INITIAL SUBMITTAL OF THE WRITTEN EXAMINATION

FOR THE LASALLE INITIAL EXAMINATION - MARCH 2005

LaSalle 2005 Initial Examination
Proposed Facility-Developed Written Examination
RO Questions 1-75
SRO Questions 76-100

1. 295001 AK1.01 001/295001/AK1.01/3.5/3.6/RO/MEMORY//

(1.00 Point) A differential temperature between the bottom of the RPV and the RPV flange that is greater than 80°F on LOA-RR-101, Attachment B, Monitoring of the Reactor Water Temperature / Pressure During Loss of Both RR Pumps is indicative of ...

A.✓ inadequate natural circulation flow.

B. inadequate RT bottom head drain flow.

C. inadequate control rod cooling water flow.

D. excessive RT non-regenerative heat exchanger WR flow.

Answer A is correct. The referenced procedure states "If delta T per Attachment B is >80°F, at the direction of the Shift Manager RAISE Rx Level to at least +50 inches on Shutdown Range / Upset Range Rx Level using available systems, as necessary to promote natural circulation and prevent temperature stratification while continuing with subsequent actions."

Reference:
LOA-RR-101, Revision 16, page 8, Step B.2.1.7

2. 295003 AK2.06 001/295003/AK2.06/3.4/3.5/RO/MEMORY/006.00.18/

(1.00 Point) Assume that AC Electrical Power is lost to the Division 1, 125 vdc Battery Chargers.

Continuing to operate without restoring AC Electrical Power to the Division 1, 125 vdc Battery Chargers will result in ...

A.✓ inoperability of RCIC due to loss of power to the governor electronics and several RCIC instruments.

B. inoperability of the 1A Diesel Generator due to loss of field flash and control power.

C. failure of the turbine lube oil to automatically start Emergency Bearing Oil Pump when required.

D. automatic closure and isolation of many inboard primary containment isolation valves.

Answer A is correct. Without a battery charger, the Division 1 Battery will continue to discharge resulting in inoperability of loads supplied by 111X and 111Y. Circuit Breaker 8 on 111Y feeds RCIC and FW Interlocks. Specifically, the RCIC governor electronics, flow controller, steam supply pressure meter, exhaust pressure meter, pump discharge pressure meter, and pump suction pressure meter.

The other answers are incorrect because they are NOT supplied by Division 1 125 vdc batteries.
1) the turbine lube oil Emergency Bearing Oil Pump is supplied by 250 vdc
2) PCIS Inboard isolation logic for Groups 2, 4, 5, 6, 7, and 10 is supplied by 112Y (Division 2)
3) 1A DG field flash and control power is supplied by 112Y (Division 2)

Reference:
LOA-DC-101, Revision 07, pages 184, 192, 193, and 204

3. 295004 AK3.03 001/295004/AK3.03/3.1/3.5/RO/MEMORY/049.00.10/

(1.00 Point) Why will the Unit-1 reactor automatically scram as a result of simultaneous loss of 111Y and 112Y?

A. De-energizes both divisions of ARI initiation logic.

B. De-energizes both backup scram valves.

C. De-energizes control power to both TDRFPs.

D.✓ De-energizes both divisions of isolation logic.

Answer D is correct. Loss of 111Y causes the Division 1 half of the isolation logic to de-energize. The logic is fail-safe and initiates a half-isolation. Loss of 112Y de-energizes the Division 2 half of the logic resulting in a PCIS Group 1 isolation (MSIVs and Drain Valves).

The other answers are incorrect. The TDRFPs continue to operate as-is without tripping capability when control power is lost. Both ARI and Backup Scram valves are energize to actuate NOT de-energize.

Reference:
LOA-DC-101, Revision 07, pages 184 and 193

4. 295005 AA1.02 001/295005/AA1.02/3.2/3.6/RO/MEMORY/049.00.10/

(1.00 Point) Given the following initial conditions:
- Reactor Power at 20% of RTP
- Normal electrical lineup for Mode 1

Considering the above initial conditions, which one of the following states the status of the eight white RPS Group Scram lights immediately following a Main Turbine trip when Turbine Stop Valve #1 sticks OPEN?

A.✓ Top row LIT, and bottom row LIT

B. Top row OFF, and bottom row OFF

C. Top row LIT, and bottom row OFF

D. Top row OFF, and bottom row LIT

Answer A is correct. When above 25% power (first stage pressure) the reactor will scram follow a turbine trip and TSV closure. With power below 25% this scram is automatically bypassed than therefore NO scram signal is received.

Reference:
LOS-RP-Q2, Revision 14, page 3, Step A.2.1, and page 4, Step C.1
LOR-1H13-P603-A211

5. 295006 AK3.01 001/295006/AK3.01/3.8/3.9/RO/MEMORY//

(1.00 Point) Following a manual reactor scram from rated conditions, RPV water level decreased to -25 inches then started to recover.

The RPV water level response is ...

A. abnormal, the TDRFPs should respond quicker to minimize the transient.

B. normal, due to RR pumps downshifting to slow speed.

C.✓ normal, due to void collapse causing shrink.

D. abnormal, the MDRFP should have started to minimize the transient.

Answer C is correct. The rapid reduction in thermal power following a scram causes a significant decrease in voids. This void collapse causes level to shrink, giving this normal level response to a scram from full power.

The other answers are incorrect because the response is normal not abnormal and Predefined FW Profile mitigates the response but does not prevent it.

Reference:
LOP-RL-01, Revision 18, page and 26, Attachment A
System Description 031, page 15

6. 295006 AA2.02 001/295006/AA2.02/4.3/4.4/RO/HIGH//

(1.00 Point) LGA-001 entry conditions have been met.

Which one of the following conditions would require entering LGA-010?

A. one control rod is at position 04 and one at 02; all other control rods are at position 00.

B.✓ two control rods are at position 04; all other control rods are at position 00

C. twenty-five control rods are at position 02; all other control rods are at position 00

D. one control rod is a position 48; all other control rods are at position 00

Remove references to position 02 from LGA-001 and LGA-010 prior to using as handouts.

Answer B is correct. LGA-001 requires Exiting LGA-001 and Entering LGA-010 if the answer to the question "All rods except one in to at least 02?" is answered "No" or "unknown" because the scram has NOT been successful.

The other answers are incorrect because with the control rods as described in the distracter, the answer would be "yes," and you would continue in LGA-001 instead of exiting to LGA-010 because the reactor scram has been successful.

Determined to be higher cognitive level question because the RO has to interpret the control rod positions in order to determine the answer to the question "All rods except one in to at least 02."

Reference:
LGA-001, Revision 06

7. 295016 G2.1.32 001/295016/2.1.32/3.4/3.8/RO/MEMORY/054.00.05/

(1.00 Point) You have been directed to transfer RHR from Suppression Pool Cooling to Shutdown Cooling at the Remote Shutdown Panel (RSP).

While performing the above task, there are NO interlocks that would prevent you from opening 1E12-F006B, Shutdown Cooling Suction if ___________________ is already OPEN.

A.✓ 1E12-F016B, 1B RHR Upstream Drywell Spray Isolation

B. 1E12-F004B, 1B RHR Suppression Pool Suction

C. 1E12-F024B, 1B RHR Full Flow Test

D. 1E12-F027B, 1B RHR Suppression Chamber Spray

Answer A is correct. RHR System isolation, automatic initiations, realignment and protective features are bypassed when control is from the RSP with the following exceptions:
1) Reactor Drain Interlocks; 1E12-F006B will NOT open unless 1E12-F027B, -F024B, and F004B are all closed
2) Pump electrical interlocks
3) 1E12-F004B will NOT open unless 1E12-F006B is full closed

Reference:
LOP-RX-06, Revision 06, page 2 and 3, Step D.1.1, D.1.2 and D.1.3.

