided to applicants during examination - None
Learning Objective - LPAOP3-24 Obj 4c
Question Source - New
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).10
Comments -

46. 062 A2.03 001

Given the following conditions:

- A loss of Instrument Bus Inverter SI has occurred.
- The crew is performing action contained in AOP-024, Loss of Uninterruptible Power Supply.
- Transfer of Bus SI to the alternate supply is required in accordance with OP-156.02, AC Electrical Distribution.

Which ONE (1) of the following describes how improper sequencing of the Instrument Bus is prevented for this transfer?

A. The inverter will not allow transfer to the alternate supply if it is out of synch with the normal supply

B. The bus must be deenergized and a kirk key used for the alternate supply breaker prior to reenergization of the bus

C. The bus transfer switch is a 'break before make' contactor that will not allow two power sources to simultaneously supply the bus

D. The normal and alternate supply breakers are electrically interlocked so that only one may be closed at a time

In accordance with OP-156.02, B is correct. A is incorrect because it describes an automatic transfer. These instrument busses do not have a maintenance, or transfer switch. Two interlocked breakers supply the bus. The interlock is mechanical, not electrical
Common 19

Tier 2 Group 1
K/A Importance Rating - RO 2.9

Ability to (a) predict the impacts of the following malfunctions or operations on the ac distribution system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Consequences of improper sequencing when transferring to or from an inverter.

Reference(s) - OP-156.02, Pg 125-130
Proposed References to be provided to applicants during examination - None
Learning Objective - LPAOP3-24 Obj 5
Question Source - New
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).7, 10
Comments -

47. 063 K2.01 002

Following a loss of Emergency DC bus 1B-SB, which of the following components would have power available?

A. 1MS-72 SB, Main Steam C to Aux FW Turbine

B. Emergency Load Sequencer 1B-SB

C. TDAFW Pump control panel

D. ✔ RM-1CR-3561B-SB, CNMT Ventilation Isolation Radiation Monitor

A, B,and C all have power from DC Bus 1B-SB. RM 3561B-SB gets power from DC Bus 3B-SB
Common 20

Tier 2 Group 1
K/A Importance Rating - RO 2.9

Knowledge of bus power supplies to the following: Major dc loads.

Reference(s) -
Proposed References to be provided to applicants during examination - NONE
Learning Objective -
Question Source - Bank
Question History - 2002 Audit Exam RO HNP 081
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).7
Comments -

48. 064 A2.16 001

Given the following conditions:

- The unit is operating at 25% power.
- Emergency Diesel Generator (EDG) A-SA is loaded to 3800 KW while operating in parallel with the grid during the performance of OST-1013, "A-SA Emergency Diesel Generator Operation."
- A loss of off-site power occurs.

Which ONE (1) of the following describes the operation of EDG A-SA output breaker and the action required to initiate load sequencing?

A. Remains closed with EDG A-SA load less than 3800 KW. Trip the EDG to initiate load sequencing.

B. Remains closed with EDG A-SA load greater than 3800 KW. Trip the EDG to initiate load sequencing.

C. Opens and then recloses to allow the sequencer to load. Verify automatic load sequencing occurs.

D. Opens and remains open. Reset and restart the EDG to initiate automatic load sequencing.

DG Sequencer will initiate a trip of the DG output breaker when off-site power is lost. Once the breaker is open, the sequencer starts its process for reclosing the breaker and placing appropriate loads on the bus
Common 21

Tier 2 Group 1
K/A Importance Rating - RO 3.3

Ability to (a) predict the impacts of the following malfunctions or operations on the ED/G system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of Offsite power during full load testing of EDG

Reference(s) - OP-155
Proposed References to be provided to applicants during examination - NONE
Learning Objective -
Question Source - Bank
Question History - 2004 Audit RO 04 051
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).7
Comments -

49. 064 A3.05 001

Given the following conditions:

- EDG 1A-SA is operating in parallel with its associated bus with voltage and frequency control in AUTO.
- Current parameters are as follows:

  -Voltage and current are normal.
  -The EDG is loaded to 3.2 MW
  -Reactive load is 0.8 MVAR

If a 150 HP motor is started on the bus, which ONE (1) of the following describes the EDG parameters from steady state to steady state operation?

A. Voltage and frequency are reduced

B. Voltage is reduced, frequency remains the same

C. MW output and MVAR output are raised

D. MW output is raised, MVAR output remains the same.

C is correct. In parallel, voltage and frequency will stay constant from steady state to steady state. Voltage will remain constant due to automatic excitation, and frequency will remain the same because the EDG is locked into the grid at 60 Hz. When load is added, MW output must increase for a constant frequency, and the increase in excitation shows itself in a higher VARS OUT
Common 22

Tier 2 Group 1
K/A Importance Rating - RO 2.8

Ability to monitor automatic operation of the ED/G system, including: Operation of the governor control of frequency and voltage control in parallel operation.

Reference(s) - Electrical Theory
Proposed References to be provided to applicants during examination - NONE
Learning Objective -
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).5
Comments -

50. 065 AA2.06 001

Given the following conditions:

- The plant is at 80% power.
- A Loss of Instrument Air has occurred.
- Instrument Air pressure is 80 psig and lowering slowly.
- The crew has entered AOP-017, Loss of Instrument Air.

Which ONE (1) of the following describes the plant conditions that will require an immediate reactor trip?

A. Loss of Instrument Air pressure to Containment

B. Any SG level below 30% with loss of feedwater control

C. Loss of VCT makeup capability with VCT level below 20%

D. Loss of any 2 Instrument Air Compressors

B is correct. Any SG below 30% requires a reactor trip. Containment air may be isolated if a leak is in that area. VCT makeup may be lost, and a subsequent shutdown may be required, but not a reactor trip. Loss of 2 IACs does not require a trip unless air pressure cannot be held above 35 psig or to allow for Feedwater control
Common 52

Tier 1 Group 1
K/A Importance Rating - RO 3.6

Ability to determine and interpret the following as they apply to the Loss of Instrument Air: When to trip reactor if instrument air pressure is de-creasing.

Reference(s) - AOP-017
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LPAOP3-17, Obj 4
Question Source - NEW
Question History -
Question Cognitive Level - LOWER
10 CFR Part 55 Content - 41(b).4
Comments -

51. 069 AK3.01 001

Given the following conditions:

- A LOCA has occurred.
- Due to several component failures, the crew was required to perform EPP-012, Loss of Emergency Coolant Recirculation.
- The Crew is now entering FRP-J.1, Response to High Containment Pressure.
- Containment pressure is 45 psig and STABLE.
- BOTH Containment Spray Pumps are OFF.
- RWST Level is 2%.

Which ONE (1) of the following describes the actions required and the reason for the current strategy for reducing Containment Pressure?

A. START both Containment Spray Pumps in accordance with FRP-J.1. RED CSF conditions take precedence over EPP-012 actions.

B. OPERATE Containment Spray Pumps in accordance with the guidance in EPP-012, as directed by FRP-J.1. Conservation of RWST inventory takes precedence over Containment heat removal concerns.

C. Perform ONLY the FRP-J.1 actions that do NOT conflict with or undo the action taken in EPP-012. Two Containment Fan Coolers will provide adequate depressurization to meet the Containment Safety Function requirements.

D. Do NOT perform actions of FRP-J.1 until the RWST EMPTY alarm is clear and Containment Spray Pumps may be restarted. Ensure all other automatic actions related to containment isolation have occurred as required to ensure maintenance of minimum safety function.

A. Incorrect. FRP-J.1 Step 3 says operate IAW EPP-012.

B. Correct.

C. Incorrect. First part is true, but 2 Containment Coolers will NOT meet safety function.

D. Incorrect. No restriction on RWST level.

Common 62

Tier 1 Group 2
K/A Importance Rating - RO 3.8

Knowledge of the reasons for the following responses as they apply to the Loss of Containment Integrity: Guidance contained in EOP for loss of containment integrity.

Reference(s) - FRP-J.1 Background
Proposed References to be provided to applicants during examination - None
Learning Objective - LPEOP3-13 OBJ 4
Question Source - Bank
Question History - Callaway 2005
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).10
Comments -

52. 072 K1.02 001

Which ONE (1) of the following will automatically occur when a high alarm on RM-1CR-3561A-D, Containment Ventilation Isolation Area Radiation Monitors, is received?

A. Containment Vacuum Relief Isolation Valves receive a CLOSE signal.

B. Airborne Radioactivity Removal (ARR) fans S-1A and B receive a TRIP signal.

C. Containment Isolation Phase "A" isolation valves receive a CLOSE signal.

D. Containment Fan Coil Units AH-37, 38, and 39 receive a TRIP signal.

3561A-D will initiate a Containment Ventilation Isolation signal. Vacuum Relief valves will close. ARR fans trip on high temperature. Phase A trips on high ctmt pressure or SI actuation. AH-37-39 receive signal from sequencer, not from rad monitors
Common 37

Tier 2 Group 2
K/A Importance Rating - RO 3.5

Knowledge of the physical connections and/or cause-effect relationships between the ARM system and the following systems: Containment Isolation.

Reference(s) - OMM-004
Proposed References to be provided to applicants during examination - None
Learning Objective - LPCVS3-0 R1
Question Source - New
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).7
Comments -

53. 073 K4.01 001

Which ONE (1) of the following describes the automatic action that occurs in response to a high radiation (red) alarm on the TB drain monitor?

