

HLT 0707 NRC RO Written Examination

1. A loss of all off-site power and main steam line break have occurred on Unit 3 resulting in the following plant conditions:
- RPV pressure 50 psig and steady.
 - RPV level (-) 100 inches and steady, being maintained by RHR Loop I at 22,000 gpm.
 - Drywell pressure 19 psig and rising.
 - Drywell temperature 235 °F and rising.
 - Suppression Pool Temp 205 °F and rising.
 - Both loops of Core Spray are unavailable.

Which ONE of the following describes the actions that MUST be taken based on the above conditions?

REFERENCE PROVIDED

- A. RHR Loop II MUST be aligned for LPCI injection to ensure RHR pumps do not exceed NPSH limits.
- B. RHR Loop II MUST be aligned for LPCI injection to ensure adequate core cooling.
- C. RHR Loop II MUST be aligned for Drywell Spray.
- D. RHR Loop II MUST be aligned for Suppression Pool Cooling.

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2. Given the following Unit 1 plant conditions:

- Unit 1 and 2 control rooms have been abandoned due to a toxic gas release.
- Control has been established at Backup Control Panel 1-25-32.
- RHR Loop II is in Suppression Pool Cooling with both RHR pumps running.
- Reactor Pressure is 110 psig and lowering due to the cooldown.
- Reactor water level is (-) 48 inches and lowering slowly.
- The Unit Supervisor has directed that RHR be lined up for LPCI injection in accordance with 1-AOI-100-2, "Control Room Abandonment."

Which ONE of the following describes the location where this lineup is performed and the method of monitoring injection flow?

Operating the LPCI Injection valves can be accomplished from _____ (1) _____ and injection flow is monitored by _____ (2) _____.

- | | | |
|----|------------------------------|---|
| A. | (1)
480V RMOV Board 1B | (2)
RHR Total Flow indication from Panel 1-25-32 |
| B. | 480V RMOV Board 1B | RHR pump amps from 4KV Shutdown Board C |
| C. | Backup Control Panel 1-25-32 | RHR Total Flow indication from Panel 1-25-32 |
| D. | Backup Control Panel 1-25-32 | RHR pump amps from 4KV Shutdown Board C |

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3. Given the following Unit 1 plant conditions:

- RHR Loop I is in Shutdown Cooling Mode with 1A and 1C RHR Pumps running.
- Unit 1 is in Mode 4 at 185 °F and lowering slowly.
- RHR SYSTEM I MIN FLOW INHIBIT switch, 1-HS-74-148 is in INHIBIT.
- RHR SYS I LPCI INBD INJECT VALVE, 1-FCV-74-53 is fully open.
- RHR SYS I LPCI OUTBD INJECT VALVE, 1-FCV-74-52 is throttled open.
- 480V RMOV Board B de-energizes due to an electrical fault.

Which ONE of the following describes the status of RHR Loop I following the loss of 480V RMOV Board B and the final position of the RHR Inboard Injection valve 1-FCV-74-53?

RHR Pumps 1A and 1C _____ (1) _____. The RHR SYS I LPCI INBD INJECT VALVE, 1-FCV-74-53 _____ (2) _____.

- | | | |
|----|---------------------------------------|--|
| A. | (1)
trip on loss of a suction path | (2)
closes due to Group II logic signal |
| B. | trip on loss of a suction path | fails open on loss of power |
| C. | remain in operation | closes due to Group II logic signal |
| D. | remain in operation | fails open on loss of power |

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4. Given the following plant conditions:

- Unit 2 is aligned with RHR Loop I in Shutdown Cooling and RHR Loop II in standby readiness.
- A leak occurs in the RPV, which results in the following conditions:
 - RPV level at 0 inches and slowly lowering
 - Drywell Pressure at 3.0 psig and slowly rising
 - RHR Pumps 'A' and 'C' TRIPPED

Which ONE of the following describes the **minimum** actions required to align RHR Loop II for injection to the RPV?

- A. After FCV-74-47 OR FCV-74-48 is closed, push the RHR SYS II SD CLG INBD INJECT ISOL RESET 2-XS-74-132.
- B. After FCV-74-47 AND FCV-74-48 are closed, start RHR Loop II pumps, reset PCIS, and open the inboard injection valve.
- C. After FCV-74-47 OR FCV-74-48 is closed; reset PCIS, push the RHR SYS II SD CLG INBD INJECT ISOL RESET 2-XS-74-132, and open the inboard injection valve.
- D. After FCV-74-47 AND FCV-74-48 are closed, reset PCIS, push the RHR SYS II SD CLG INBD INJECT ISOL RESET 2-XS-74-132, and open BOTH injection valves.

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6. Unit-1 is operating at 100% rated power when CORE SPRAY SYS I SPARGER BREAK (9-3C W14) alarms on Panel 9-3.

Which ONE of the following describes the principle of operation of the Core Spray Leak Detection instrument due to a Core Spray pipe break between the RPV wall and the core shroud?

The pressure sensed in the Core Spray pipe will be _____ (1) _____ causing a _____ (2) _____ ΔP to be sensed by the Leak Detection ΔP transmitter.

- A. (1) higher (2) lower
- B. higher higher
- C. lower lower
- D. lower higher

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7. Given the following Unit 3 plant conditions:

- 480 V Shutdown Board 3A tripped due to an electrical fault.
- An ATWS has occurred requiring the initiation of Standby Liquid Control (SLC).

Which ONE of the following describes the SLC pump which should be started and the status of the squib valves once the appropriate pump is started?

The OATC should start the (1) SLC Pump. Once started, (2) should fire.

- | | | |
|----|-----------|---------------------------|
| A. | (1)
3A | (2)
both squib valves. |
| B. | 3A | only the "A" squib valve. |
| C. | 3B | both squib valves. |
| D. | 3B | only the "B" squib valve. |

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9. Which ONE of the following Reactor Protection System scram signals is delayed for six (6) seconds once the setpoint has been exceeded and the basis for that delay?