8. 295018 AK1.01 001/295018/AK1.01/3.5/3.6/RO/MEMORY/011.00.21/

(1.00 Point) The 1A Diesel Generator (DG) Cooling Water Pump tripped while the 1A DG was running under load during surveillance testing.

Assuming no operator action, which one of the following statements describes the expected impact on continued 1A DG operation?

A. The 1A DG governor will runback the load limiter to 10% to prevent damaging the 1A DG.

B. The pump trip will directly actuate the DG lockout which will trip the 1A DG.

C.✓ The 1A DG will eventually trip on high cooling water temperature.

D. The 1A DG will eventually fail with possible damage due to lack of cooling.

Answer C is correct. With no ECCS signal present, the DG will heat up and trip on high cooling water temperature (208F) before the DG is damaged.

Reference:
LOP-DG-01, Revision 30, page 5, step D.2.2.2
System Description 011, page 45, item 2 on table

9. 295019 AK2.06 001/295019/AK2.06/2.8/2.9/RO/MEMORY/080.00.16/

(1.00 Point) With the unit operating at near full power and the Off-Gas system in a normal operating configuration, Instrument Air (IA) pressure to the Off-Gas system components starts to decrease and can NOT be corrected.

Which one of the following describes the effect on the 2N62-F300A and 2N62-F300B Condenser Off-Gas Outlet valves as IA pressure decreases?

A.✓ They will automatically CLOSE when IA pressure decreases to the closure trip setpoint.

B. They will automatically OPEN when IA pressure decreases to the opening trip setpoint.

C. They will fail CLOSED when IA pressure decreases to less than spring pressure.

D. They will fail OPEN when IA pressure decreases to less than spring pressure.

Answer A is correct. The Condenser Off-Gas Outlet Valves have accumulators that provide enough stored energy to ensure one positive closing of the valves. When IA pressure decreases below 75 psig, air stored in the accumulator will force the valve operator closed.

The other answers are incorrect. They fail closed, NOT open. They do not drift in the closed direction as IA pressure decreases, they get a close signal when IA pressure is less than the trip setpoint and accumulator pressure is used to close them.

Reference:
System Description 080, page 5, Section IV.B, page 18, Section V.A.2, and page 20, Table

10. 295021 AK3.02 001/295021/AK3.02/3.3/3.4/RO/MEMORY//

(1.00 Point) The unit is operating in Mode 3 when it is discovered that 1E12-F009, Shutdown Cooling Suction Inboard Isolation Valve will NOT open.

The Unit Supervisor directs the following:
- using 1A RHR to establish reactor water level +190 to +260 inches
- opening 3 SRVs
- throttling 1A RHR Full Flow Test valve (1E12-F024A) to maintain reactor water level in the band and a flow rate of 6500 gpm through the 1A RHR pump

Following the Unit Supervisor's instructions will ...

A. provide adequate flow to remove the decay heat load without damaging the SRVs.

B. cause runout and subsequent damage to the RHR system.

C. cause cavitation and subsequent damage to the 1E12-F024A.

D.✓ provide adequate flow to remove the decay heat load but may damage the SRVs.

Answer D is correct. This method establishes predetermined (by engineering evaluation) conditions for draining and makeup to removed the decay heat and bring the unit to Mode 4 from Mode 3.

The other answer are incorrect. If used for water flow the SRVs cannot be considered operable without an engineering evaluation. Each SRV will only pass 2150 gpm water flow, the sum of which is less than pump runout conditions. The RHR Full Flow Test valve is throttled to maintain level in the RPV and a caution in the procedure says to throttle the Full Flow Test valve to maintain less than 7200 gpm so the pump does not go into runout.

Reference:
LOP-RH-17, Revision 18, page 4, Step B.1.3, and pages 60 to 63, Steps E.25 and E.26

11. 295023 AA1.02 001/295023/AA1.02/2.9/3.1/RO/MEMORY/029.00.05J/

(1.00 Point) The Fuel Pool Cooling and Cleanup (FC) system was operating with the 1A FC Pump running and both Filter Demineralizers (F/Ds) were in service. The 1B FC Pump was in standby.

Subsequently a large leak develops in the refueling bellows.

Which one of the following correctly states the expected response assuming NO mitigating operator actions are taken?

A. An FC trouble alarm due to 1A FC Pump trip on low Spent Fuel Pool level and both F/D Hold Pumps start.

B. Condensate Storage Tank (CST) level decreasing due to Cycled Condensate (CY) automatically aligning to maintain minimum Fuel Pool level.

C.✓ An FC trouble alarm due to 1A FC Pump trip on low Suction Pressure and both F/D Hold Pumps start.

D. Makeup Condensate Storage Tank level decreasing due Clean Condensate (MC) automatically aligning to maintain minimum Fuel Pool level.

Answer C is correct. The FC Pumps will automatically trip on: 1) Low Suction Pressure (2-second time delay), 2) Under Voltage, and 3) Overload.

The other answers are incorrect. The F/D Hold Pumps will automatically start, however the standby FC Pump has NO automatic start feature.

Reference:
LOP-FC-03, Revision 23, page 14, Steps D.2.2 and D.2.4
System Description 029, page 18, Section III.F.3.

12. 295024 EA2.01 001/295024/EA2.01/4.2/4.4/RO/HIGH//

(1.00 Point) An event occurred resulting in the following conditions:

- Reactor scrammed, all control rods are full-in
- HPCS, LPCS and LPCI automatically initiated
- All three DGs are operating
- RCIC is in standby
- All plant equipment operated as designed

The above response is expected when __________________ is the only initiating parameter.

A. high RPV pressure

B. low RPV level (Level-2)

C. low RPV level (Level-1)

D.✓ high Drywell pressure

Answer D is correct. All of the indications have high Drywell pressure as an initiation signal.

The other answers are incorrect. Level did not drop to level-2 or level-1 because RCIC never received an initiation signal. An if RPV Pressure was high, ECCS systems and the DGs would not have automatically started.

Reference:
LGA-001, Revision 06, Detail L
LOA-PC-101, Revision 07, pages 16-18
System Description 060, page 6, Section II.E.
System Description 011, page 44, Section V.A.1
System Description 049, page 26, Table of scram setpoints
System Description 032, page 2, Section II.A.

13. 295025 G2.2.22 001/295025/2.2.22/3.4/4.1/RO/MEMORY//

(1.00 Point) Per the Technical Specification LCO, Drywell and Suppression Chamber pressure shall be maintained ≥-0.5 psig and __________ in MODES 1, 2, and 3.

A. ≤0.60 psig **B.**✓ ≤0.75 psig **C.** ≤1.00 psig **D.** ≤1.77 psig

Answer B is correct. TS 3.6.1.4 states, "Drywell and suppression chamber pressure shall be ≥-0.5 psig and ≤0.75 psig."

Reference:
Technical Specification 3.6.1.4, page 3.1.6.4-1

14. 295026 EK1.01 001/295026/EK1.01/3.0/3.4/RO/HIGH//

(1.00 Point) Due to LOCA conditions in the Drywell, the following conditions exist:
- Suppression Pool Temperature is 195°F
- Suppression Pool Level is +6 inches
- Suppression Chamber Pressure is +0.5 psig
- Drywell temperature is 195°F
- One Containment Vacuum Breaker is stuck OPEN

Which one of the following would DECREASE the probability of damaging the LPCS pump if operated under the above conditions?