A. ✔ 1MD-285, Indus Waste to the Oil Separator, SHUTS; TB condensate pump area sump pumps TRIP

B. 1SWT-420, Indus Waste to LC Hold-Up Tank Isol Vlv, SHUTS; TB condensate pump area sump pumps TRIP

C. 1SWT-420, Indus Waste to LC Hold-Up Tank Isol Vlv, SHUTS; industrial waste sump pumps TRIP

D. 1MD-285, Indus Waste to the Oil Separator, SHUTS; tank area drain transfer pumps TRIP

MD-285 will close and TB sump pumps will stop. Different rad monitors perform the other functions
Common 23

Tier 2 Group 1
K/A Importance Rating - RO 4.0

Knowledge of PRM system design feature(s) and/or interlocks which provide for the following: Release termination when radiation exceeds setpoint.

Reference(s) - AOP-005
Proposed References to be provided to applicants during examination - None
Learning Objective - LPRMS3-0 9a
Question Source - Bank
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).7, 11
Comments -

54. 075 A4.01 002

Given the following conditions:

- The plant is at 100 percent power with the following SW alignment:
  - "A" and "B" Emergency Service Water Pumps are off.
  - "A" & "B" Emergency Service Water header supplied from Normal Service Water.
  - "A" Normal Service Water Pump running.
  - "B" Normal Service Water Pump off.
- Power is lost to Bus 1A-SA.
- The A EDG starts, re-energizes the bus, and sequences loads as designed.

Which ONE (1) of the following describes the effect on Service Water system alignment?

A. "A" NSW Pump remains as the only pump in service since Bus 1A remained energized.

B. The B NSW pump is now running with the same alignment.

C.✔ The A ESW pump is now running supplying the A ESW header.

D. The B ESW pump started on low pressure and is supplying the B ESW header.

A NSW will be running, but not the only pump. A ESW will start on the LOOP. B NSW will not receive a start signal for this event, and B ESW does not start because there was no LOOP on Train B
Common 38

Tier 2 Group 2
K/A Importance Rating - RO 3.2

Ability to manually operate and/or monitor in the control room: Emergency/essential SWS pumps.

Reference(s) - ESW LP 3.0/5.0
Proposed References to be provided to applicants during examination - None
Learning Objective - LP ESWS3-0 R7a
Question Source - Bank
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).4, 7
Comments -

55. 076 A3.02 002

Given the following conditions:

A reactor trip and safety injection actuation have occurred.

Which one of the following sets of components are being supplied by the Emergency Service Water system?

A. Containment fan coolers (AH-1, 2, 3, 4)
CSIP oil coolers
RHR heat exchangers

B. RCP bearing oil coolers
Diesel Generator coolers
CCW heat exchangers

C.✔ AFW pump emergency makeup
CSIP oil coolers
CCW heat exchangers

D. Containment fan coil units (AH-37, 38, 39),
AFW pump emergency makeup,
Diesel Generator coolers.

A is wrong. RHR HX supplied by CCW
B is wrong. RCP bearings supplied by CCW
D is wrong. AH-37-39 supplied by NSW
Common 25

Tier 2 Group 1
K/A Importance Rating - RO 3.7

Ability to monitor automatic operation of the SWS, including: Emergency heat loads.

Reference(s) - SD-139
Proposed References to be provided to applicants during examination - None
Learning Objective - LP ESWS3-0 A2
Question Source - Bank
Question History - ESW-A2-002
Question Cognitive Level -
10 CFR Part 55 Content - 41(b).8
Comments -

56. 076 AA2.02 001

Given the following conditions:

- A rapid load reduction from 100% power to 65% power was performed approximately 3 hours ago.
- The RCS Gross Failed Fuel detector is in alarm.
- Charging Pump Room Fuel Breach Area Radiation Monitors are in alarm.
- Chemistry confirms RCS activity exceeds Technical Specification limits.

The USCO directs a plant shutdown be performed.

Which ONE (1) of the following actions is directed to limit the release of radioactivity in the event of a subsequent SGTR?

A. MSIVs are closed.

B. All SG PORV setpoints are raised.

C. RCS is cooled down below 500°F.

D. Maximum number of Condensate Polishing Demineralizers are placed in service.

A Incorrect. Closing MSIVs would contribute to rad release through SG PORVs and Safeties if cooldown and depressurization was not performed in a timely manner.
B Incorrect. PORV setpoints are normally raised in SGTR procedure.
D Incorrect. Condensate polishing would help clean the secondary plant but not an action performed in accordance with the ARPs.

Common 63

Tier 1 Group 2
K/A Importance Rating - RO 2.8

Ability to determine and interpret the following as they apply to the High Reactor Coolant Activity: Corrective actions required for high fission product activity in RCS.

Reference(s) - TS, AOP-032 background
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LP AOP32 Obj 2
Question Source - Bank
Question History - 18813, IP3 2003 NRC
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).5, 10
Comments -

57. 078 K1.05 001

Which one of the following statements correctly describes how to locally shut the MSIVs from outside the Control Room?

A. On the 236 level in the RAB, isolate air by closing 1IA-814, then remove cap and open drain valve 1IA-1876

B. On the 236 level in the RAB, remove the cap and open the drain for valve on 1IA-1876 then isolate air by closing 1IA-814.

C. ✔ On the 261 level in the RAB, isolate air by closing 1IA-814, then remove cap and open drain valve 1IA-1876

D. On the 261 level in the RAB, remove the cap and open the drain for valve on 1IA-1876 then isolate air by closing 1IA-814.

IAW EPP_014, procedure to locally perform this action is to isolate IA and then vent the line
Common 26

Tier 2 Group 1
K/A Importance Rating - RO 3.4

Knowledge of the physical connections and/or cause-effect relationships between the IAS and the following systems: MSIV air.

Reference(s) - EPP-014
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LP MSSS3-0 A5
Question Source - Bank
Question History - Systems Bank MSSS-3.0-A5 004
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).4, 10
Comments -

58. 103 A1.01 001

Given the following conditions:

- The plant is in Mode 5.
- Containment Pre-Entry Purge Makeup and Exhaust is in operation.
- The Personnel Airlock and Equipment Hatch are closed.
- The Containment Pre-Entry Purge Exhaust Isolation valve is inadvertently closed.
- NO other components reposition.

Which ONE (1) of the following describes the containment parameter affected by this failure and how the parameter is affected?

A. Pressure RISES

B. Temperature LOWERS

C. Radiation Level RISES

D. Humidity Level LOWERS

A. Correct.
B. B. Incorrect. Temperature will remain constant since the Purge system does not provide a cooling function
C. C. Incorrect. Radiation levels would only rise to cause a purge isolation, they would not rise because of an isolation
D. Incorrect. Humidity is a function of the containment temperature and dewpoint, which are unaffected by purge control operation.
Common 28

Tier 2 Group 1
K/A Importance Rating - RO 3.7

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the containment system controls including: Containment pressure, temperature, and humidity.

Reference(s) - SD-168
Proposed References to be provided to applicants during examination - None
Learning Objective - LP CVS3-0 A2
Question Source - Bank
Question History - SONGS 10/2005 NRC
Question Cognitive Level -
10 CFR Part 55 Content - 41(b).9
Comments -

59. 103 A4.04 001

Given the following conditions:

- A LOCA has occurred.
- RCS pressure is 300 psig and stable.
- Containment pressure is 16 psig and lowering slowly.
- All equipment is operating as designed.
- The crew is performing actions contained in PATH-1, preparing to reset ESF Actuation signals.

Which ONE (1) of the following describes the conditions required to be met, if any, to reset Containment Isolation Phase A and B?

A. Phase A and Phase B may be reset manually without additional conditions.

B. Phase A may be reset manually at this time. Containment Spray must be reset prior to resetting Phase B.

C. Phase B will NOT reset until Phase A is reset. Phase A may be reset at this time.

D. Phase A will NOT reset until Safety Injection is reset. Phase B will NOT reset until containment pressure is below the actuation setpoint.

Manual resets for CIA and CIB may be performed even with actuating signal present.
Common 27

Tier 2 Group 1
K/A Importance Rating - RO 3.5

Ability to manually operate and/or monitor in the control room: Phase A and phase B resets.

Reference(s) - SD-103
Proposed References to be provided to applicants during examination - None
Learning Objective - LP ESFAS3-0 OBJ 2
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).7, 9
Comments -

60. E03 EK3.4 001

Which ONE (1) of the following describes the preferred method of operating RCPs and the reason during performance of EPP-009, Post LOCA Cooldown and Depressurization?

A. Starting any RCP is undesirable because starting an RCP during Natural Circulation may cause a SG safety valve to lift.

B. Starting one RCP is desirable to provide pressurizer spray flow and mix the RCS.

C. Starting any RCP is undesirable because the heat input will delay RCS cooldown.

D. Starting 2 or more RCPs is desirable because it collapses RCS voids and allows true measurement of RCS inventory.

A. Incorrect. SG SV may lift but not a reason to keep RCPs off

B. Correct

C. Incorrect. Not an event where heat input is a consideration

D.Incorrect. Only 1 RCP required to perform these functions

Common 64

Tier 1 Group 2
K/A Importance Rating - RO 3.5

Knowledge of the reasons for the following responses as they apply to the (LOCA Cooldown and Depressurization) RO or SRO function as a within the control room team as appropriate to the assigned position, in such a way that procedures are adhered to and the limitations in the facilities license and amendments are not violated.