The scram signal for _____ (1) _____ is delayed for six (6) seconds to take into consideration the _____ (2) _____.

- | | |
|-------------------------------------|-----------------------------|
| (1) | (2) |
| A. APRM Flow-biased STP (.66W +66%) | fuel thermal time constant. |
| B. APRM Flow-biased STP (.66W +66%) | nominal MSIV closure time. |
| C. APRM High Flux \leq 120% RTP | fuel thermal time constant |
| D. APRM High Flux \leq 120% RTP | nominal MSIV closure time. |

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10. Following a reactor scram on Unit 1 the following conditions were observed:

- All control rods did NOT fully insert following the scram.
- RPV level is (-) 15 inches and rising with feed water injection.
- Reactor pressure is 940 psig being controlled by Bypass Valves.
- All Intermediate Range Monitors are fully inserted and reading on Range 5 and lowering.

Which ONE of the following describes the appropriate action to monitor and control reactor power?

_____ (1) _____ path RC/Q of 1-EOI-1, "RPV Control" and control reactor power using
_____ (2) _____.

- | | | |
|----|------------------|--|
| A. | (1)
Remain in | (2)
1-AOI-100-1, "Reactor Scram" and
1-OI-85, "CRD System." |
| B. | Remain in | 1-EOI Appendix 1D, "Insert Control Rods using
Reactor Manual Control System." |
| C. | Exit | 1-AOI-100-1, "Reactor Scram" and
1-OI-85, "CRD System." |
| D. | Exit | 1-EOI Appendix 1D, "Insert Control Rods using
Reactor Manual Control System." |

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11. Given the following Unit 1 plant conditions:

- A reactor startup is in progress following refueling, with ALL 8 Reactor Protection System (RPS) Shorting Links installed.
- The reactor is in Mode 2.
- IRM "G" is on Range 7, all other IRMs are on Range 8.

An electronic failure in the "B" Source Range Monitor (SRM) drawer results in a SRM HIGH/INOP (9-5A W13) alarm.

Which ONE of the following describes the plant response and required action, if any, to continue the startup?

The SRM failure will initiate a _____ (1) _____. The startup may continue _____ (2) _____ bypassing SRM "B" in accordance with 1-OI-92, "Source Range Monitor System."

- | | | |
|----|----------------------------|---------|
| | (1) | (2) |
| A. | Control Rod Withdraw Block | after |
| B. | SRM HIGH/INOP alarm ONLY | without |
| C. | Control Rod Withdraw Block | without |
| D. | SRM HIGH/INOP alarm ONLY | after |

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12. Given the following Unit 1 plant conditions:

- Operating at 100% rated power.
- The normal feeder breaker to 4KV Shutdown Board C inadvertently trips.
- The alternate breaker from Shutdown Bus 1 fails to close.
- 4KV Shutdown Board C is now being powered from C Diesel Generator.

Which ONE of the following describes the effect on Average Power Range Monitors (APRM) and Rod Block Monitors (RBM) due to this electrical transient?

- A. Power Range Neutron Monitoring (PRNM) is not affected by this transient.
- B. All APRM channels generate a Critical Fault and RBM B generates a Non-critical fault.
- C. All APRM channels generate a Non-critical Fault and RBM B generates a Critical fault.
- D. All APRM channels and RBM channels generate a Non-critical fault.

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14. The following plant conditions exist:

- Reactor Level at (-) 130 inches for 8 minutes.
- Drywell pressure is at 2.3 psig.
- Reactor Pressure is at 600 psig.
- CS pumps A and C are running.
- RHR pumps failed to start.

The ADS confirmatory level instrument (LT-3-184) on System I has failed upscale.

Which ONE of the following describes the response of the ADS system and the reason for this response?

- A. ADS valves are NOT open. RHR is required to be operating.
- B. ADS Valves are open. ADS System II Logic has actuated all ADS valves.**
- C. ADS valves are NOT open. Both Systems I and II logic are required to actuate all ADS valves.
- D. ADS valves are open. The instrument failure is in the conservative direction.

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15. Given the following Unit 1 plant conditions:

- Reactor power is at 100% with all systems in a normal lineup.
- Instrument Mechanics (IM) are performing calibrations on the drywell pressure sensors when an inadvertent Group 2 and Group 6 PCIS isolation signal is received on Unit 1.

Which ONE of the following describes the response of the Standby Gas Treatment (SGT) system and the effect these PCIS isolations will have on plant operation?

Standby Gas Treatment (SGT) trains _____ (1) _____ will be operating. As a result of this PCIS malfunction, the reactor will _____ (2) _____.

- (1) (2)
- A. A, B and C continue to operate until PCIS is restored to a normal condition.
- B. A, B and C scram due to a Group I isolation from steam tunnel high temperature.
- C. A and B only continue to operate until PCIS is restored to a normal condition.
- D. A and B only scram due to a Group I isolation from steam tunnel high temperature.

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16. Unit-1 is operating at 100% rated power when the following annunciator alarmed:

MAIN STEAM RELIEF VALVES OPEN 1-FA-1-1 (9-3C W24)

Which ONE of the following describes the primary sensor that initiated the annunciator and one of the secondary indications which could be used to verify its accuracy?

The annunciator is initiated by the MSRV _____ (1) _____ and can be verified using the MSRV _____ (2) _____.

- | | | |
|----|----------------------------------|------------------------------|
| A. | (1)
valve position indication | (2)
tail pipe temperature |
| B. | valve position indication | tail pipe flow monitor |
| C. | tail pipe flow monitor | tail pipe temperature |
| D. | tail pipe temperature | tail pipe flow monitor |

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18. Given the following Unit 1 plant conditions:

- A reactor startup is in progress from cold conditions.
- The reactor is critical with a heat up in progress at 180 °F.
- The heat up rate is currently 80 °F/hr.
- 1A and 1B Condensate pumps and 1A Condensate Booster pump are operating.
- RPV level is (+) 30 inches and steady.