A. Starting all available Drywell Cooling per LGA-VP-01, Primary Containment Temperature Reduction.

B. Starting one loop of Drywell Spray per LGA-RH-103, Unit 1 A/B RHR Operations in the LGAs/LSAMGs.

C. Returning Suppression Pool level to within limits per LOP-RH-16, Raising and Lowering of Suppression Pool Level.

D.✓ Starting two loops of Suppression Pool Cooling per LGA-RH-103, Unit 1 A/B RHR Operations in the LGAs/LSAMGs.

Answer D is correct. With Suppression Pool (SP) temperature high, starting SP Cooling would increase NPSH to the LPCS Pump.

The other answers are incorrect. Lowering SP Level would reduce NPSH. Starting Drywell Spray (or SC Spray) would reduce static pressure in the containment and therefore reduce NPSH. Starting Drywell Cooling will have little or no effect on NPSH.

Reference:
LGA-003, Revision 05, figure NL

15. 295028 EK2.03 001/295028/EK2.03/3.6/3.8/RO/HIGH/414.00.02/

(1.00 Point) A LOCA has occurred resulting in the following plant conditions:

- Drywell Temperature indicates 290°F
- RPV Pressure indicates 50 psig
- Reactor Building Temperature indicates 155°F
- Narrow Range Level indicates 0 inches
- Wide Range Level indicates -90 inches
- Upset Range Level indicates +20 inches
- Shutdown Range Level indicates +20 inches
- Fuel Zone Level indicates -120 inches

Based on the above conditions, which one of the following statements about RPV level indication is true?

A.✓ Both Fuel Zone and Wide Range instruments are usable.

B. None of the level instruments are usable.

C. Fuel Zone is the ONLY instrument that is usable.

D. Wide Range is the ONLY instrument that is usable.

Provide LGA-001 to the examinee as a handout.

Answer A is correct. With the given RPV pressure and Drywell temperature, the RPV Saturation Temperature curve (Figure J) has NOT been exceeded and reference legs most likely have NOT flashed. Therefore, analysis of individual instruments based on building temperatures per RPV Level Instrument Criteria (Table K) must be made. Fuel Zone level is on-scale as long as level in the indicating range of the FZ instrument (-311 to -111 inches). This gives FZ an on-scale reading. Wide Range (WR) is on-scale if indicating greater than or equal to -97 inches regardless of Reactor Building temperature. This gives WR an on-scale reading. Therefore both WR and FZ are indicating on-scale and the other answers are incorrect.

Reference:
LGA-001, Revision 06, Detail I
LGA-010, Revision 06, Detail I

16. 295030 EK3.07 001/295030/EK3.07/3.5/3.8/RO/HIGH//

(1.00 Point) Given the following initial plant conditions:

- Suppression Pool Level is -3 feet
- Suppression Pool Temperature is 210°F
- Drywell Pressure is 8 psig
- Suppression Chamber Pressure is 3 psig

Which one of the following would most likely cause system damage while operating the 1B RHR pump in the LPCI mode?

A. ✓ Suppression Pool Level decreases by 18 inches.

B. Drywell Pressure increases by 4 psig.

C. Suppression Pool Temperature increases by 5°F.

D. Suppression Chamber Pressure decreases by 2 psig.

Answer A is correct because decreasing SP Level by 18 inches would make SP Level -4.5 feet and the -13 foot curve becomes applicable (vice the -4 foot curve) and this increases the probability of operating with inadequate Net Positive Suction Head (NPSH).

The other answers are incorrect because 1) increasing SP Temperature by 5°F does not cross the -4 foot curve, 2) decreasing Suppression Chamber Pressure by 2 psig does not cross the -4 foot curve, and 3) increasing DW Pressure by 4 psig would increase Suppression Chamber pressure, moving you further away from the -4 foot curve.

Reference:
LGA-001, Revision 06
LGA-003, Revision 05
LGA-005, Revision 06
LGA-010, Revision 06

17. 295031 EA1.08 001/295031/EA1.08/3.8/3.9/RO/MEMORY/400.00.02/

(1.00 Point) When using the Standby Liquid Control System injection line as an alternate injection flowpath, the NSO can monitor proper operation by observing that ______________ running with discharge pressure greater than reactor pressure and SBLC squib valve continuity lights out.

A. TWO Makeup Condensate (MC) pumps are

B. ONE Diesel Fire Pump (DFP) is

C. TWO SBLC pumps are

D.✓ ONE SBLC pump is

Answer D is correct. The referenced procedure directs starting one SBLC pump and pumping water from the SBLC Tank or the Test Tank and injecting into the vessel through the normal SBLC flow path.

The other answers are incorrect. FP and MC are viable distracters because the procedure directs these systems as makeup to the SBLC Storage Tank and to the SBLC Test Tank when SBLC is lined up for alternate injection. It the examinee knows the source of water but doesn't know the lineup then they would pick either of the two answers.

Reference:
LGA-SC-102, Revision 01, page 4, Step C.5.a, and page 5, Step C.5.5.c

18. 295037 EA2.01 001/295037/EA2.01/4.2/4.3/RO/MEMORY//

(1.00 Point) While operating at full power in a normal electrical lineup, an event has occurred on Unit-1 and the following conditions exist:

- Both RPS Motor Generator Sets have tripped
- The Rod Worth Minimizer (RWM) shows multiple control rods are NOT full-in

Assuming no operator action, how would you determine if Reactor Power is above 3%?

A. Digital power level indicated on the SPDS display screen.

B. One or more Main Turbine Bypass Valves OPEN.

C.✓ IRMs reading ≥75 on Range 8.

D. White APRM Downscale lights are OUT.

Remove all occurrences of the parenthetical statement "(75 on IRM range 8)" from the LGA-010 handout.

Answer C is correct. Per LGA-010 power is less than 3% if IRMs are reading 75 on Range 8.

The other answers are incorrect. With both RPS busses de-energized the APRMs are de-energized and the white downscale lights are expected to be out. Also, both RPS busses de-energies will isolate the MSIVs and therefore any Turbine Bypass Valve that is open is either stuck or has been manually opened using the jack. Finally, the SPDS display does not indicate reactor power in the IRM or SRM ranges.

Reference:
LGA-010, Revision 06, Override under step 6, and level band step 9

19. 295038 G2.1.14 001/295038/2.1.14/2.5/3.3/RO/MEMORY//

(1.00 Point) The lowest E-Plan event classification level that REQUIRES activation of the assembly siren based on off-site release rate with no danger to on-site personnel is ...

A. an Unusual Event.

B. an Alert.

C.✓ a Site Emergency.

D. a General Emergency.

Answer C is correct. An assembly is required after a Site Area Emergency or General Emergency has been declared.

The other answers are incorrect. Assembly should be considered when an Unusual Event or Alert has been declared.

Reference:
EP-MW-113-100, Revision 01, page 2, Note at Step 4.1, and page 3, Note at top of page

20. 600000 AK1.01 001/600000/AK1.01/2.5/2.8/RO/MEMORY/125.00.08/

(1.00 Point) The control room received a report of an electrical fire in the 1B Diesel Generator Room.

The fire should be classified as a (1)______________ type fire, and the immediate hazard to consider when entering the room is (2)______________ in the area.