Reference(s) - EPP-009 Background
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LPEOP3-5, 3B
Question Source - Bank
Question History - Robinson 2002 NRC 95
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).10
Comments -

61. E04 EK3.1 001

Given the following conditions:

- A LOCA outside containment has occurred.
- The crew is performing the actions in EPP-013, LOCA Outside Containment.

Which ONE of the following indications is used to determine if the leak has been isolated in accordance with EPP-013?

A. RCS pressure, because SI flow will repressurize the RCS with the break isolated.

B. Pressurizer level, because with the break isolated, RCS inventory will rapidly rise.

C. RVLIS indication, because as RCS inventory and pressure rise, vessel head and plenum voiding will immediately be reduced.

D. Safety injection flow, because when the break is isolated, it is the first parameter that will change.

A-Correct.
B-Incorrect. RCS inventory will increase, but may not immedaitely show up on PRZ level
C-Incorrect. RVLIS may indicate 100% at the start, so may not provide indication of isolation at all
D-Incorrect. SI Flow is a good confirmatory indication when RCS pressure rises, because it will be reduced, but RCS pressure rise is the only immediate indication
Common 53
Tier 1 / Group 1
K/A Importance Rating - RO 3.2

Knowledge of the reasons for the following responses as they apply to the (LOCA Outside Containment) Facility operating characteristics during transient conditions, including coolant chemistry and the effects of temperature, pressure, and reactivity changes and operating limitations and reasons for these operating characteristics.

Reference(s) - EPP-13 and basis
Proposed References to be provided to applicants during examination - None
Learning Objective -
Question Source - Modified
Question History -
Question Cognitive Level - Comprehension
10 CFR Part 55 Content - 41(b).5
Comments -

62. E05 EK2.1 001

Given the following conditions:

- A Loss of Heat Sink has occurred.
- The crew is establishing RCS 'Bleed and Feed' in accordance with FRP-H.1, Loss of Secondary Heat Sink.
- The RO opens one PRZ PORV. He reports that NEITHER of the other two PORVs will open.

Which ONE (1) of the following describes the consequences of the PORV failures?

A. A Red Path on the Core Cooling CSF will develop due to loss of RCS Inventory with no available makeup.

B. RCS 'Feed and Bleed' cooling must be established to ensure sufficient SI flow at the operable PORV setpoint.

C. The RCS may not depressurize quickly enough to ensure sufficient SI flow to provide RCS heat removal, and other RCS openings may have to be established.

D. 'Bleed and Feed' cooling of the RCS must be terminated and secondary depressurization to inject Condensate pump flow must be immediately initiated.

A. Incorrect. Although a red condition on Core Cooling may eventually occur, there is available makeup with HHSI
B. Incorrect. Bleed and Feed is preferable, because SI flow may NOT be adequate at the PORV setpoint
C. Correct.
D. Incorrect. Action to align condensate pumps is already taken, and not as a contingency to Bleed and Feed

Common 54

Tier 1 Group 1
K/A Importance Rating - RO 3.7

Knowledge of the interrelations between the (Loss of Secondary Heat Sink) and the following: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Reference(s) - FRP-H.1 and Background doc
Proposed References to be provided to applicants during examination - None
Learning Objective - LP EOP3-11 4D
Question Source - Bank
Question History - 2002 BVPS-1
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).10
Comments -

63. E09 EA1.3 001

Given the following conditions:

- A MANUAL reactor trip was initiated due to Component Cooling Water problems.
- All RCP's are stopped.
- The crew has transitioned to EPP-004, REACTOR TRIP RESPONSE.

Which ONE (1) of the following pairs of parameters is indicative that natural circulation cooling is occurring?

A. SG pressure stable and CET's decreasing.

B. SG pressure stable and Thot increasing.

C. SG pressure increasing and RCS subcooling decreasing.

D. SG pressure increasing and Tcold trending to saturation for SG pressure.

B Incorrect. Thot should not be increasing.
C Incorrect. Both are contrary indicators.
D Incorrect. Both are contrary indictors.

Common 65

Tier 1 Group 2
K/A Importance Rating - RO 3.5

Ability to operate and / or monitor the following as they apply to the (Natural Circulation Operations) Desired operating results during abnormal and emergency situations.

Reference(s) - EPP-004
Proposed References to be provided to applicants during examination - NONE
Learning Objective -
Question Source - Bank
Question History - 18708, IP3 2003
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).5
Comments -

64. E11 EK2.1 001

Given the following conditions:

- A LOCA has occurred.
- Multiple failures have resulted in a transition to EPP-012, Loss of Emergency Coolant Recirculation.
- RWST level is 4%.
- The crew is preparing to make up to the RWST per EPP-012.

Which ONE (1) of the following describes the effect on the plant of the RO resetting the SI Auto Suction Switchover in accordance with EPP-012?

A. Allows resetting of the SI signal and manual realignment of safeguards equipment.

B. Allows manual operation of Containment Spray pump discharge and chemical addition valves

C. Defeats the automatic open and shut features of the RHR Pump Miniflow Isolation Valves.

D. Defeats the automatic open and shut features of the CSIP Alternate Miniflow Isolation Valves.

SI reset is performed inependently. CS discharge valves may be operated after resetting Phase B and Spray. RHR miniflow valves are not part of this circuit
Common 55

Tier 1 Group 1
K/A Importance Rating - RO 3.6

Knowledge of the interrelations between the (Loss of Emergency Coolant Recirculation) and the following: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Reference(s) - EPP-012, Note prior to step 4
Proposed References to be provided to applicants during examination - None
Learning Objective -
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).7
Comments -

65. E12 EK3.1 001

In procedure EPP-015, Uncontrolled Depressurization of All Steam Generators, the Operator is directed to establish feed flow to all three Steam Generators.

What is the setpoint and basis for establishing flow in this range?

A. 12.5 KPPH, maintain minimum feed flow to ensure CST inventory is maintained until RHR can be placed in service.

B. 210 KPPH, maintain a minimum required feed flow to ensure adequate heat sink is maintained.

C. 12.5 KPPH, establish a minimum verifiable flow to ensure components remain wet so that thermal stresses are minimized upon a feed flow increase.

D. 210 KPPH, establish a minimum verifiable flow to ensure components remain wet so that thermal stresses are minimized upon a feed flow increase.

A Incorrect. 12.5 KPPH is the correct feed flow; however basis incorrect.
B Incorrect. Feed flow range incorrect and basis incorrect.
D Incorrect. Feed flow range incorrect, basis is correct.

Common 56

Tier 1 Group 1
K/A Importance Rating - RO 3.5

Knowledge of the reasons for the following responses as they apply to the (Uncontrolled Depressurization of all Steam Generators) Facility operating characteristics during transient conditions, including coolant chemistry and the effects of temperature, pressure, and reactivity changes and operating limitations and reasons for these operating characteristics.

Reference(s) - EPP-015
Proposed References to be provided to applicants during examination - NONE
Learning Objective -
Question Source - Bank
Question History - WTSI 18579 Robinson 2002
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).4, 10
Comments -

66. G2.1.11 004

The plant is operating at 100% power.

Which ONE (1) of the following requires the EARLIEST action in accordance with Technical Specifications?

A. One Containment Isolation Valve is declared inoperable.

B. Containment Average Air Temperature is 122 degrees F.

C. Containment Vacuum is -1.2 inches water gauge.

D. Containment Pressure is 1.2 psig.

C is correct because action is required to restore to < 1.0 inches H2O within 1 hour.
A allows for 4 hours
B allows for 8 hours
D is within required specification for pressure
Common 66

Tier 3 Group 1
K/A Importance Rating - RO 3.0

Knowledge of less than one hour technical specification action statements for systems.

Reference(s) - TS 3.6.1.1 through 3.6.1.5, and 3.6.3
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LP CONT3-0 R2A
Question Source - New
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).9, 43(b).2
Comments -

67. G2.1.23 001

While implementing an AOP, the crew encounters a step that directs them to 'REFER TO' a different procedure.

At this point the crew will...

A. exit the current AOP and immediately transition to the new procedure and perform applicable actions.

B. complete the procedure in progress and refer to the other procedure after the exit conditions are met.

C. ✔ perform actions of the other procedure as necessary in conjunction with the procedure in effect.

D. perform and complete the referenced procedure as written prior to performing actions of any other procedures.

A is a 'Go To' action
B may be performed at any time at SRO discretion
C is correct
D would apply to a 'Go To' step
Common 68

Tier 3 Group 1
K/A Importance Rating - RO 3.9

Ability to perform specific system and integrated plant procedures during all modes of plant operation.

Reference(s) - OMM-027
Proposed References to be provided to applicants during examination - None
Learning Objective - LP AOP3-0 OBJ 3
Question Source - Bank
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).10
Comments -

68. G2.1.9 001

The plant is in Mode 3.

Based on the current plant conditions, which ONE (1) of the following is NOT a task that the RO may direct an STA to perform?