Which ONE of the following describes the appropriate method used to return RPV level to the normal control band under these conditions, and the reason for using that method?

- A. CRD SYSTEM FLOW CONTROL in MANUAL can be used to raise injection flow to as high as 80 gpm.
- B. RWCU BLDN FLOW CONT in MANUAL to reject less water to the main condenser due to thermal expansion from the heat up.
- C. RFW SU LVL CONT in AUTOMATIC to control level and prevent distracting the OATC during the startup.
- D. CNDS FLOW CONTROL SHORT CYCLE in MANUAL to raise Condensate Booster pump discharge pressure to raise injection flow.

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19. Regarding the Standby Gas Treatment (SGT) train, which ONE of the following describes the temperature set point that will trip the relative humidity heater and the basis for maintaining relative humidity within the SGT train?

The "SGT FILTER BK RH HTR CONT TEMPERATURE" annunciator will alarm and trip the Relative Humidity heater at a set point of ___(1)___ °F. Moisture is controlled within the SGT train to prevent damage to the ___(2)___.

- | | (1) | (2) |
|----|-----|---------------------|
| A. | 180 | Charcoal Adsorbers. |
| B. | 180 | HEPA filter. |
| C. | 80 | Charcoal Adsorbers. |
| D. | 80 | HEPA filter. |

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20. Given the following plant conditions:

- Diesel Generator (DG) 3EA is running in parallel with the grid during the monthly load surveillance test.
- The DG Mode Selector Switch for 3EA DG is in the PARALLEL WITH SYSTEM position.
- 3EA DG load is currently 2400 KW and steady.

Which ONE of the following describes the expected response of 3EA DG if the DG Mode Selector Switch was moved to the UNITS IN PARALLEL position, and the reason for that response?

The 3EA DG would _____ (1) _____. This is a result of _____ (2) _____ speed droop control.

- | | | |
|----|------------------------------|-----------|
| | (1) | (2) |
| A. | trip on Overload (51X) | zero |
| B. | trip on Overload (51X) | automatic |
| C. | continue to operate normally | automatic |
| D. | continue to operate normally | zero |

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21. Given the following plant conditions:

- Unit 3 is in a normal lineup.
- The following alarm is received:
 - UNIT PFD SUPPLY ABNORMAL (9-8B W35)
- It is determined that the alarm is due to a Unit 3 Unit Preferred AC Generator Over-voltage condition

Which ONE of the following describes the result of this condition?

Unit 3 Breaker 1001 _____ (1) _____; Unit 2 Breaker 1003 _____ (2) _____; and the Motor-Motor-Generator (MMG) set _____ (3) _____.

- | | | | |
|----|----------------------|-----------------------------|--------------------------------------|
| A. | (1)
trips OPEN; | (2)
is interlocked OPEN; | (3)
automatically shuts down. |
| B. | is interlocked OPEN; | trips OPEN; | automatically shuts down. |
| C. | trips OPEN; | is interlocked OPEN; | continues to run without excitation. |
| D. | is interlocked OPEN; | trips OPEN; | continues to run without excitation. |

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23. Which ONE of the following is a concern to plant operation if the Plant/Station Battery Rooms HVAC units are not operating properly?
- A. The design limit for hydrogen concentration in the rooms may be reached when the batteries are being charged.
 - B. Electrical Maintenance will not be able to obtain accurate cell specific gravity readings if temperature is above 90 °F.
 - C. The lead-calcium batteries tend to release toxic gas into the atmosphere above 90 °F.
 - D. The quarterly battery SR frequency is lowered to weekly when temperatures are outside the 70 °F to 90 °F temperature range.

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25. Given the following plant conditions:

- The Unit 3 Control Air system is aligned with the "G" Air compressor running and loaded.
- Subsequently, the Unit 3 Control Air system pressure falls to approximately 60 psig due to a rupture.

Which ONE of the following describes the final plant configuration pertaining to the Control Air system.

- A. All Unit's Control Air system pressure will drop and a manual scram will be required for all units.
- B. The effects on Unit 1 and 2 will not be as severe as on Unit 3 because of the automatic unit separation capability.
- C. The effect on Unit 3 will not be experienced on Unit 1 and 2 because of the alignment of the closed manual header isolation valve between Unit 2 and 3.
- D. All Unit's Control Air system pressures will drop, all Control Air Compressors will full load, and the Service Air Compressor will unload due to the Surge Condition experienced on Unit 3.

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26. Unit 2 is at rated power with the following indications:

- RECIRC PUMP MTR 'A' TEMP HIGH (9-4A W13).
- RECIRC PUMP MTR 'B' TEMP HIGH (9-4B W13).
- RBCCW EFFLUENT RADIATION HIGH (9-3A W17).
- RBCCW SURGE TANK LEVEL HIGH (9-4C W6).
- RX BLDG AREA RADIATION HIGH (9-3A W 22).
- Recirc Pump Motors "2A" and "2B" Winding and Bearing Temperature Recorder (2-TR-68-84) are reading 170 °F and 188 °F respectively and rising.
- RBCCW Pump Suction Header Temperature Indicator (2-TIS-70-3) is reading 94 °F and rising.
- RWCU NON-REGENERATIVE HX DISCH TEMP HIGH (9-4C W17).
- Area Radiation Monitor RE-90-13A and RE-90-14A are in alarm reading 55 mr/hr and rising.

Which ONE of the following describes the actions that should be taken in accordance with plant procedures?

Enter 2-EOI-3, "Secondary Containment Control" and _____

_____.

- A. Trip and isolate '2B' Recirc Pump.
Enter 2-AOI-68-1A "Recirc Pump Trip/Core Flow Decrease OPRMs Operable."
- B. Trip and isolate '2B' Recirc Pump.
Commence a normal shutdown.
- C. Trip RWCU pumps and isolate the RWCU system.
Commence a normal shutdown.
- D. Trip RWCU pumps and isolate the RWCU system.
Close RBCCW Sectionalizing Valve 2-FCV-70-48.