A.✓ (1) Class C;
(2) suffocation due to CO2

B. (1) Class B;
(2) suffocation due to CO2

C. (1) Class C;
(2) electrical shock due to water

D. (1) Class B;
(2) electrical shock due to water

Answer A is correct. An electrical fire is classified as a Class C type fire (Class B is flammable liquids) and the Diesel Generator Rooms are protected by CO2 flood systems that automatically initiate.

Reference:
LOA-FP-101, Revision 06, page 25, warning at top of page
System Description 125, page 20, Section III.M.4.a.1)

21. 295014 AA1.07 001/295014/AA1.07/4.0/4.1/RO/MEMORY/434.00.01/

(1.00 Point) Which one of the following actions are taken by the control room operators, to PREVENT cold water injection during an ATWS?

A. Rapidly lowering level to lower reactor power during an anticipated transient without scram event.

B.✓ Holding the hand switches for 1(2)A and 1(2)B RHR injection valves in CLOSE while RPV pressure decreases through the automatic open permissive setpoints.

C. Using only systems that inject inside the core shroud during an anticipated transient without scram event.

D. Injecting with Alternate ATWS Systems to restore and maintain RPV level on the Wide Range level instruments.

Answer B is correct. The first action step in LGA-010 directs inhibiting ADS and preventing injection from HPCS, LPCS, and LPCI. When the 505 psig interlocks clear, the 1(2)A and 1(2)B LPCI injection valves will realign for injection. You can prevent the injection valves from opening by holding the injection valve control switches in CLOSE as you pass through the 505 psig interlocks.

The other answers are incorrect. Only systems that inject OUTSIDE the core shroud should be used (FW, SC, CRD, RCIC, etc.). When using Alternate ATWS Systems you ARE intentionally injecting cold water, therefore the use of Alternate ATWS Systems does not prevent cold water injection. Step 9 of LGA-010 starts with a caution that warns you that injecting too fast while in Step 9 can damage the core.

Reference:
LGA-010 Lesson Plan, pages 4 and 5, Section IV.B.1, 2, and 3

22. 295020 AA2.05 001/295020/AA2.05/3.6/3.6/RO/HIGH//

(1.00 Point) Following a reactor water level transient on Unit-2 the following conditions exist:
- Reactor automatically scrammed on low reactor water level
- All control rod are full-in
- RCIC is in standby
- The Emergency Diesel Generators are in standby

The following valves indicate CLOSED on both the PCIS Status CRTs and the control panels:
- 2B33-F019, RR Sample Inboard Isolation
- 2B33-F020, RR Sample Outboard Isolation
- 2E12-F040A, 2A RHR Heat Exchanger Blowdown Downstream Isolation
- 2E12-F040B, 2B RHR Heat Exchanger Blowdown Downstream Isolation
- 2E12-F049A, 2A RHR Heat Exchanger Blowdown Upstream Isolation
- 2E12-F049B, 2B RHR Heat Exchanger Blowdown Upstream Isolation

All other PCIS valves are in their normal, expected positions based on the transient.

Based on the valve positions, a spurious PCIS ______________ isolation has occurred.

A. Group 2 **B.✓** Group 3 **C.** Group 4 **D.** Group 7

Answer B is correct. Reactor water level did NOT drop below the Level-2 setpoint because RCIC and the EDGs are still in standby. PCIS Group 7 isolates on Level-3 and should be isolated because the reactor scrammed on low level (Level-3). Therefore it can be determined that level dropped below Level-3 but did NOT go below Level-2. Any isolation that occured based on RPV level dropping below Level-2 would be spurious. PCIS Groups 2, 3, and 4 all isolate on Level-2. Valves 2B33-F020 and 2B33-F019 are PCIS Group 3 valves and have spuriously isolated.

Reference:
LOA-PC-201, Revision 09, page 16

23. 295022 G2.1.23 001/295022/2.1.23/3.9/4.0/RO/HIGH/049.00.14/

(1.00 Point) Unit-1 is pulling rods for a startup. The reactor is critical below the Point of Adding Heat (POAH) when the following annunciators are received:

- 1H13-P603-A303, CRD Feed Pump Suction Filter DP Hi
- 1H13-P603-A103, 1A CRD Feed Pump Auto Trip
- 1H13-P603-A204, CRD Charging Wtr Press Lo

The NSO observes CRD Charging Header pressure at 1000 psig and pressure has decreased 30 psig over the last minute.

Based on the above information, the NSO's first priority is to ...

A. dispatch an NLO to determine the cause of 1A CRD pump trip per LOR-1H13-P603-A102, 1A CRD Feed Pmp Auto Trip.

B.✓ insert a manual scram per the scram hardcard and LGP-3-2, Reactor Scram.

C. dispatch an NLO to swap CRD Suction Filters per LOP-RD-14, CRD System Pump Suction Filter Replacement.

D. start 1B CRD pump per LOA-RD-101, Control Rod Drive Abnormal.

Answer B is correct. Scram setpoint for low CRD pressure is 1124 psig with the mode switch in either REFUEL or STARTUP. Reactor is operating in Mode 2 with the mode switch in STARTUP because control rods are being withdrawn and power less than that required to transfer the mode switch to RUN. Based on mode switch position, the scram setpoint for CRD pressure has been exceeded and there are no indications that the reactor has automatically scrammed.

The other answers are incorrect. LOA-RD-101 does not cover a tripped CRD pump. Although suction filters may need swapped and the cause of the pump trip needs to be determined, the highest priority is the scram setpoint being exceeded and failure to scram.

Reference:
LOP-AA-03, Revision 19, page 13

24. 295032 EK1.04 001/295032/EK1.04/3.1/3.6/RO/HIGH//

(1.00 Point) Which one of the following would explain an increase in HCU pressure with no accumulator trouble alarm?

A. The nitrogen side of the accumulator is leaking through the fill connection.

B. CRD Pressure Control Valve was throttled closed.

C. Charging water leaked past the accumulator seals.

D.✓ Reactor Building Area temperatures are approaching Max Normal.

Answer D is correct. As Reactor Building (RB) temperature increases above normal, the nitrogen in the accumulator expands at a predetermined rate (~25 psig for every 20°F increase in RB Temperature).

The other answers are incorrect. If charging water leaked past the accumulator seal you would get an accumulator alarm on high level. The other two choices are incorrect because throttling the CRD Pressure control valve closed will increase Charging Water pressure but the accumulator piston is already at its full charged position and will not move any more therefore pressure will not change while adjusting the FCV. Leaking nitrogen from an accumulator would cause a low accumulator pressure alarm and would not cause HCU pressure to increase.

Reference:
LOP-RD-10, Revision 16, page 11, Attachment A
LGA-002, Revision 03

25. 295002 EK2.06 001/295002/EK2.06/2.6/2.7/RO/HIGH/080.00.18/

(1.00 Point) Unit-1 is operating near full power with two Circulating Water (CW) Pumps operating. Condensate Polisher (CP) inlet temperature is 128°F.

Differential pressure across one of the operating traveling screens increases to 16 inches of water.

This would cause CP inlet temperature to ...

A. remain at 128°F because Turbine Hood Spray would automatically initiate.

B.✓ increase above 128°F as condenser vacuum decreases.

C. remain at 128°F because Total Steam Flow would NOT change.

D. decrease below 128°F as condensate depression decreases.

Answer B is correct. Vacuum decreases when a CW pumps trips causing a decrease in condensate subcooling (condensate depression). Less subcooling of the condensate would cause an increase in condensate temperature.

The other answers are incorrect. Turbine Hood Spray has no effect on condensate depression.