A. Silence control room annunciators

B. Operate Radiation Monitoring System controls

C. Operate the Source Range Audio Count Rate Drawer

D. Operate the Metal Impact Monitoring System (MIMS)

OMM-001, Section 3.2.7.9
Common 67

Tier 3 Group 1
K/A Importance Rating - RO 2.5

Ability to direct personnel activities inside the control room.

Reference(s) - OMM-001
Proposed References to be provided to applicants during examination - None
Learning Objective -
Question Source - New
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).10
Comments -

69. G2.2.1 001

Given the following conditions:

- A reactor startup is being performed 90 hours after a plant trip.
- Critical boron concentration is determined to be 80 ppm.
- The estimated critical rod position is Control Bank D at 100 steps.

Which of the following identifies the - 500 PCM and + 500 PCM rod positions for these conditions?

	- 500 PCM	+ 500 PCM
A.	Bank D @ 37 Steps	Bank D @ 175 Steps
B.	Bank D @ 47 Steps	Bank D @ 180 Steps
C.	Bank D @ 57 Steps	Bank D @ 182 Steps
D.	Bank D @ 62 Steps	Bank D @ 190 Steps

Using the correct graph from the graphs supplied, C is correct. All the other answers could be correct if the wrong curve is used
Common 69

Tier 3 Group 2
K/A Importance Rating - RO 3.7

Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.

Reference(s) - Curve Book
Proposed References to be provided to applicants during examination - Curves A12-6 through 11
Learning Objective - LP GP3-4 OBJ 5
Question Source - Bank
Question History - 2004 Audit RO 04 001
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).6
Comments -

70. G2.2.26 002

Maintaining the Refueling boron concentration greater than that required by the Core Operating Limit Report (COLR) ensures the reactor remains shutdown by at least ...

A. 1.3%.

B. 2.0%.

C. 2.5%.

D. 5.0%.

Kef <.95 is SD by 5%
Common 70
Tier 3 Group 2
K/A Importance Rating - RO 2.5

Knowledge of refueling administrative requirements.

Reference(s) - TS 3.9.1 basis, PLP-106
Proposed References to be provided to applicants during examination - None
Learning Objective - LP TS2-0 OBJ 5
Question Source - Bank
Question History - 2004 RO Audit 48
Question Cognitive Level -
10 CFR Part 55 Content - 41(b).10, 43(b).2
Comments -

71. G2.3.10 003

Given the following conditions:

- A 25 year old male started working for the Operations Department at Harris on June 2nd of this year.
- He previously worked at Millstone Unit 3 as part of the Maintenance Department.
- His exposure for this year at Millstone was 1600 mRem.
- He has received NO Progress Energy management exposure extensions and NO emergency exists.

Which one of the following is the ADDITIONAL Total Effective Dose Equivalent exposure that the individual can receive WITHOUT management concurrence at Harris this year?

A. 400 mRem.

B. 2000 mRem.

C. 2400 mRem.

D. 3400 mRem.

A-Incorrect. Adding the 400 plus his current exposure would make 2000
B-Correct. Total allowable exposure for work performed at Progress Energy plants is 2000 mRem. The individual has 1600 already, so the lower of 2000 mRem at Progress Energy or 4000 mRem total will apply
C-Incorrect. Adding 2400 to his current would give 4000, the total yearly allowable
D-Incorrect. Adding 3400 to 1600 gives the TEDE limit of 5 Rem 5(N-18)

Common 72

Tier 3 Group 3
K/A Importance Rating - RO 2.9

Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.

Reference(s) - NGGM-PM-0002, LP RP-3.5
Proposed References to be provided to applicants during examination - NONE
Learning Objective - RP-3.5-20
Question Source - Bank
Question History - Robinson 2002
Question Cognitive Level -
10 CFR Part 55 Content - 41(b).12
Comments -

72. G2.3.2 001

A job must be performed under the following conditions:

- Dose rate at job location is 90 mrem/hr.
- Airborne Radioactivity Area from particulates due to weld grinding:
  - Total Internal dose for the job if respirator is worn is 0 mrem.
  - Total Internal dose for the job if no respirator is worn is 82 mrem.
- Time to complete job while wearing a respirator is 3.5 hours.
- Time to complete job without wearing a respirator is 2.75 hours.

Which ONE (1) of the following describes whether a respirator will be worn, and why?

A. No, wearing a respirator will raise total exposure.

B. Yes, wearing a respirator will lower total exposure.

C. No, wearing a respirator will make no difference to the total exposure.

D. Yes, a respirator must be worn anytime airborne radiation is present.

A. Incorrect. 315 total mr vs. 329.5 mr without respirator
B. Correct. 315 total mr
C. Incorrect. There is a difference if you add the internal dose
D. Incorrect. Not if total dose would be higher by wearing a respirator
Common 71
Tier 3
K/A Importance Rating - RO 2.5

Knowledge of facility ALARA program.

Reference(s) -
Proposed References to be provided to applicants during examination - None
Learning Objective -
Question Source - BANK
Question History - SONGS 2005 NRC Exam 73
Question Cognitive Level - Comprehension
10 CFR Part 55 Content - 41(b).12
Comments -

73. G2.4.27 002

The following conditions exist:

-A fire has been identified and verified in the Reactor Auxiliary Building.

Which ONE (1) of the following is NOT an action the Control Room Operator is required to perform in accordance with FPP-002, "Fire Emergency"?

A. notify the S-SO

B. ✔ coordinate Fire Brigade efforts to protect potentially affected safety-related equipment.

C. review the appropriate Fire Preplan List.

D. sound the fire alarm and announce the location of the fires.

The Fire Brigade Leader provides the action in B. The RO is responsible for all other actions listed
Common 74

Tier 3 Group 4
K/A Importance Rating - RO 3.0

Knowledge of fire in the plant procedure.

Reference(s) - FPP-002
Proposed References to be provided to applicants during examination - None
Learning Objective -
Question Source - Bank
Question History - PP-2.15-R1 003
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).10
Comments -

74. G2.4.34 001

During performance of AOP-004, Remote Shutdown, which ONE (1) of the following describes the responsibility of the RO?

A. Monitor and control plant conditions from the Auxiliary Control Panel (ACP)

B. Align plant equipment at the Auxiliary Transfer Panel (ATP) and Switchgear Rooms to facilitate control of plant equipment from outside the control room

C. Start and control EDGs locally to provide safety-related power

D. Locally operate and control CSIPs for RCS Makeup

B is correct per AOP-004, whether there is a fire or no fire. A is performed by USCO. C is performed by BOP. D is performed by RAB operator
Common 73

Tier 3 Group 4
K/A Importance Rating - RO 3.8

Knowledge of RO tasks performed outside the main control room during emergency operations including system geography and system implications.

Reference(s) - AOP-004
Proposed References to be provided to applicants during examination - None
Learning Objective - LP AOP3-4, OBJ 7
Question Source - New
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 41(b).10
Comments -

75. G2.4.43 002

After a loss of power to 60 KVA NNS UPP-1, what method of communication will be used between the MCR and plant personnel?

A. Plant PA

B. Radios

C. Telephones

D. ✔ Sound Powered Phones

Sound Powered phones would be only phones available. Procedure directs their use
Common 75

Tier 3 Group 4
K/A Importance Rating - RO 2.8

Knowledge of emergency communications systems and techniques.

Reference(s) - AOP-024
Proposed References to be provided to applicants during examination - None
Learning Objective - LP AOP3-24, OBJ 3
Question Source - Bank
Question History - Comm
Question Cognitive Level - Higher
10 CFR Part 55 Content - 41(b).7
Comments -

You have completed the test!

1. 005 AA2.03 001

Given the following conditions:

- The unit is at 100% power
- One Control Rod in Bank (D) Group (1) was found stuck at 190 steps an hour ago.
- While aligning the remainder of the rods in Bank (D) to 190 steps an additional Control Rod in Bank (D) Group (2) was found stuck at 210 steps.
- It has been determined that both rods are mechanically bound.

In accordance with Technical Specifications, which one of the following describes the action required within one hour?

A. Determine that QPTR requirements are satisfied or enter the applicable action statement.

B. Align the remainder of rods in the affected banks within 12 steps of the stuck rod.

C. Determine that Shutdown Margin requirements are satisfied.

D. Determine that Axial Flux Difference requirements are satisfied or enter the applicable action statement.

Technical Specifications Reactor control Systems 3 / 4.1.3 Movable Core Assemblies Group Height 3.1.3.1 Action a. Answer A, B, and D are wrong because operation may not continue must be in hot shutdown within six hours.
SRO 82

Tier 1 Group 2
K/A Importance Rating - SRO 4.4

Ability to determine and interpret the following as they apply to the Inoperable / Stuck Control Rod: Required actions if more than 1 rod is stuck or inoperable

Reference(s) - TS 3.1.3.1
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LPAOP3-1, Obj 6.c.1
Question Source - Bank
Question History - Salem 2002 NRC
Question Cognitive Level - Higher
10 CFR Part 55 Content - 43(b) item 1,2
Comments -

2. 005 G2.1.12 002

Given the following conditions:

- The plant is in MODE 1, 100% power.
- The "B" RHR Pump was taken OOS yesterday for maintenance.
- "A" CSIP is declared INOPERABLE due to NPSH calculation concerns.
- "B" CSIP and "A" RHR pumps are OPERABLE

Which ONE (1) of the following describes the required actions for these conditions?