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28. Which ONE of the following combinations of the alarms and indications numbered below characterizes the possibility of an uncoupled control rod?

1. "Red" (- -) on the Full Core Display.
2. CONTROL ROD OVERTRAVEL (9-5A W14).
3. "Red" (48) on Four Rod Display.
4. CONTROL ROD DRIFT (9-5A W28)
5. Blank rod position indication on Four Rod Display.

A. 1, 2, 4

B. 2, 4, 5

C. 2, 3, 4

D. 1, 2, 5

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29. Unit 2 is starting up with the following plant conditions:

- Total steam flow is at 20% of rated flow.
- Rod Worth Minimizer (RWM) Group 22 is latched with limits from 00-04. (a double asterisk on the pull sheet applies for this group)
- The OATC selects the first rod in Group 22 and takes the ROD MOVEMENT CONTROL switch to the ROD OUT NOTCH position.
- The selected rod triple notches to position 06.

Which ONE of the following describes the RWM response to this condition and the reason for that response?

The RWM ROD BLOCK (9-5B W35) _____ (1) _____. The reason for that response is _____ (2) _____.

- (1) (2)
- A. will alarm a Withdraw Block is applied due to power below the Low Power Set Point (LPSP).
- B. will alarm a Withdraw Block is applied since the single notch restraint limit for Group 22 control rods has been exceeded.
- C. will NOT alarm Notch 06 is the Alternate Withdraw Limit for that control rod and will NOT result in a Withdraw Error.
- D. will NOT alarm a Withdraw Block is NOT applied with power above the Low Power Set Point (LPSP).

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32. Unit 2 is at 100% power with the following plant conditions:

- SIX MONTHS following a refueling outage.
- An electrical problem caused a trip of BOTH Fuel Pool Cooling Pumps.
- Pump restart is delayed.
- The Fuel Pool Temperature was 90 °F when the pumps tripped.

Which ONE of the following is the calculated time to reach the fuel pool temperature Operating Limit and Technical Requirements Manual Limit?

The Operating Limit will be reached in (1) . The TRM limit will be reached in (2) .

REFERENCE PROVIDED

- | | (1) | (2) |
|----|--------------|-------------|
| A. | 16.7 hours. | 32.3 hours. |
| B. | 26.9 hours. | 58.2 hours. |
| C. | 26.9 hours. | 64.9 hours. |
| D. | 43.75 hours. | 52.9 hours. |

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33. Which ONE of the following describes the reason for Extraction Non-Return Valve closure when a turbine trip signal is received?
- A. Protect the heater tubes from excessive vibration when the steam flows back to the turbine.
 - B. Protect the turbine casing from over-pressurization when the steam flows back to the turbine.
 - C. Protect the moisture separators from over-pressurization on CIV closure.
 - D. Protect the turbine from overspeed when the steam flows back to the turbine.

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34. Given the following plant conditions:

- The Radwaste system Waste Collector Pump has failed due to bearing damage.
- Waste Collector Tank level is upscale at 38,000 gallons.

Which ONE of the following describes the action required to correct this problem and the effect on plant operation until it is completed?

To correct this problem perform the following: _____ (1) _____. Until this action is complete, the _____ (2) _____ sump levels will continue to rise.

- | | | |
|----|---|---|
| A. | (1)
Lineup to pump the Waste Collector Tank to the Waste Surge Tank. | (2)
Drywell, Reactor Building and Turbine Building Floor Drain |
| B. | Cross-tie Waste Collector Pump suction to the Waste Surge Pump. | Drywell, Reactor Building and Turbine Building Floor Drain |
| C. | Lineup to pump the Waste Collector Tank to the Waste Surge Tank. | Drywell, Reactor Building and Turbine Building Equipment Drain |
| D. | Cross-tie Waste Collector Pump suction to the Waste Surge Pump. | Drywell, Reactor Building and Turbine Building Equipment Drain |

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35. Unit 2 is in Mode 2 during a reactor startup at ~ 2% power.

The Off-gas system is aligned as follows:

- "A" SJAE is in service.
- Adsorber control switch (HS-66-113) AUTO
- Adsorber train "A" inlet (FCV 66-113A) CLOSED
- Adsorber bypass valve (FCV 66-113B) OPEN
- Off-gas system isolation valve (FCV 66-28) OPEN

Which ONE of the following describes the effect on the Off-gas system alignment should one of the OG Post-Treatment radiation monitors fail upscale?

The Adsorber INLET valve (66-113A) will ____ (1) _____. The Adsorber BYPASS valve (66-113B) will ____ (2) _____. The Off-gas isolation valve (66-28) will ____ (3) _____.

- | | (1) | (2) | (3) |
|----|---------------|--------------|-------------|
| A. | open | close | remain open |
| B. | open | close | close |
| C. | remain closed | remain open | remain open |
| D. | remain closed | remains open | close |

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36. Given the following Unit 1 plant status:

- The unit was operating at 100% rated power.
- A Loss of Off-Site Power has occurred.
- 1-EOI-1, "RPV Control" was entered on low RPV level.
- 1-EOI-2, "Primary Containment Control" was entered on High Drywell pressure.
- 1-EOI-3, "Secondary Containment Control" was entered on Secondary Containment Δp .
- RPV level is being maintained at (-) 20 inches.
- Drywell pressure is 1.2 psig and steady.
- Reactor Building Ventilation was restarted as directed by 1-EOI-3, "Secondary Containment Control"

Which ONE of the following conditions would cause the Reactor Building ventilation to re-isolate?

- A. Drywell pressure rises above 2.5 psig.
- B. 0-RM-90-259A or B reading 300 cps.
- C. Reactor Zone exhaust radiation rises above 75 mr/hr.
- D. Refuel Zone exhaust radiation rises above 75 mr/hr.