Reference:
LOP-CW-05, Revision 11, page 2, step D.1
System Description 111, page 31, Section B.2.
LGP-2-1, Revision 64, page 45, note at top of page

26. 295035 EK3.02 001/295035/EK3.02/3.3/3.5/RO/HIGH/118.00.05A/

(1.00 Point) Unit-1 is operating at full power with Reactor Building Ventilation (VR) in the following lineup:
- 1C VR Supply Fan OFF
- 1B VR Exhaust Fan OFF
- Two Unit-1 VR Supply and two Unit-1 VR Exhaust Fans are running
- Unit-2 VR is shutdown and no Unit-2 VR fans are running

Assuming NO operator actions are taken, how will the VR System respond to a trip of the 1A VR Exhaust Fan?

A. All running VR Supply and Exhaust Fans will trip to OFF on high building differential pressure.

B.✓ 1A and 1B VR Supply Fans will cycle on high reactor building differential pressure.

C. 1C VR Exhaust Fan will cycle on low reactor building differential pressure.

D. 1A VR Supply Fan will cycle on high reactor building differential pressure and 1B VR Supply Fan will continue to run.

Answer B is correct. The fan trip unbalances the supply versus exhaust air flow. With an extra supply fan running, the building will pressurize until pressure reaches the high differential pressure trip (+2.0 inches H2O), then the supply fans will trip. Without operator intervention (Supply Fan handswitchs remain in normal-after-start) when building pressure decreases, then the VR Supply Fans will restart. The building will re-pressurize and the Supply Fans will trip. The cycle will repeat until an additional exhaust fan is started or the supply fan handswitches are removed from normal-after-start.

Reference:
LOP-VR-02, Revision 25, step D.4
System Description 118, page 21, 26 and 28

27. 295036 EA1.02 001/295036/EA1.02/3.5/3.6/RO/MEMORY/418.00.01/

(1.00 Point) The rounds NLO reports that the Unit-2 Northwest Reactor Building corner room sump is overflowing due to a blown pump shaft seal in the northwest corner room.

Closing the suction isolation valve on which one of the following pumps would most likely isolate the leak?

A.✓ Division 1 Residual Heat Removal (RHR)

B. Reactor Core Isolation Cooling (RCIC)

C. Low Pressure Core Spray (LPCS)

D. High Pressure Core Spray (HPCS)

Answer A is correct. The following pumps are located in the reactor building corner rooms:
Northwest = A RHR
Northeast = LPCS and RCIC
Southeast = B and C RHR
Southwest = HPCS and both CRD

Reference:
LOP-RE-01T, Revision 12, page 5
System Description 064, page 16, Section F.

28. 203000 K2.01 001/203000/K2.01/3.5/3.5/RO/MEMORY/005.00.05E/

(1.00 Point) The following conditions exist on Unit-1:
- 100% power, steady state
- All ECCS systems are lined up for STANDBY

An ECCS initiation signal occurs concurrently with Bus 142Y undervoltage.

When Bus 142Y re-energizes, the (1)_________ starts immediately and (2)_________ starts approximately 5-seconds later.

A.✓ (1) 1C RHR Pump; (2) 1B RHR Pump

B. (1) LPCS Pump; (2) 1A RHR Pump

C. (1) 1B RHR Pump; (2) 1C RHR Pump

D. (1) 1A RHR Pump; (2) LPCS Pump

Answer A is correct. When Bus 142Y is re-energized, the 1C RHR Pump will start immediately, and then 1B RHR Pump will start following a 5-second time delay to prevent over loading the 1A Diesel Generator.

The other answers are incorrect. When Bus 141Y is re-energized, the LPCS will start immediately, and then 1A RHR Pump will start following a 5-second time delay to prevent over loading the Common Diesel Generator.

Reference:
LOS-DG-110, Revision 01,
System Description 005, page 18, paragraph D.2

29. 205000 K3.03 001/205000/K3.03/3.8/3.9/SRO/HIGH/023.00.05/

(1.00 Point) Unit-1 has been in Cold Shutdown for 7 days following an extended run:

- 1B RHR is operating in Shutdown Cooling with a stable suction temperature of 190°F
- 1A RHR Pump is OOS
- RPV water level is +145 inches
- 1A RR Pump is in slow speed
- 1B RR Pump is OOS

Which one of the following describes the response of the Reactor Recirculation pump suction temperatures 15 minutes after a trip of the 1B RHR pump (assume NO operator action)?

	1A RR Pump Suction Temperature	1B RR Pump Suction Temperature
A.	Remains relatively stable	Remains relatively stable
B.	Increase	Increase
C.✓	Increase	Remains relatively stable
D.	Remains relatively stable	Increase

Answer C is correct. The 1A RR Loop would warm up with the increasing RPV Temperature due to decay heat. The 1B Loop temperature should be at near drywell temperature and will remain relatively constant since its suction or discharge isolation valve is closed while operating in SDC to prevent short cycling the SDC flow. Therefore there is no flow in the 1B RR Loop.

Reference:
LOP-RH-07, Revision 50, page 8

30. 209001 K2.03 001/209001/K2.03/2.9/3.1/RO/HIGH/063.00.14/

(1.00 Point) Given the following initial plant conditions:

- Low Pressure Core Spray (LPCS) was running for a surveillance.
- Full Flow Test Valve, 1E21-F012 was throttled to achieve rated pump discharge pressure
- Injection Valve, 1E21-F005 was closed
- Minimum Flow Valve 1E21-F011 was closed

Subsequently a loss of Division 1, 125 vdc occurs, followed by Drywell pressure increasing to 2.0 psig.

Assuming no operator actions have been taken, what is the final status of the following LPCS components?

	Full Flow Test Valve 1E21-F012	Minimum Flow Valve 1E21-F011
A.	Closed	Open
B.✓	Throttled	Closed
C.	Closed	Closed
D.	Throttled	Open

Answer B is correct. Loss of Division 1, 125 vdc (111Y) will result in loss of power to the LPCS logic. The Full Flow Test valve (1E21-F012) will not receive an automatic close signal and will remain open (in its currently throttled position). With adequate flow passing through the full flow test valve (>750 gpm) the Minimum Flow valve (1E21-F011) will remain closed.

Reference:
System Description 063, page 8, section F. and page 20, power supply table

31. 209001 K6.03 001/217000/K6.04/3.5/3.5/RO/HIGH/032.00.05D/

(1.00 Point) The Reactor Core Isolation Cooling (RCIC) system is running for a surveillance in the Condensate Storage Tank (CST) to CST test mode when a vehicle drives into the side of the CST leaving only 2 feet of water in the tank. Suppression Pool (SP) level is normal.

The RCIC turbine will continue to run ...

A. in the CST to CST test mode.

B.✓ however the RCIC minimum flow valve will automatically open.

C. however RCIC will re-align to the SP to SP test mode.

D. however RCIC will re-align and pump the SP to the CST.

Answer B is correct. When CST level drops below 3 feet, the Suppression Pool Suction valve (1E51-F031) will automatically OPEN and then the CST Suction valve (1E51-F010), the CST Full Flow Test valves (1E51-F022 and 1E51-F059) will CLOSE. When 1E51-F022 and 1E51-F059 close, RCIC will not have a flowpath and the Minimum Flow valve (1E51-F019) will automatically OPEN.