LCO...

A. 3.5.2 must be entered. Restore one ECCS Train to service within 6 hours.

B. 3.5.2 must be entered. Restore both ECCS Trains to service within 72 hours.

C. 3.0.3 must be entered. Place the plant in Mode 3 within 7 hours.

D. 3.0.3 must be entered. Place the plant in Mode 3 within 13 hours.

C. Correct. TS 3.0.3 if at least one full flow train of ECCS not operable
D. Incorrect. Too much time
A&B Incorrect. As long as you have 100% flow capability for a single train of ECCS, you do not have to enter 3.0.3, but if not, enter 3.0.3
SRO 86

Tier 2 Group 1
K/A Importance Rating - SRO 4.0

Conduct of Operations: Ability to apply Technical Specifications for a system

Reference(s) - TS 3.5.2, 3.0.3
Proposed References to be provided to applicants during examination - None
Learning Objective - LPSIS3-0, Obj 6
Question Source - Bank
Question History - 2004 Audit Retake
Question Cognitive Level - Higher
10 CFR Part 55 Content - 43(b).2
Comments -

3. 006 A2.10 001

Chemistry sample has determined the following:

- "A" SI Accumulator boron concentration is 2466 ppm.
- "B" SI Accumulator boron concentration is 2402 ppm.
- "C" SI Accumulator boron concentration is 2577 ppm.
- RWST boron concentration is 2388 ppm.

Which ONE (1) of the following describes the impact of this condition, and the action required?

A. RWST Boron concentration may not adequately counterract the reactivity effects of an uncontrolled RCS cooldown. Immediately initiate a plant shutdown in accordance with GP-006, Plant Shutdown to Hot Standby.

B. RWST Boron concentration may not adequately counterract the reactivity effects of an uncontrolled RCS cooldown. Restore boron concentration within limits in 1 hour or initiate a plant shutdown in accordance with GP-006, Plant Shutdown to Hot Standby.

C. "C" SI Accumulator Boron solubility concerns may adversely affect ECCS flow analysis assumptions. Immediately initiate a plant shutdown in accordance with GP-006, Plant Shutdown to Hot Standby.

D. "C" SI Accumulator Boron solubility concerns may adversely affect ECCS flow analysis assumptions. Restore boron concentration within limits in 1 hour or initiate a plant shutdown in accordance with GP-006, Plant Shutdown to Hot Standby.

TS 3.5.4 basis states that boron concentration of the RWST is designed to ensure subcriticality is maintained with uncontrolled cooldown coincident with most reactive rod stuck fully out.

C Accumulator boron concentration is high, but within limits of TS 3.5.1

SRO 87

Tier 2 Group 1
K/A Importance Rating - SRO 3.9

Ability to (a) predict the impacts of the following malfunctions or operations on the ECCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Low boron concentration in SIS.

Reference(s) - TS 3.5.4 and basis
Proposed References to be provided to applicants during examination - None
Learning Objective - LP SIS3-0, Obj 6
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 43(b).2, 5
Comments -

4. 007 EA2.04 001

Given the following conditions:

- A manual reactor trip was performed.
- All DRPI indication is extinguished.
- Reactor Trip breakers indicate red lights on, green lights off.
- Power Range indication is 8%.
- Intermediate Range indication is 2×10^{-5} amps.
- Intermediate Range Start Up Rate (SUR) is + 0.1 dpm.

Which one of the following describes the plant condition and the action required?

A. The reactor is tripped. Continue in PATH-1 to determine if SI is required.

B. The reactor is tripped. Transition to EPP-004, Reactor Trip Response.

C. The reactor is NOT tripped. Continue in PATH-1.

D. The reactor is NOT tripped. Transition to FRP-S.1, Response to Nuclear Power Generation/ATWS.

If Trip Breaker lights are red with power at 8%, then the reactor has not tripped. If reactor trip has not occurred, then FRP-S.1 is the appropriate procedure to use.
SRO 76

Tier 1 Group 1
K/A Importance Rating - SRO 4.6

Ability to determine or interpret the following as they apply to a reactor trip: If reactor should have tripped but has not done so, manually trip the reactor and carry out actions in ATWS EOP

Reference(s) - PATH-1
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LPEOP3-1, Obj 3.a
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 43(b).5
Comments -

5. 008 G2.4.4 002

Given the following conditions:

- A LOCA has occurred
- The crew is performing PATH-1
- The following parameters exist:
  - All SG pressures – 800 psig and slowly trending down
  - All SG levels – being controlled at 42% NR
  - PRZ level – off-scale high
  - RVLIS Upper Head indicates 20%
  - Containment Pressure – 8 psig
  - RWST level – 74% and decreasing slowly
  - ONE CSIP has been stopped in accordance with PATH-1
  - RCS pressure – 950 psig and decreasing

Based on these indications, which ONE (1) of the following procedures will the crew enter next?

A. EPP-008, "SI Termination" to stop ECCS pumps

B. EPP-009, "Post-LOCA Cooldown and Depressurization" to cooldown and reduce RCS pressure

C. EPP-010, "Transfer to Cold Leg Recirculation" to allow for long term recirculation of the RCS

D. EPP-012, "Loss of Emergency Coolant Recirculation" to initiate makeup and minimize SI flow

A-Incorrect. RCS Pressure not stable, and RCS inventory too low
B-Correct.
C-Incorrect. RWST level is high. Entry to EPP-010 is 23.4% RWST level.
D-Incorrect. No indication that equipment needed for recirc is not available

SRO 77

Tier 1 Group 1
K/A Importance Rating - SRO 4.3

Emergency Procedures / Plan Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.

Reference(s) - PATH-1
Proposed References to be provided to applicants during examination - None
Learning Objective - LP EOP3-5, Objective 1.a
Question Source - Bank
Question History - 2004 Harris retake
Question Cognitive Level - Comprehension
10 CFR Part 55 Content - 43(b).5 because the SRO must evaluate plant conditions and determine a course of action
Comments -

6. 011 G2.1.7 001

Given the following conditions:

- The plant is at 100% power.
- The following alarms are received in the sequence listed, approximately 10 seconds apart:
  - ALB-009-2-1, PRESSURIZER HIGH LEVEL DEVIATION AND HEATERS ON
  - ALB-009-4-1, PRESSURIZER HIGH LEVEL
  - ALB-009-4-2, PRESSURIZER HIGH LEVEL ALERT

The RO determines that PRZ Level indicates the following:

- LI-459 indicates 95% and rising
- LI-460 indicates 56% and lowering
- LI-461 indicates 55% and lowering

Which ONE (1) of the following actions will be directed by the USCO?

A. Trip the reactor and go to PATH-1.

B. Lower Charging flow and select unaffected PRZ level channels in accordance with the applicable alarm response procedures.

C. Raise Charging flow and select unaffected PRZ level channels in accordance with the applicable alarm response procedures.

D. Isolate Letdown and control Charging as necessary to maintain PRZ level in accordance with OP-107, Charging and Volume Control System.

Failed channel is LI-459. Actual PRZ level will be lowering, so raising charging flow will raise level to program. Reactor trip criteria is not met. One channel failed high does not meet the trip logic. Would not isolate letdown if charging flow can be raised. Lowering charging flow would make the situation worse.

SRO 91

Tier 2 Group 2
K/A Importance Rating - SRO 4.4

Conduct of Operations: Ability to evaluate plant performance and make operational judgements based on operating characteristics, reactor behavior, and instrument interpretation.

Reference(s) - APP-ALB-009-4-1, 4-2
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LP PZRLC3-0, Obj 8
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 43(b).5
Comments -

7. 013 G2.2.22 001

Given the following conditions:

- The Unit is at 100% power.
- All systems are in normal alignments.
- A Steam Line Break occurs downstream of MSIV "A".
- A Main Steam Line Isolation Signal is generated.

Which ONE (1) of the following describes the maximum allowable closure time of the MSIVs and the associated reason?

A. The MSIVs must close within 5 seconds to minimize the reactivity effects of the RCS cooldown.

B. The MSIVs must close within 5 seconds to limit the pressure rise inside Containment.

C. The MSIVs must close within 30 seconds to limit the pressure rise inside Containment.

D. The MSIVs must close within 30 seconds to minimize the reactivity effects of the RCS cooldown.

A Correct.
B incorrect because the break is downstream of MSIVs
C incorrect because of break location and closure time is for FWIVs
D incorrect because closure time is out of limit
SRO 88

Tier 2 Group 1
K/A Importance Rating - SRO 4.1

Equipment Control Knowledge of limiting conditions for operations and safety limits.

Reference(s) - TS 3.7.1.5 and basis
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LPMSSS3-0, Obj 5
Question Source - Bank
Question History - SONGS 4/2005 NRC Exam
Question Cognitive Level - Higher
10 CFR Part 55 Content - 43(b).2
Comments -

8. 015 G2.1.23 002

Given the following conditions:

- The plant is at 100% power.
- RCP "B" seal No. 1 leakoff high-low flow alarm is in.
- "B" RCP No. 1 seal leakoff flow indicates 7 gpm.
- NLO has been sent to read "B" RCP #2 seal leakoff flow.
- VCT pressure is 26 psig.
- "B" RCP seal injection flow is 9.5 gpm.
- "B" RCP No. 2 seal leakoff high flow alarm has just been received.