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37. Unit 3 Reactor Building Ventilation is running with the Standby Gas Treatment (SGT) Systems in a normal standby lineup.

An event occurs which results in the following Unit 3 plant conditions:

- Reactor Water Level increasing from a low of +8 inches.
- Drywell Pressure 1.5 psig and steady.
- Reactor Building Exhaust duct radiation 62 mR/hr and increasing slowly.
- Refuel Floor Exhaust duct radiation 65 mR/hr and steady.

Which ONE of the following describes the Secondary Containment ventilation lineup for these conditions?

The SGT systems are _____ (1) _____. Reactor Building ventilation is _____ (2) _____ and Refuel Floor Ventilation is _____ (3) _____.

- | | (1) | (2) | (3) |
|----|---|-------------------------------|--------------------------------|
| A. | running with suction from the Reactor Building. | secured with dampers isolated | running with dampers open. |
| B. | running with suction from the Refuel Floor. | running with dampers open | secured with dampers isolated. |
| C. | in a normal standby lineup. | running with dampers open | running with dampers open. |
| D. | running with suction from the HPCI gland exhauster. | running with dampers open | running with dampers open. |

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39. Which ONE of the following describes the response of thermal limits due to the trip of a single recirculation pump from 100% rated power?

A single recirculation pump trip from 100% rated power will cause the value of Critical Power to _____ (1) _____ and the Critical Power Ratio will _____ (2) _____.

- A. (1) (2)
A. lower lower
- B. lower rise
- C. rise lower
- D. rise rise

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40. Given the following Unit-2 conditions:

- A Loss of Off-site power and LOCA has occurred.
- 480V Load Shedding Logic has actuated.
- The Unit Operator immediately clears the "A" RBCCW pump white disagreement light while surveying panel 9-4.
- No other actions were performed.

Which ONE of the following describes the effect on the RBCCW system?

- A. "A" pump auto starts after 40 sec; "B" pump can be manually started immediately.
- B. "B" pump auto starts after 43 sec; "A" pump can be manually started after 40 sec.
- C. "A" pump auto starts after 40 sec; "B" pump auto starts after 43 secs.
- D. "B" pump auto starts after 43 sec; "A" pump can be manually started immediately.

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41. The following plant conditions exist:

- Complete loss of offsite power on Unit 2.
- All 4KV Shutdown boards are being supplied by their Diesel Generators.
- DW pressure: 2 psig slowly rising.
- RPV level: (-) 140 inches and stable.
- RPV pressure: 800 psig and stable.
- HPCI and RCIC are injecting to the vessel.
- 250V Reactor MOV BD 2A UV (9-8C W4) is in alarm.

What ONE of the following describes the required action to restore 2A 250v Reactor MOV Board voltage to normal?

On 250V Battery Charger ____ (1) ____, perform the following: _____ (2) _____.

- | | (1) | (2) |
|----|-----|---|
| A. | 2A | Place the Emergency ON select switch in "Emergency ON." |
| B. | 2A | Manually re-close the normal feeder breaker following a 40 second time delay. |
| C. | 3 | Place the Emergency ON select switch in "Emergency ON." |
| D. | 3 | Manually re-close the normal feeder breaker following a 40 second time delay. |

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42. Given the following plant conditions:

- Reactor power is 38% power.
- Main turbine load is 23%.
- Turbine bypass valves are partially open.

Which ONE of the following describes the response of the reactor if the Main Turbine Generator inadvertently trips?

The reactor will _____.

- A. **scram on High Reactor Pressure.**
- B. immediately scram on Turbine Stop Valve closure.
- C. continue to operate at 38% power with Bypass Valves open.
- D. continue to operate above 38% power due to a loss of Feedwater heating.

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43. Unit 2 has received a scram signal but some of the control rods failed to fully insert. The Unit Supervisor has directed you to insert control rods as directed by 2-OI-85, "Control Rod Drive System."

Which ONE of the following control rod insertion processes can ONLY be accomplished in the main control room as directed by 2-OI-85, "Control Rod Drive System?"

- A. Removal and replacement of RPS scram solenoid fuses.
- B. Venting and re-pressurizing the Scram Pilot Air Header.
- C. Venting the over piston area.
- D. Raised cooling water differential pressure.

HLT 0707 NRC RO Written Examination

45. Which ONE of the following describes the response to a partial loss of RBCCW?

Should the system discharge header pressure drop to less than (1), isolation valve FCV-70-48 would close, causing RBCCW System loads (2) to lose RBCCW cooling.

- | | |
|-----------------------------|------------------------------|
| 1. RBED sump HX | 6. DWED sump HX |
| 2. FPC HX | 7. RWCU non-regenerative HX |
| 3. Recirc pump seal coolers | 8. Recirc pump motor coolers |
| 4. RR system sample coolers | 9. DW coolers |
| 5. RWCU pump seal coolers | |

- | | | |
|----|----------|------------|
| | (1) | (2) |
| A. | 67 psig; | 3,6,8,9. |
| B. | 57 psig; | 3,6,8,9. |
| C. | 67 psig; | 1,2,4,5,7. |
| D. | 57 psig; | 1,2,4,5,7. |

HLT 0707 NRC RO Written Examination

46. Units 2 and 3 are operating at 100% power when a leak develops in the Control Air header, causing pressure to lower slowly. All available compressors are in service.

Which ONE of the following statements describes the response of the Service Air System?

Service Air to Control Air Crosstie Valve (0-FCV-33-1) will OPEN at (1) and will (2) when Control Air pressure drops below 30 psig.