Reference:
System Description 032, page 9, Section C.4.a and C.4.c.
System Description 032, pages 16 and 17, Section 3.a.2)
1E-1-4226AE, AS, and AW

32. 209002 K1.03 001/209002/K1.03/3.0/3.0/RO/MEMORY/061.00.05G/

(1.00 Point) DEGRADATION of the HPCS Water Leg pump will ...

A.✓ increase the probability of water hammer.

B. degrade HPCS Pump seal cooling flow.

C. decrease the HPCS Pump suction pressure.

D. reduce the response time for HPCS injection.

Answer A is correct. The HPCS water leg pump takes a suction from the Suppression Pool and discharges into the HPCS Pump discharge header. The discharge header needs to remain full to allow HPCS flow to quickly reach the reactor. A drained header delays HPCS delivery and may cause water hammer when the HPCS pump starts.

Reference:
System Description 061, pages 4 and 8

33. 209002 A1.08 001/209002/A1.08/3.1/3.3/RO/HIGH/061.00.05/

(1.00 Point) An event has occurred on Unit-1 resulting in the following conditions:
- Drywell pressure has increased to 1.0 psig
- All ECCS pumps have automatically started

Subsequently RPV level reached +66 inches and then decreased to -10 inches.

Which one of the following actions would cause the HPCS system to inject water into the RPV?

A. Turn the injection valve handswitch to OPEN and THEN turn the minimum flow valve hand switch to CLOSE.

B.✓ Depress the HPCS High Water Level reset pushbutton, then turn the injection valve handswitch to OPEN.

C. Depress the HPCS High Drywell Pressure reset pushbutton, then turn the injection valve handswitch to OPEN.

D. Arm and depress the HPCS System Manual Initiation pushbutton.

Answer B is correct. After automatic initiation, the injection valve will automatically close when RPV Level-8 is reached (59.5 inches). The high level (Level-8) signal seals itself in until either the low level initiation is reached (Level-2) or the High Water Level reset pushbutton is depressed. If the pushbutton is used, the injection valve will not automatically re-open until level reaches the low level (Level-2) setpoint, therefore the operator will have to manually open the injection valve (after resetting the high level trip). The other answers are, therefore, incorrect.

Reference:
System Description, page 25, Section E.

34. 211000 A2.01 001/211000/A2.01/3.5/3.8/RO/HIGH/028.00.21/

(1.00 Point) During an ATWS, the NSO started the 1A Standby Liquid Control (SBLC) system per the Scram Hardcard and verified proper operation of SBLC.

After pumping 1000 gallons of boron solution, Bus 141Y tripped on overcurrent.

Which one of the following actions should the NSO take, and why?

A. Verify both SBLC system handswitches are in STOP per LGA-010, Failure to Scram because cold shutdown boron has injected.

B.✓ Inject boron using 1B SBLC system per LGA-SC-101, Initiation of Standby Liquid Control, because the 1A SBLC pump is lost.

C. Insert rods per LGA-NB-01, Alternate Rod Insertion, because neither SBLC system is available.

D. Lineup and inject boron per LGA-RT-103, Alternate Boron Injection Using RWCU, because neither SBLC system is available.

Answer B is correct. Loss of Bus 141Y will cause the 1A SBLC Pump to lose power and the operator should continue to inject boron per LGA-SC-101 because LGA-010 has not been exited.

The other answer are incorrect. The 1B SBLC System (and pump) are available. The SBLC Tank must be pumped down below a level of 3050 gallons in order to say cold shutdown boron has been injected. There are approximately 4950 gallons in the tank when it is full. 4950 minus 1000 gallons that were pumped, equals 3950 gallons left in the tank. You need to pump a minimum of 900 more gallons of solution to reach cold shutdown boron injection.

Reference:
LGA-SC-101, Revision 01, page 3, Step C.3.4
LGA-010, Revision 06

35. 212000 A3.02 001/212000/A3.02/3.2/3.5/RO/HIGH/049.00.10/

(1.00 Point) Unit-1 was operating at 25% RTP with the 1B21-F028A, Main Steam Isolation Valve closed.

Subsequently MSIV 1B21-F022C spuriously closed.

Based on the above MSIV closures, RPS relays in ...

A. both channels should have de-energized causing a full scram.

B. both channels should remain energized.

C. Channel A1 should have de-energized causing a 1/2 scram.

D.✓ Channel B1 should have de-energized causing a 1/2 scram.

Answer D is correct. Using the BADC-CADB logic the following combinations of Inboard OR Outboard MSIV closed will cause a half scram: BA, DC, CA or DB.

LOS-RP-Q3 explains the logic in a note as follows:
NOTE: Valve limit switches are connected to the RPS logic as per the following table. "AD" and "BC" combinations will not give a half scram.

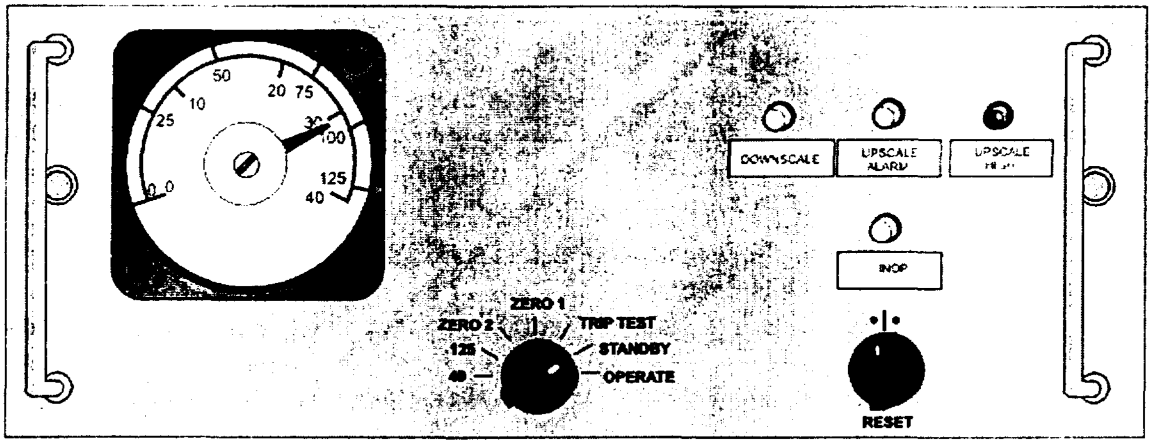
Valves 1B21-F022x and 1B21-F028x				*RPS Subchannels*	
A	*B*	*C*	*D*		
X	*X*			*A-1*	*(A+B = channel A-1 tripped)*
		X	*X*	*A-2*	*(C+D = channel A-2 tripped)*
X		*X*		*B-1*	*(A+C = channel B-1 tripped)*
	X		*X*	*B-2*	*(B+D = channel B-2 tripped)*

Reference:
LOS-RP-Q3, Revision 13, Attachment 1A.
1E-1-4215AA, AC, AD, AE, AF, AH, and AL

36. 215003 A4.04 001/215003/A4.04/3.1/3.3/RO/HIGH/042.00.14/

(1.00 Point) Unit-1 is performing a startup. The reactor is critical below the point of adding heat.

Using the figure below, which one of the following lights are expected to be lit for the conditions provided?



IRM CHANNEL B
1C51-K601B

A. BOTH Upscale Alarm AND Upscale High **B.** Inop ONLY

C.✓ BOTH Inop AND Upscale Alarm **D.** Upscale Alarm ONLY

Answer C is correct. The STANDBY position of the IRM Selector switch has the same functions as when in OPERATE with the exception of inserting an INOP trip. Therefore the INOP light is lit.