Which ONE (1) of the following describes the action required?

A. ✔ Trip the reactor and go to EOP-Path -1.

B. Reduce power to less than 49% and secure the "B" RCP within 4 hours.

C. Power operation may continue provided that seal injection flow to "B" RCP is maintained greater than 9 gpm.

D. Initiate a plant shutdown per GP-006, stop "B" RCP within 8 hours.

With #1 seal leakoff greater than 7 GPM and the #2 seal leakoff flow alarm in, total seal leakage is higher than allowed to operate. With power >49%, the reactor and RCP will be tripped. The other actions may be taken for different circumstances for RCP failures.
SRO 78

Tier 1 Group 1
K/A Importance Rating - SRO 4.0

Conduct of Operations: Ability to perform specific system and integrated plant procedures during all modes of plant operation.

Reference(s) - AOP-018 Att 2
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LPAOP018 Obj 3
Question Source - Bank
Question History - AOP-3.18-31
Question Cognitive Level - Higher
10 CFR Part 55 Content - 43(b).5
Comments -

9. 027 AA2.09 001

Given the following conditions:

- The plant is initially operating at 70% Power.
- ALB-009-3-2, PRESSURIZER HIGH PRESS DEVIATION CONTROL is received.
- Pressurizer Pressure Indicator PI-444 indicates 2320 psig and INCREASING.
- Pressurizer Pressure Indicator PI-445.1 indicates 2225 psig and DECREASING.

Based on the indications above, which ONE (1) of the following describes plant status and what actions are immediately required?

A. Reactor power is 0%. Enter and perform actions of PATH-1. When directed by PATH-1, CLOSE PORVs 445A and 445B AND/OR their associated Block Valves.

B. Reactor power remains at approximately 70%. Place Master Pressure Controller PK-444A in Manual and raise controller output to restore RCS pressure IAW APP-ALB-009-3-2.

C. Reactor power is 0%. Enter and perform actions of PATH-1. When directed by PATH-1, ensure PORVs 445A and 445B close when pressure is reduced below the setpoint, OR close PORV Block Valves IAW APP-ALB-009-3-2.

D. Reactor power remains at approximately 70%. Enter AOP-019, Malfunction of RCS Pressure Control, and place Master Pressure Controller PK-444A in Manual, reducing controller output to close spray valves and PORV 444B.

A-Incorrect. PORVs 445A/B will not be open because they are controlled from PT-445. PORV 444B will be open.
B-Incorrect. Would not act to restore pressure until after Spray Valves are closed
C-Incorrect. PORVs should not be open because their input is at 2225 psig. Otherwise, would be an appropriate action, except performed in AOP
D-Correct. Spray valves will be going open because the failed channel is providing input to the controller. Placing controller in Manual and reducing output will act to close the valves. Reactor should not have tripped

SRO 79

Tier 1 Group 1
K/A Importance Rating - SRO 3.6

Ability to determine and interpret the following as they apply to the Pressurizer Pressure Control Malfunctions: Reactor power.

Reference - AOP-019, APP-ALB-009-3-2
Proposed References to be provided to applicants during examination - None
Learning Objective - LP PZRPC3-0, Objectives 1 and 5
Question Source - Bank
Question History - 2004 Harris SRO Retake
Question Cognitive Level - Comprehension
10 CFR Part 55 Content - 43.5 because the SRO must evaluate plant conditions and determine a course of action
Comments -

10. 037 G2.1.2 002

Given the following conditions:

- The plant is at 100 % power.
- The following conditions have been observed:
  - Condenser Vacuum Pump Rad monitor (REM-01TV-3534) went into alert 4 and 1/2 hours ago.
  - Primary to Secondary leakage into "B" SG has been identified as follows:
    - 21 gallons per day 4 hours ago.
    - 41 gallons per day 3 hours ago.
    - 62 gallons per day 2 hours ago.
    - 82 gallons per day for the last 60 minutes.

Based on the above conditions, which ONE (1) of the following describes the required actions?

A. Hold power stable while performing AOP-016, Excessive Primary Plant Leakage, Attachment 10

B. ✔ Perform AOP-016, Attachment 11, and shutdown the plant in accordance with GP-006. Be in Mode 3 within 24 hours

C. Perform AOP-016, Attachment 11, and shutdown the plant in accordance with GP-006. Be in Mode 3 in less than 6 hours

D. Perform AOP-016, Attachment 11, and reduce power to 50% within 1 hour in accordance with GP-006. Be in Mode 3 within the the next 2 hours

B is correct in accordance with the procedure.
All other actions may be taken for tube leakage of different magnitudes or different rates of change

SRO 83

Tier 1 Group 2
K/A Importance Rating - SRO 4.0

Conduct of Operations: Knowledge of operator responsibilities during all modes of plant operation.

Reference(s) - AOP-016
Proposed References to be provided to applicants during examination - AOP-016, Attachment 1
Learning Objective - LPAOP3-16, Obj 4
Question Source - Modified
Question History - AOP-3.16-3 001
Question Cognitive Level - Higher
10 CFR Part 55 Content - 43(b).2, 5
Comments -

11. 045 G2.1.23 001

Given the following conditions:

- The plant is operating at 100% power.
- The following alarm and condition are observed in the control room:
  - ALB-022-4-3, GENERATOR VOLT/FREQ RATIO HIGH OR UNDER FREQ
  - Main Generator frequency has dropped to 58.2 Hz.

Based on the above conditions, which ONE (1) of the following actions is required?

A. Reduce Turbine Load to maintain reactor power less than 100% IAW AOP-028, Grid Instability.

B. Raise Generator Excitation to maintain within the limits of the generator capability curve IAW AOP-028.

C. Monitor the low frequency condition, and if it exists for 5 minutes, initiate a reactor shutdown IAW GP-006, Normal Plant Shutdown from Power Operation to Hot Standby.

D. Immediately trip the reactor and enter PATH-1.

A-Incorrect. May perform if frequency was higher than 59 hz
B-Incorrect. May REDUCE excitation if required if frequency was greater than 59 hz
C-Incorrect. Would manually trip the reactor if condition existed for 5 minutes
D-Correct.
SRO 92

Tier 2 Group 2
K/A Importance Rating - SRO 4.0

Conduct of Operations: Ability to perform specific system and integrated plant procedures during all modes of plant operation.

Reference(s) - APP-ALB-022-4-3, AOP-028
Proposed References to be provided to applicants during examination - None
Learning Objective - LP-AOP3-28 Objective 2
Question Source - Bank
Question History -
Question Cognitive Level - HIGHER
10 CFR Part 55 Content - 43(b).5 because the SRO must evaluate plant conditions and determine a course of action
Comments -

12. 051 G2.4.45 001

Given the following conditions:

- The plant is at 69% power.
- Plant load increase is in progress in accordance with GP-005.
- The following alarms are received:
  - ALB-020-2-4A, CONDSR PRE TRIP LOW VACUUM
  - ALB-021-8-5, COMPUTER ALARM CIRC WATER SYSTEMS
- The BOP determines that condenser backpressure is 6.6 inches Hg in Zone 2 and rising slowly.
- Computer alarm indicates Vacuum Pump "A" Vibration HIGH.

Which ONE (1) of the following actions is required?

A. Reduce turbine load to less than 60% in accordance with GP-006 to stabilize condenser vacuum.

B. Enter AOP-012, Partial Loss of Condenser Vacuum, to perform actions for vacuum restoration.

C. Trip the reactor and enter PATH-1

D. Trip the turbine and enter AOP-006, Turbine Generator Trouble

A is incorrect. Reducing load will place the plant outside of operating limits.
B is correct. Enter AOP-012
C is incorrect. Trip criteria not met
D is incorrect. Power level too high for turbine trip, and criteria not met
SRO 84

Tier 1 Group 2
K/A Importance Rating - SRO 3.6

Emergency Procedures / Plan Ability to prioritize and interpret the significance of each annunciator or alarm.

Reference(s) - AOP-012, APP-ALB-020-2-4A
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LPAOP3-12, Obj 1
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 43(b).5
Comments -

13. 059 G2.4.49 002

Given the following conditions:

- The plant was operating at 95 percent power, steady state conditions, when multiple feed system annunciators were received.
- The following plant conditions are observed and communicated by the BOP operator:
  - "A" MFP control switch indicates green
  - ALB-016-1-4, FW PUMP A/B O/C TRIP-GND OR BKR FAIL TO CLOSE, is lit
  - ALB-020-2-2, TURBINE RUNBACK OPERATIVE, is lit
  - Steam Generator Levels 52 percent and lowering
  - FRV M/A controllers output rising
  - Reactor power at 93 percent and lowering.

Which ONE (1) of the following actions is the USCO required to perform?

A. ✔ Enter AOP-010, Feedwater Malfunctions. Direct the RO to trip the reactor and go to EOP-PATH-1.

B. Enter AOP-010, Feedwater Malfunctions. Direct performance of Section 3.2, Loss of Running Pumps.

C. Enter AOP-010, Feedwater Malfunctions, and direct the BOP to isolate SG Blowdown

D. Enter AOP-006, Turbine Generator Trouble. Direct the crew to manually control SG levels 52 percent to 62 percent in accordance with OP-134.01, Feedwater System.