- | | | |
|----|---------|-------------|
| | (1) | (2) |
| A. | 95 psig | fail open |
| B. | 95 psig | fail closed |
| C. | 85 psig | fail open |
| D. | 85 psig | fail closed |

HLT 0707 NRC RO Written Examination

47. Unit 3 is in Cold Shutdown with the following plant conditions:

- Both reactor recirc pumps are removed from service for maintenance.
- RHR Loop II is in shutdown cooling with 3B RHR pump running.
- At 08:00, RHR Loop II was taken out of shutdown cooling to adjust the packing on the RHR pumps.
- At 09:30, RHR Loop II was returned to the shutdown cooling mode of operation.
- During this time RHR Loop I remained in standby.
- At 12:00, the Unit Supervisor is informed that an RHR Loop I surveillance needs to be performed that will require declaring RHR Loop I inoperable.

Which ONE of the following describes the EARLIEST time and the MAXIMUM duration that RHR Loop I may be made inoperable for surveillance testing?

RHR Loop I may be made inoperable _____ (1) _____ and can remain inoperable _____ (2) _____.

REFERENCE PROVIDED

- | | (1) | (2) |
|----|-------------|-------------------------------------|
| A. | immediately | as long as RHR Loop II is operable. |
| B. | immediately | for no longer than 2 hours. |
| C. | after 16:00 | as long as RHR Loop II is operable. |
| D. | after 16:00 | for no longer than 2 hours. |

HLT 0707 NRC RO Written Examination

49. Unit 2 is at 100% rated power with the following conditions:

- DRYWELL NORM OPERATING PRESS HIGH (9-3B W 19) in alarm.
- DRYWELL PRESS APPROACHING SCRAM (9-3B W 30) in alarm.
- DRYWELL PRESSURE ABNORMAL (9-5B W 31) in alarm.
- DRYWELL FD SUMP LEVEL ABN (9-4C W 2) in alarm.
- Drywell venting is in progress using 2-AOI-64-1, "Drywell Pressure and/or Temperature High, or Excessive Leakage into Drywell."
- Drywell pressure is 2.2 psig and steady.

Assuming no further operator action, which ONE of the following describes the plant response if 480V Shutdown Board 2A de-energized due to an electrical fault?

The Drywell vent lineup would be _____ (1) _____. Drywell pressure would _____ (2) _____.

- | | (1) | (2) |
|----|------------|---|
| A. | unaffected | lower due to non-essential RBCCW loads isolating. |
| B. | unaffected | remain steady at 2.2 psig. |
| C. | isolated | lower due to non-essential RBCCW loads isolating. |
| D. | isolated | rise due to RPS A de-energizing. |

HLT 0707 NRC RO Written Examination

50. Given Unit 1 at 100% rated power:

Which ONE of the following describes the unit response if the Max Combined Flow Limit setting was inadvertently reduced from 125% to 75% over two minutes?

Main Generator load would _____ (1) _____, Main Turbine Bypass Valves would _____ (2) _____ and reactor pressure would _____ (3) _____.

- | | (1) | (2) | (3) |
|----|-----------------|---------------|-----------------|
| A. | remain the same | open | remain the same |
| B. | lower | remain closed | rise |
| C. | remain the same | remain closed | remain the same |
| D. | lower | open | rise |

HLT 0707 NRC RO Written Examination

52. A LOCA has occurred on Unit 2 resulting in the following conditions:

- 2-EOI-1, "RPV Control" and 2-EOI-2, "Primary Containment Control" are being executed.
- Drywell Sprays could not be initiated due to logic failures.
- Drywell pressure 15 psig and slowly rising.
- Drywell temperature 305 °F and steady.
- Suppression Pool level 15.5 feet.
- Suppression pool temperature 140 °F and steady.
- ADS was manually initiated due to high Drywell temperature.
- The six ADS valves have now closed due to low reactor pressure.
- Normal range level indicates (+) 34 inches.
- Emergency range level indicates (+) 58 inches.
- Shutdown Floodup level indicates (+) 30 inches.

Which ONE of the following describes the current status of RPV level instrumentation?

Reactor water level (1) be determined. The Shutdown Floodup instrument (2) be used for trend indication.

REFERENCE PROVIDED

- | | | |
|----|------------|------------|
| A. | (1)
CAN | (2)
CAN |
| B. | CAN | CANNOT |
| C. | CANNOT | CAN |
| D. | CANNOT | CANNOT |

HLT 0707 NRC RO Written Examination

53. Which ONE of the following describes the condition where Emergency RPV Depressurization is required based on Suppression Pool level and the basis for that requirement?

Suppression Pool water level below (1) requires Emergency RPV Depressurization based on level below the (2).

- A. (1) (2)
A. 12.75 feet downcomer pipe exits.
- B. 12.75 feet HPCI Exhaust Line exit.
- C. 11.50 feet downcomer pipe exits.
- D. 11.50 feet HPCI Exhaust Line exit.

HLT 0707 NRC RO Written Examination

54. Given the following Unit 1 plant conditions:

- HPCI 120VAC POWER FAILURE (9-3F W7) is in alarm.
- A LOCA has occurred initiating a scram on Low Reactor Water Level.
- Reactor water level (-) 122 inches and lowering
- Drywell pressure 1.8 psig and steady
- A Pre-Accident Signal (PAS) has just been received and all ECCS equipment respond as designed.
- Assume NO operator actions.

Which ONE of the following describes the time that must elapse before ADS automatically initiates and the reason for this response?

ADS will initiate in ____ (1) ____ . This actuation is in response to a _____ (2) _____ .

- | | | |
|----|--------------------|--------------------------------|
| A. | (1)
265 seconds | (2)
LOCA inside the Drywell |
| B. | 360 seconds | LOCA inside the Drywell |
| C. | 265 seconds | LOCA outside the Drywell |
| D. | 360 seconds | LOCA outside the Drywell |

HLT 0707 NRC RO Written Examination

55. An ATWS has occurred on Unit 1. The following conditions exist after the OATC initiated Standby Liquid Control (SLC) injection using the 1A SLC pump:

- Pump Running Red Light On
- Squib Valve Continuity Lights Off
- SLC SQUIB VALVE CONTINUITY LOST (9-5 W20) in alarm
- SLC Pressure 1200 psig
- Reactor Pressure 1000 psig
- RWCU is in service.