With power approximately 90/125s of scale, the UPSCALE ALARM is lit and not the UPSCALE HIGH trip should be in until 120/125s of scale.

Reference:
System Description 042, page 13, first paragraph

37. 215004 G2.1.28 001/215004/2.1.28/3.2/3.3/RO/MEMORY/300.010/

(1.00 Point) During a reactor startup, the NSO can more closely monitor the SRMs by ...

A. selecting the SPDS computer screen.

B. change the indicating range.

C.✓ changing the recorder chart speed.

D. adjusting the discriminator voltage.

Answer C is correct. During a Reactor Startup, on the SRM dual pen recorders, SELECT the highest indicating SRM for each operable channel A or C and B or D on recorder 1(2)C51-R602 .... Place the SRM recorder in fast speed and LABEL charts with the Time/Date of going to fast speed, and Channels selected.

The other answers are incorrect. Only IRMs have selectable ranges. Operators do not adjust the discriminator voltage. There are no SRM indications associated with the SPDS computer screen.

Reference:
LOP-NR-01, Revision 12, page 5, Step E.2.

38. 215005 K1.07 001/215005/K1.07/2.6/2.9/RO/HIGH/044.00.18C/

(1.00 Point) As the Local Power Range Monitor (LPRM) detectors age, the output of the Average Power Range Monitors (APRMs) will ______________ .

[Assume initial APRM Gain Adjustment Factors (AGAFs) were equal to 1.00 and actual power remains the same as the LPRM ages.]

A. INCREASE and the AGAFs will be LESS than 1.00

B.✓ DECREASE and the AGAFs will be GREATER than 1.00

C. DECREASE and the AGAFs will be LESS than 1.00

D. INCREASE and the AGAFs will be GREATER than 1.00

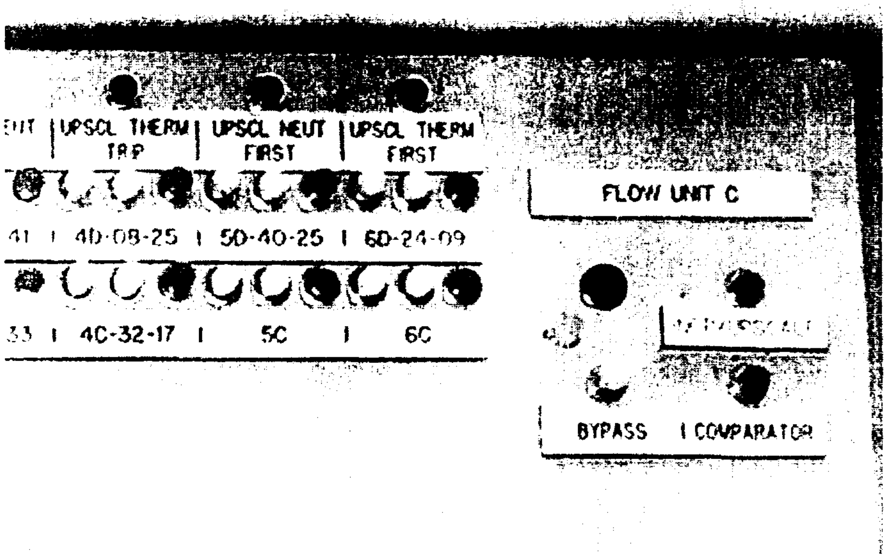
Answer B is correct. As U-235 depletes in the detector, there are fewer fissions for a given neutron flux field, resulting in a decreased detector output. This decreased detector output will result in a lower indicated power.

AGAF = (Actual Power)/(Indicated Power). Therefore, if indicated power decreased and actual power stayed the same, the AGAF values will be increasing.

Reference:
System Description 043, page 7
System Description 044, page 27

39. 215005 A4.04 001/215005/A4.04/3.2/3.2/RO/MEMORY/043.00.07/

(1.00 Point) Unit-1 is operating at 15% RTP following a reactor startup. During performance of the control room rounds, it is discovered that the AMBER light for the LPRM labeled 5D-40-25 is lit on back panel 1H13-P608.



Which one of the following would cause the above indication?

A. The output signal from the LPRM reading zero.

B. The LPRM mode switch in the BY (bypass) position.

C. The LPRM mode switch in the CA (calibrate) position.

D.✓ The output signal from the LPRM reading upscale.

Answer D is correct. The amber light associated with each LPRM indicates an upscale condition. High flux is the only one of the conditions that causes an upscale trip.

There are three lights associated with each LPRM. From left to right, they are:
1) White - Bypassed
2) White - Downscale
3) Amber - Upscale

Therefore, the other answers are incorrect.

Reference:
System Description 043, page 16, Section B.1.a.

40. 217000 K2.01 001/217000/K2.01/2.8/2.8/RO/MEMORY/032.00.16/

(1.00 Point) How would a loss of 250 vdc bus 121Y affect the Reactor Core Isolation Cooling (RCIC) system?

RCIC (1)______________ automatically start following an automatic initiation signal, and (2)______________ automatically isolate following a PCIS high RCIC room temperature isolation signal.

A. (1) would
(2) would

B. (1) would NOT
(2) would NOT

C.✓ (1) would NOT;
(2) would

D. (1) would
(2) would NOT

Answer C is correct. 121Y supplies the components that may need to automatically reposition for automatic initiation function to work. The PCIS valves are powered from 136Y-2 (1E51-F063) and 135X-1 (1E51-F008). Therefore the automatic initiation function will NOT work however the PCIS function is still operable.

Reference:
LOA-DC-101, Revision 07, page 202, Attachment 121Y

41. 218000 K3.01 001/218000/K3.01/4.4/4.4/RO/HIGH/062.00.08/

(1.00 Point) An event has occurred on Unit-1 resulting in the following conditions:
- Bus 112Y is de-energized
- Division 1 ADS High Drywell pressure transmitters are inoperable and transmitting 0 psig
- Actual Drywell pressure is 2.0 psig
- RPV pressure is approximately 450 psig and steady

RPV Level has just reached the Level-1 setpoint.

Low pressure ECCS systems will start to inject ...

A. in less than 1 minute.

B. in 9 to 10 minutes.

C. in 2 to 3 minutes.

D.✓ in 11 to 12 minutes.

Answer D is correct. Division 2 ADS will not initiate because Bus 112Y is dead. Division 1 ADS should initiate in 105 seconds however the Drywell pressure transmitter is inoperable so the 9 minute timer starts, when it times out the 105 second timer will start. This give a total time delay of 645 seconds (10.75 minutes). Then after ~11 minutes Division 1 ADS will initiate. Shortly after, RPV pressure will drop from 450 psig to less than LPCS shutoff head (~440 psig) at which time LPCS will start to inject. The correct answer is just under 11 minutes for ADS to initiate and then less than one minute for RPV pressure to drop below 440 psig (11-12 minutes).

Reference:
LOP-MS-03, Revision 06, page 4, Step D.5

42. 218000 A3.02 001/218000/A3.02/3.6/3.7/RO/HIGH/070.00.05D/

(1.00 Point) LGA entry conditions exist on Unit-1 with the following conditions:
- reactor pressure = 790 psig
- Drywell pressure = 5 psig
- Bus 111Y is de-energized

After depressing all four ADS Manual Initiation pushbuttons, you take the following SRV Tailpipe temperature readings from the appropriate back panel recorders:

SRV	Temperature	SRV	Temperature	SRV	Temperature
C	319°F	K	260°F	R	260°F
D	317°F	L	258°F	S	318°F
E	315°F	M	265°F	U	317°F
F	255°F	P	350°F	V	272°F
H	350°F				

Based on the above tailpipe temperatures, how many ADS valves are open?