A is coirrect. Feedwater Pump trip greater than 90% power requires rx trip
B is incorrect. Trip is required. Would only use section if trip not required
C is incorrect. Immediate action that is performed if trip is not required.
D is incorrect. Wrong procedure for feed pump trip, even though a runback is occurring. Levels should be maintained >52%

Common 89

Tier 2 Group 1
K/A Importance Rating - SRO 4.0

Emergency Procedures / Plan Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.

Reference(s) - AOP-010
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LPAOP3-10 Obj 1
Question Source - Bank
Question History - AOP-3.10-R4 004
Question Cognitive Level - Higher
10 CFR Part 55 Content - 43(b).5
Comments -

14. 062 AA2.03 002

Given the following plant conditions:

- The plant is operating at 55% power.
- The following annunciators are received in the Control Room:
  - ALB-002-7-2, SERV WTR PUMPS DISCHARGE LOW PRESS
  - ALB-002-6-1, SERV WTR SUPPLY HEADER A LOW PRESS
  - ALB-002-5-5, SERV WTR HEADER A HIGH/LOW FLOW
- The BOP notes that Cooling Tower Basin Level is decreasing.
- "A" ESW Pump automatically starts.
- ALB-002-7-2, SERV WTR PUMPS DISCHARGE LOW PRESS alarm clears.
- Cooling Tower Basin level stabilizes.

The crew enters AOP-022, Loss of Service Water and completes the immediate actions.

Which ONE (1) of the following describes the action required, if any, based on current plant conditions?

A. Trip the reactor and go to PATH-1. Ensure the Emergency Service Water system is aligned in accordance with PATH-1

B. Locate and isolate the leak on ESW Train "A". When the leak is isolated, restore "A" ESW header to service using ESW or NSW in accordance with OP-139, Service Water System.

C. Locate and isolate the leak on the NSW header. When the leak is isolated, shutdown Train "A" ESW and restore normal NSW flow in accordance with OP-139, Service Water System.

D. No additional actions are required because the leak is isolated. Verify ESW is properly aligned to equipment listed in AOP-022, Attachment 1, Equipment Alignment due to Loss of an ESW Header.

A Correct. Cooling Tower level decreasing indicates a leak on NSW. Because suction cannot be maintained, and power is >P-10, the reactor will be tripped.
B Incorrect. Immediate actions would isolate the ESW header from the NSW header. With the alarm still standing, the leak would have to be in the NSW header.
C Incorrect. Action in AOP-022 is for ESW alignment in case of an ESW leak
D Incorrect. Would be correct if the leak was ESW

SRO 80

Tier 1 Group 1
K/A Importance Rating - SRO 2.9

Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water: The valve lineups necessary to restart the CCWS while bypassing the portion of the system causing the abnormal condition.

Reference(s) - AOP-022, section 3.2 APP-ALB-002-7-2
Proposed References to be provided to applicants during examination - None
Learning Objective - LPAOP3-22 OBJ 5
Question Source - Bank
Question History - 2004 Harris SRO Retake
Question Cognitive Level - Comprehension
10 CFR Part 55 Content - 43(b).5 Because the SRO must evaluate plant conditions and determine a course of action
Comments -

15. 068 A2.04 001

Given the following conditions:

- A release of Treated Laundry and Hot Shower Tank "A" is in progress.
- A HIGH ALARM is received on REM-*1WL-3540, Treated Laundry and Hot Shower Tank Pump discharge radiation monitor.
- Discharge flow indicated on the Waste Processing computer is approximately 28 GPM.

Which ONE (1) of the following describes the action required for the above plant conditions?

A. ✓ The release must be manually terminated. Isolate the release path in accordance with AOP-008, Accidental Release of Liquid Waste, and/or AOP-005, Radiation Monitoring.

B. The release was automatically terminated. Waste Processing computer indication is a setpoint, not actual flow, indicated by the liquid waste release permit. Verify isolation in accordance with AOP-005, Radiation Monitoring.

C. The release may continue because the release permit provides actual sample data of the tank contents. Determine cause of the alarm in accordance with OP-119, Radwaste Radiation Monitoring System.

D. The release may continue provided 2 independent samples of the release are taken and analyzed by qualified individuals and verified to be within limits.

High alarm on an effluent release monitor requires the release to be terminated. In this case, automatic action did not occur, so the action is required manually. With flow indicated, the release is ongoing. Any time the alarm is lit, the release should be stopped. D is wrong because it denotes action for a failed monitor, not an alarming monitor

SRO 93

Tier 2 Group 2
K/A Importance Rating - SRO 3.3

Ability to (a) predict the impacts of the following malfunctions or operations on the Liquid Radwaste System ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Failure of automatic isolation

Reference(s) - AOP-005, AOP-008
Proposed References to be provided to applicants during examination - None
Learning Objective - LPAOP3-8 OBJ 3
Question Source - New
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 43(b).4, 5
Comments -

16. 078 A2.01 001

Given the following conditions:

- The plant is at 100% power.
- The Compressed Air System (CAS) Control Panel is set for 1C Air Compressor in LEAD (Sequence 3).
- A Valve Shift Error occurs on Air Dryer 1C-NNS.
- Instrument Air Header pressure indicates 110 psig.

Which ONE (1) of the following describes the impact of this failure, and the action required?

A. High Air Dryer DP may cause a Loss of Instrument Air. Bypass Air Dryer 1C-NNS in accordance with AOP-017, Loss of Instrument Air.

B. Instrument Air may have a higher than desired moisture content. Shift the CAS Control Panel to 1A Air Compresor in LEAD (Sequence 1) and isolate Air Dryer 1C-NNS in accordance with OP-151.01, Compressed Air.

C. Instrument Air may have a higher than desired moisture content. Isolate Air Dryer 1C-NNS and place Air Dryer 1A-NNS in service on Air Compressor 1C in accordance with OP-151.01, Compressed Air.

D. High Air Dryer DP may cause a Loss of Instrument Air. Manually perform the valve shift on Air Dryer 1C-NNS in accordance with AOP-017, Loss of Instrument Air.

B is correct. Per procedure P&L, when a valve shift error occurs, place the other compressors and dryers in service. AOP-017 entry is not necessary. Would not perform a manual valve shift either
SRO 90

Tier 2 Group 1
K/A Importance Rating - SRO 2.9

Ability to (a) predict the impacts of the following malfunctions or operations on the IAS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Air dryer and filter malfunctions.

Reference(s) - OP-151.01, P&Ls
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LP ISA3-0 11c
Question Source - NEW
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 43(b).5
Comments -

17. E04 G2.1.20 001

Given the following conditions:

- A LOCA Outside Containment has occurred.
- The crew has completed performing the actions of EPP-013, LOCA Outside Containment.
- RCS pressure is 1450 psig and lowering slowly.

Which ONE (1) of the following describes the action that will be performed?

A. Return to EPP-013, Step 1, and repeat steps to isolate the leak

B. Return to PATH-1, entry point C, to rediagnose the event in progress.

C. Transition to EPP-009, Post LOCA Cooldown and Depressurization.

D. Transition to EPP-012, Loss of Emergency Coolant Recirculation

For a LOCA Outside Containment, if isolation cannot be verified, then EPP-012 must be entered to conserve inventory, because the leak may be unisolable
SRO 81

Tier 1 / Group 1
K/A Importance Rating - SRO 4.2

Conduct of Operations: Ability to execute procedure steps

Reference(s) - EPP-13
Proposed References to be provided to applicants during examination - None
Learning Objective -
Question Source - Bank
Question History -
Question Cognitive Level - Higher
10 CFR Part 55 Content - 43(b).5 because the SRO must evaluate plant conditions and determine a course of action
Comments -

18. E10 EA2.1 001

Given the following conditions:

- A reactor trip has occurred due to a loss of offsite power.
- The operating crew is performing actions of EPP-005, Natural Circulation Cooldown.
- Train "A" of RVLIS is out of service.
- The crew has commenced RCS cooldown and depressurization.
    - RCS pressure is 1780 psig and trending DOWN.
    - RCS Tavg is 448 deg. F and trending DOWN.
    - RCS cooldown rate MUST be performed at approximately 60 deg F/Hr. due to secondary inventory concerns.
    - Pressurizer level is 35% and trending UP slowly.

Which one of the following actions will be required in accordance with EPP-005?

A. Repressurize the RCS to minimize void growth.

B. Actuate safety injection and transition to EPP-014, Faulted Steam Generator Isolation.

C. Transition to EPP-007, Natural Circulation Cooldown With Steam Void In Vessel (Without RVLIS).

D. Transition to EPP-006, Natural Circulation Cooldown With Steam Void In Vessel (With RVLIS).

A Incorrect. Do not raise pressure when cooldown is uncontrolled at this rate.

B Incorrect. No SI requirements met. Subcooling is high and PRZR level is high. Potential PTS event if SI is initiated.

C Incorrect. RVLIS is available (Train 'B').