Which ONE of the following describes the status of SLC and the appropriate action?

Standby Liquid Control (1) injecting into the RPV. Perform the following: (2) .

- A. (1) (2)
A. is NOT Initiate SLC pump 1B.
- B. is NOT Fire the squib valves locally.
- C. IS Manually isolate RWCU.**
- D. IS Fire the squib valves locally.

HLT 0707 NRC RO Written Examination

56. Given the following plant conditions:

- A Site Area Emergency has been declared due to gaseous effluent releases above 100 mrem TEDE.
- High radiation has been detected in the air inlet to the Unit 3 Control Room.
- Radiation Monitor RE-90-259B is reading 275 cpm above background.

Which ONE of the following describes the Control Room Emergency Ventilation (CREV) System response?

- A. BOTH CREV units will automatically start and will continue to run until Control Bay Ventilation is restarted; then, they must be manually stopped.
- B. BOTH CREV units will automatically start and will continue to run until Control Bay Ventilation is restarted; then, they will automatically stop.
- C. The Selected CREV unit will automatically start and will continue to run until Control Bay Ventilation is restarted; then, it will automatically stop.
- D. The Selected CREV unit will automatically start and will continue to run until Control Bay Ventilation is restarted; then, it must be manually stopped.

HLT 0707 NRC RO Written Examination

58. Given the following plant conditions:

- A significant voltage transient on the grid initiated a fault on Unit Station Service Transformer (USST) 2A.
- A fire on USST 2A resulted in actuation of fire suppression systems.
- Subsequently, all off-site power was lost due to continued voltage transients on the grid.

Which ONE of the following describes the required operator actions to restore Electric Fire Pump B to service and the location where these actions are performed?

Proceed to _____ (1) _____ and perform the following: _____ (2) _____.

- | | (1) | (2) |
|----|----------------------|---|
| A. | 4KV Shutdown Board B | Place the NORMAL/EMERGENCY switch for Fire Pump B to EMERGENCY and then back to NORMAL. |
| B. | 4KV Shutdown Board B | Re-close the breaker for Fire Pump B. |
| C. | 4KV Shutdown Board C | Place the NORMAL/EMERGENCY switch for Fire Pump B to EMERGENCY and then back to NORMAL. |
| D. | 4KV Shutdown Board C | Re-close the breaker for Fire Pump B. |

HLT 0707 NRC RO Written Examination

59. Which ONE of the following describes the logic arrangement for the Reactor Feed Pump High Water Level Trip and the basis for that trip?

The Reactor Feed Pump (RFP) High Water Level Trip logic is _____ (1) _____ and is designed to prevent damage to the _____ (2) _____.

- | | (1) | (2) |
|----|----------------------|--------------|
| A. | one-out-of-two-twice | RFP turbines |
| B. | one-out-of-two-twice | Main Turbine |
| C. | two-out-of-two-once | RFP turbines |
| D. | two-out-of-two-once | Main Turbine |

HLT 0707 NRC RO Written Examination

61. Given a condition where a rising Drywell Average Air Temperature CANNOT be restored or maintained, which ONE of the following temperatures will require initiating a reactor scram?

Before Drywell Average Air Temperature exceeds (1) °F, a manual reactor scram is required in accordance with EOI-2, "Primary Containment Control?"

- A. 150
- B. 160
- C. 200
- D. 280

HLT 0707 NRC RO Written Examination

62. Given the following Unit 2 plant conditions:

- An inadvertent Group 6 isolation occurs due to a bag of contaminated trash being brought too close to the Unit 2 Reactor Zone Ventilation Radiation Monitors.
- When the bag is removed, the NUMAC radiation monitor readings return to normal.

Which ONE of the following describes the MINIMUM operator action(s), if any, are required to reset the Group 6 isolation?

The NUMAC radiation monitors _____ (1) _____ reset. The PCIS isolation indication on Control Room Panel 9-4 _____ (2) _____ reset.

- | | | |
|----|-------------------------|-------------------------|
| A. | (1)
must be manually | (2)
must be manually |
| B. | must be manually | will automatically |
| C. | will automatically | must be manually |
| D. | will automatically | will automatically |

HLT 0707 NRC RO Written Examination

63. Given the following Unit 2 conditions:

- RX ZONE EXH RADIATION MONITOR DNSC (9-3A W35) is in alarm.
- Reactor Zone Radiation detector 2-RE-90-142A has failed to a DOWNSCALE condition.

Which ONE of the following subsequent instrumentation failures will cause a Reactor Zone Isolation?

Radiation monitor _____ (1) _____ will initiate a Reactor Zone isolation if it fails _____ (2) _____.

- | | | |
|----|---------------------|----------------|
| A. | (1)
2-RE-90-142B | (2)
upscale |
| B. | 2-RE-90-143B | downscale |
| C. | 2-RE-90-143C | upscale |
| D. | 2-RE-90-142C | downscale |

HLT 0707 NRC RO Written Examination

64. Given the following plant conditions:

- Unit 2 is at 100% power.
- During the backwash of a Reactor Water Cleanup (RWCU) Demineralizer, the Backwash Receiving Tank ruptured.
- The RWCU system has been isolated.
- Secondary Containment conditions are as follows:
 - ALL Reactor and Refuel Zone radiation monitors trip on high radiation.
 - NO Standby Gas Treatment (SGT) train can be started.

Refuel zone pressure:	(-) 0.12 inches of water
Reactor zone pressure:	(+) 0.02 inches of water

- AREA RADIATION LEVELS

RB EL 565 W, 565 E, 565 NE:	250 mr/hr
RB EL 593	upscale
RB EL 621	upscale

Which ONE of the following describes the required action and the type of radioactive release in progress?

REFERENCE PROVIDED

- A. Initiate a shutdown per 2-GOI-100-12A, "Unit Shutdown." An Elevated radiation release is in progress.
- B. Initiate a shutdown per 2-GOI-100-12A, "Unit Shutdown." A Ground-level radiation release is in progress.
- C. Scram the reactor and Emergency Depressurize the RPV. An Elevated radiation release is in progress.
- D. Scram the reactor and Emergency Depressurize the RPV. A Ground-level radiation release is in progress.

HLT 0707 NRC RO Written Examination

66. Given the following conditions involving Foreign Material Exclusion (FME):

- An outage worker was placing a plastic FME cover on a vacuum breaker inside the Torus.
- He inadvertently dropped the cover into the Suppression Pool.
- The cover immediately sank to the bottom of the Torus.
- The cover was still visible from the catwalk.

Which ONE of the following describes the required actions for this situation?

Work in the Torus _____ (1) _____. The FME cover MUST be retrieved _____ (2) _____.

- (1) (2)
- A. MUST be stopped. before job closeout.
- B. MUST be stopped. immediately.
- C. may continue. before job closeout.
- D. may continue. immediately.

HLT 0707 NRC RO Written Examination

67. Which ONE of the following describes the proper orientation of a fuel bundle within a control rod cell while performing a Core Load Verification in accordance with 0-GOI-100-3C, "Fuel Movement Operations During Refueling", Attachment 6?
- A. Channel spacer buttons are adjacent to the control blade and adjacent to each other.
 - B. The bundle serial number is readable as viewed from the center of the reactor core.
 - C. Channel fasteners for each bundle in the cell are aligned to the outside corners.
 - D. Orientation boss on the lifting bails point towards the center of the reactor core.

HLT 0707 NRC RO Written Examination

68. Which ONE of the following describes the management level required to provide FINAL approval of maintenance with a RED RISK classification in accordance with BP-336, "RISK DETERMINATION AND RISK MANAGEMENT?"
- A. Risk SRO
 - B. Shift Manager
 - C. Operations Manager
 - D. Plant Manager

HLT 0707 NRC RO Written Examination

69. Given the following plant conditions:

- Unit 2 is coming out of an outage making preparations for re-start.
- Reactor Coolant temperature is 150 °F.
- Mode Switch is in the REFUEL position.

As the Unit Operator, you receive a phone call from the Refuel Floor SRO to inform the Control Room that the Reactor Pressure Vessel (RPV) Head is fully tensioned.

Which ONE of the following describes the correct operating MODE in accordance with Technical Specifications?

- A. Mode 2
- B. Mode 3
- C. Mode 4
- D. Mode 5

HLT 0707 NRC RO Written Examination

70. Which ONE of the following satisfies the criteria that identifies a "Complex Infrequently Performed Test or Evolution?" (CIPTE)

- A. Primary System/Reactor Coolant System Barrier Hydrostatic Pressure Test.
- B. Rod Worth Minimizer functional test prior to startup in accordance with 1-GOI-100-1A.
- C. HPCI Main and Booster Pump Set Developed Head and Flow Rate Test at Rated Reactor Pressure per 3-SR-3.5.1.7.
- D. Functional test conducted per the Work Order to verify operability of the RHR Inboard Injection Valve following maintenance.

HLT 0707 NRC RO Written Examination

71. Which ONE of the following Process Radiation Monitor systems will NOT be adversely affected by a loss of Reactor Protection System (RPS) Bus A?
- A. Main Steam Line radiation monitors.
 - B. Refuel Zone Ventilation radiation monitors.
 - C. Reactor Zone Ventilation radiation monitors.
 - D. Control Room Emergency Ventilation radiation monitors.

HLT 0707 NRC RO Written Examination

73. Given the following Unit 1 plant conditions:

- A reactor scram has occurred.
- HPCI is needed to maintain reactor water level.
- Suppression pool temperature is 145 °F.
- Suppression pool level is 13.25 feet.

Which ONE of the following describes the reason HPCI is operated with a suction from the CST if possible?

- A. The HPCI turbine exhaust pressure is likely to exceed the Primary Containment Pressure limit.
- B. The HPCI pump shaft seals are not designed to operate at temperatures in excess of 140 °F and may fail.
- C. The suppression pool provides insufficient NPSH to the HPCI pump and cavitation may occur at rated flow.
- D. The HPCI lube oil will exceed allowable temperatures and the HPCI function could be lost due to damaged bearings.

HLT 0707 NRC RO Written Examination

74. Given the following plant conditions:

- An accident has occurred on Unit 1 which has resulted in entry into Severe Accident Management Guidelines (SAMG).
- SAMGs are being implemented from the Technical Support Center (TSC).

Which ONE of the following procedure classifications is inappropriate to be used in conjunction with SAMG implementation?

- A. Abnormal Operating Instructions (AOI).
- B. Emergency Plan Implementing Procedures (EPIP).
- C. Emergency Operating Instruction (EOI) Flowcharts.
- D. Emergency Operating Instruction (EOI) Appendices.

HLT 0707 NRC RO Written Examination

75. Unit 3 is performing a Reactor Startup with the following conditions:

- RPV pressure is at 750 psig.
- Control Rod withdrawal is in progress.
Reactor power is at Range 6 on the IRMs.
- The Woodward Governor for 3A RFP fails upscale and the Reactor scrams on APRM High-High.
- The Operating Crew stabilizes the Unit.
- After the scram is reset the OATC notes the following annunciators:
 - DRYWELL PRESSURE HIGH HALF SCRAM (9-4A W8).
 - DRYWELL TEMP HIGH (9-3B W16).
 - DRYWELL/SUPPR CHAMBER RADIATION HIGH (9-7C W15)
 - OG PRETREATMENT RADIATION HIGH (9-3A W5)

Which ONE of the following actions should the Unit Supervisor direct to be completed within 2 hours?

- A. Inject Standby Liquid Control.
- B. Place SJAEs on Auxiliary Boiler Steam supply.
- C. Open 3-FCV-1-56 Main Steam Line Drain.
- D. Place Steam Seals on Auxiliary Boiler Steam supply.