SRO 85

Tier 1 Group 2
K/A Importance Rating - SRO 3.9

Ability to determine and interpret the following as they apply to the (Natural Circulation with Steam Void in Vessel with/without RVLIS) Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

Reference(s) - EPP-005
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LP EOP3-8 4C
Question Source - Bank (46458)
Question History - BVPS-1 2002 NRC
Question Cognitive Level - Higher
10 CFR Part 55 Content - 43(b).5
Comments -

19. G2.1.25 002

Given the following conditions:

- The plant was operating at 100% power when a reactor trip occurred on low pressurizer pressure.
- "C" S/G Tube Rupture was diagnosed, and PATH-2 was entered.
- RCS Cooldown and Depressurization is complete.

Given the following control room indications:

- SG "C" level is 32% and decreasing.
- SG "A" and "B" levels are stable.
- PRZ level is 63% and increasing.

Which ONE (1) of the following describes the required operator action IAW PATH-2?

A. Increase Charging Flow and Depressurize RCS.

B. Decrease Charging flow.

C✓ Energize Pressurizer heaters.

D. Depressurize RCS and Decrease Charging flow.

C is correct. See Reference
A would be correct if PRZ level was less than 25% with SG level increasing
B would be correct if PRZ level was greater than 75% with SG level increasing
D would be correct if PRZ level was 50% - 75% and SG level increasing
SRO 94

Tier 3 Group 1
K/A Importance Rating - SRO 3.1

Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data.

Reference(s) - PATH-2 Table 1
Proposed References to be provided to applicants during examination - Path-2 Table 1
Learning Objective - LP EOP3-2 OBJ 1
Question Source - Bank
Question History - Vendor Bank
Question Cognitive Level - Application
10 CFR Part 55 Content - 43(b).5
Comments -

20. G2.1.4 001

EXCLUDING any unexpected absences, which ONE (1) of the following describes the MINIMUM shift crew composition required by Technical Specifications in MODE 3 for the positions listed?

	S-SO	USCO	RO	AO
A.	0	1	2	2
B.	1	1	2	2
C.	1	0	2	1
D.	1	1	1	2

B is correct in accordance with TS Table 6.2-1. Memory of TS minimum staffing SRO 95

Tier 3 Group 1
K/A Importance Rating - SRO 3.4

Knowledge of shift staffing requirements.

Reference(s) - TS Table 6.2-1
Proposed References to be provided to applicants during examination - NONE
Learning Objective - LPTS2-0 S1A
Question Source - NEW
Question History -
Question Cognitive Level - Lower
10 CFR Part 55 Content - 43(b).1
Comments -

21. G2.2.11 002

Which ONE of the below is a responsibility of the WCC-SRO concerning a Temporary Change (Plant Modification) in accordance with EGR-NGGC-0005, Engineering Change?

A. Identify the placement of Temporary Change Tags.

B. ✔ Verify proper annotation of affected Priority 0 drawings.

C. Initiate the Temporary Change Log (Form 2)

D. Perform a periodic audit verifying the hanging of the Temporary Change Tags and the state of the Temporary Change Tag integrity

The only task performed by Ops is the WCC-SRO verification of Priority 0 drawing annotation
SRO 96

Tier 3 Group 2
K/A Importance Rating - SRO 3.4

Knowledge of the process for controlling temporary changes.

Reference(s) - EGR-NGGC-005
Proposed References to be provided to applicants during examination - NONE
Learning Objective -
Question Source - Bank
Question History - PP-3.4-021
Question Cognitive Level - Lower
10 CFR Part 55 Content - 43(b).3
Comments -

22. G2.3.1 003

A male employee who is 20 years old has received the following exposure:

-Current Total Effective Dose Equivalent (TEDE) for the year to date is 4200 mrem.
-Current Deep Dose Equivalent (DDE) for the year to date is 700 mrem.
-Current Committed Effective Dose Equivalent (CEDE) for the year to date is 3500 mrem.
-Current Total Organ Dose Equivalent (TODE) for the year to date is 300 mrem.

Assuming his exposure is properly documented and appropriate management approval is received, which of the following is the MAXIMUM additional whole body exposure the operator can receive this year without exceeding his 10CFR20 exposure limits?

A. 800 mrem

B. 1200 mrem

C. 500 mrem

D. 1500 mrem

5 Rem per year is the 10CFR20 limit for TEDE exposure. The employee currently has 4200 mRem, leaving 800 mRem exposure to reach his limit
SRO 97

Tier 3 Group 3
K/A Importance Rating - SRO 3.0

Knowledge of 10 CFR: 20 and related facility radiation control requirements.

Reference(s) - 10CFR20, DOS-NGGC-0004
Proposed References to be provided to applicants during examination - NONE
Learning Objective -
Question Source - BANK
Question History - Prairie Island SRO 2004
Question Cognitive Level - Higher
10 CFR Part 55 Content - 43(b).4
Comments -

23. G2.3.9 001

A Normal Containment Purge is planned following an outage.

Which ONE (1) of the following describes the release permit requirements for the planned evolution?

A. A Batch Release Permit MUST be prepared per CRC-853.

B. If the purge is within 30 days of the Pre-Entry Purge, the release permit for Pre-Entry Purge may be used.

C. If all 4 Containment Ventilation Isolation monitors and both RCS leak detection monitors are OPERABLE, a Batch Release Permit is NOT required.

D. A Batch Release Permit must ONLY be prepared if the previous purge was secured for radiological reasons. If not, a release permit is NOT required.

A-Correct
B-Incorrect. Startup after outage requires new permit
C-Incorrect. Monitors required to be operable, but permit still required.
D-Incorrect. Previous purge radiological problem is one reason that a batch release permit must be prepared, but if there was no problem, a permit still must be prepared.
SRO 98

Tier 3 Group 3
K/A Importance Rating - SRO 3.4

Knowledge of the process for performing a containment purge.

Reference(s) - OP-168, sections 5.1.1 and 5.1.2
Proposed References to be provided to applicants during examination - None
Learning Objective - LP CVS3-0 R4
Question Source - BANK
Question History -
Question Cognitive Level - Memory
10 CFR Part 55 Content - 43(b).4 because misunderstanding of release permit requirements or improper operation of the Containment Purge system can result in unwanted radioactive release
Comments -

24. G2.4.11 001

Given the following conditions:

- A loss of Component Cooling Water has occurred.
- The reactor was tripped in accordance with AOP-014, Loss of Component Cooling Water.
- The crew has entered PATH-1.

Which ONE (1) of the following describes the continued use of AOP-014, Loss of Component Cooling Water?

A. Use of AOP-014 is NOT allowed during EOP performance.

B. May ONLY be used concurrently with actions of PATH-1, and ONLY where directed by the procedure.

C. May be used concurrently with EOPs ONLY if referring to the AOP does NOT result in delaying accident mitigation

D. May be used concurrently as necessary under all conditions of EOP use.

A-Incorrect. AOP-014 may be used concurrently on an 'as needed' basis
B-Incorrect. May also be used with other EPPs, EPP-4 for instance
C-Correct.
D-Incorrect. If steps performed from the AOP would result in delays for EPP use, it would not be performed
SRO 99
Tier 3
K/A Importance Rating - SRO 3.6

Knowledge of abnormal condition procedures.

Reference(s) - OMM-027, EOP User's Guide
Proposed References to be provided to applicants during examination - None
Learning Objective - LP EOP3-19 OBJ 1B
Question Source - Bank
Question History - 2004 NRC Retake SRO 25
Question Cognitive Level - Memory
10 CFR Part 55 Content - 43(b).5 because the SRO must evaluate plant conditions and determine a course of action by applying the proper procedural guidance in an emergency
Comments -

25. G2.4.6 001

Given the following conditions:

- The plant is operating at 100% power.
- EDG 1B-SB is out of service and is expected to return to service in two (2) hours.
- Subsequently, the following events occur:
  - A loss of offsite power occurs.
  - The reactor is tripped and the crew enters PATH-1
  - SI is NOT actuated.
  - The crew made a transition to FRP-H.1, Loss Of Secondary Heat Sink based on a CSFST RED Path.

Subsequently, EDG 1A-SA output breaker trips on a bus fault.

Which ONE (1) of the following describes the actions that will be taken?

A. Immediately transition to EPP-001, Loss Of All AC Power to 1A-SA and 1B-SB Buses.

B. Restore feed in accordance with FRP-H.1, and then return to PATH-1 to restore EDG 1A-SA.

C. Remain in FRP-H.1 until directed to return to procedure in effect, and then transition to EPP-001.

D. Remain in FRP-H.1 unless a higher priority RED condition is observed. When directed to return to procedure in effect, return to PATH-1. Restore EDG 1A-SA or 1B-SB in EPP-004, Reactor Trip Response.

A. Correct.
B. Incorrect. No AC power is available, therefore transition to EPP-1 is required.
C. Incorrect. Transition to EPP-1 immediately, even if a RED condition exists.
D. Incorrect. This would be correct if only one EDG was tripped.

SRO 100

Tier 3 Group 4
K/A Importance Rating - SRO 4.0

Knowledge symptom based EOP mitigation strategies.

Reference(s) - EOP User's Guide, EPP-1
Proposed References to be provided to applicants during examination - None
Learning Objective - LP EOP3-7, OBJ 4
Question Source - Bank
Question History - BVPS-1 2005 NRC
Question Cognitive Level - Higher
10 CFR Part 55 Content - 43(b).5
Comments -

You have completed the test!