A. 7 ADS valves are open.

B. 6 ADS valves are open.

C.✓ 5 ADS valves are open.

D. 4 ADS valves are open.

Provide Steam Tables to the examinee as a handout.

Answer C is correct. Expansion through the SRVs is isenthalpic. Using the steam tables, if you start at 805 psia (1200 BTUs/lbm) then side horizontally (constant enthalpy line) to the right, stopping at 20 psia. You will stop on just below the 320°F line. Therefore any tail pipe near 320°F represents an open SRV. There are 5 SRVs open using the above readings, all 5 are ADS SRVs.

The other answers are incorrect because their temperatures are too low for an SRV that is full open. Two non-ADS SRVs (H and P) have failed readings, they are reading too high for isenthalpic expansion of saturated steam at 800 psig.

Reference:
Steam Tables

43. 223002 K4.01 001/223002/K4.01/3.0/3.2/RO/HIGH/091.00.01/

(1.00 Point) While operating at 100%, level indicating switch 1B21-N704C which supports PCIS Group 2 and 3, has failed downscale. This particular switch is powered from RPS A.

Subsequently a leak in the Drywell has resulted in RPV level dropping to -100 inches. Level then returned to the normal control band.

Based on the above event, ________________________ PCIS Group 2 and 3 valves will isolate.

A. NEITHER Inboard NOR Outboard

B. ONLY the Outboard

C. ONLY the Inboard

D.✓ BOTH Inboard AND Outboard

Answer D is correct. Redundancy and physical separation are required in the electrical and mechanical design to ensure that no single failure in the system prevents the system from performing its safety function. PCIS Groups 2 and 3 initiates at Level-2 (approximately -48 inches).

Reference:
LOA-PC-101, Revision 07, pages 16, 17 and 18, Attachment A (hard card)
LSCS-UFSAR page 6.2-54
Technical Specifications Appendix G

44. 239002 K5.05 001/239002/K5.05/2.6/2.9/RO/MEMORY/070.00.05C/

(1.00 Point) Which one of the following would be an indication that an SRV tail pipe has sheared at the T-quencher and the T-quencher is no longer performing as designed?

A.✓ Greater than normal localized heating at the SRV tail pipe discharge.

B. Containment Vacuum breaker cycles each time the SRV opens.

C. Greater than normal SRV tail pipe temperature each time the SRV opens.

D. Large spike in Drywell pressure each time the SRV opens.

Answer A is correct. One end of the T-quencher has drilled holes that allow the steam to escape and are positioned so the discharge creates a swirling effect in the suppression pool. The swirling effect promotes better mixing of the steam and pool water. The arrangement minimizes localized thermal stress from a single valve discharge.

The other answers are incorrect because the steam would still condense and a pressure spike would be NOT be created in either the Suppression Chamber (SC) or Drywell (DW). Because there would be no pressure spike, SC pressure would remain less than DW pressure and the Containment Vacuum Breakers would NOT open.

Reference:
System Description 070, pages 7 and 8, Section III.C.

45. 259002 K6.02 001/259002/K6.02/3.3/3.4/RO/MEMORY//

(1.00 Point) Unit-1 is at 100% power with both TDRFPs in 3-element control. The level setpoint is set at +36 inches.

A fuse blows de-energizing 1A Narrow Range (NR) Level transmitter, 1C34-N004A.

Assuming NO operator action, the reactor ...

A. will scram because the main turbine will trip on high level.

B.✓ will NOT scram because the RWLC System will ignore the 1A NR level indication.

C. will scram because level will decrease to the low level scram setpoint.

D. will NOT scram but power will be reduced due to an automatic RR Pump downshift.

Answer B is correct. If any level signal deviates from the majority value it will automatically be disconnected and an event message will be displayed on the 1DS001 Operator Station. Disconnection will be unnoticeable.

Reference:
System Description 040, page 34, Table
System Description 031, page 12, Section III.A.
LOP-FW-16, Revision 15, page 34, Attachment 2

46. 261000 A1.02 001/261000/A1.02/3.1/3.2/RO/HIGH/095.00.20/

(1.00 Point) Standby Gas Treatment (VG) is being used to vent the containment. Drywell pressure is 1.4 psig and steady when the VG Train Flow Transmitter fails to 5000 cfm.

Based on the VG train automatic response to this failure, Drywell pressure will ...

A. decrease because the VG Flow will stabilize at 5000 cfm.

B.✓ increase because the VG Flow Control Damper will close.

C. increase because the VG Primary Fan will trip.

D. remain constant and VG Flow will remain at 4000 cfm.

Answer B is correct. 5000 cfm is 1000 cfm greater than normal. The Flow Control Damper will close trying to control flow at 4000 cfm. This will cause Drywell pressure to start to increase because no flow will be leaving the Drywell. The other answers are incorrect.

Reference:
LGA-VQ-01, Revision 08, page 15, step E.3.d.6)d)
LOS-VG-M1, Revision 29, page 11, Attachment 1A, step 2.5
System Description 095, page 7, top of page, page 17, table gives flow setpoint

47. 261000 A4.07 001/261000/A4.07/3.1/3.2/RO/HIGH/095.00.05E/

(1.00 Point) Standby Gas Treatment (VG) has automatically initiated. Ten minutes later the NSO recognizes that the VG Outlet Isolation Damper (1VG003) indicates intermediate.

Which one of the following would confirm to the NSO that the 1VG003 is NOT full open?

A. Reactor Building differential pressure is -0.5 inches H2O.

B. The VG Flow Control Damper, 1VG002 indicates intermediate.

C. VG Train Flow indicates 4000 cfm.

D.✓ The electric heater is de-energized.

Answer D is correct. If train air flow is NOT greater than 3200 scfm then the electric heater will NOT start. If flow drops below 3200 cfm then the electric heater will trip. Therefore if the electric heater is off it is a good indication that there is inadequate flow through the VG train.

The other answers are incorrect. VG train normal flow is 4000 cfm. The 1VG002 throttles to maintain 4000 cfm therefore dual indication on the 1VG002 is normal. VG is designed to maintain less than -0.25 inches H2O differential reactor building pressure. Differential pressure at -0.5 inches H2O would indicate adequate SBGT flow.

Reference:
LOR-2PM07-A401, Revision 02, setpoint
System Description 095, page 7, Section C., page 17, Table

48. 262001 A2.02 001/262001/A2.02/3.6/3.9/RO/HIGH/011.00.14/

(1.00 Point) Unit-1 is shutdown with the UAT unavailable. Unit-2 is in a normal full power electrical lineup.

Subsequently a spurious trip of the SAT Feed to 141Y (breaker 1412) occurred.

The 0 DG is running loaded with the following breaker lineup per the AC Power Abnormal procedure LOA-AP-101:

- SAT is available and carrying 142X, 142Y, and 143
- ACB 1411, UAT Feed to 141X is OPEN (and NOT available)
- ACB 1412, SAT Feed to 141Y is OPEN (and NOT available)
- ACB 1413, 0 DG Output is CLOSED
- ACB 1414, Unit Tie Breaker is OPEN (and available)
- ACB 1415, 141X/Y Tie Breaker is CLOSED

While operating in the above lineup, an ECCS initiation signal is received on Unit-1.

The operator should expect (1)__________________ and then enter the appropriate section of LOA-AP-101, Unit-1 AC Power System Abnormal, to (2)__________________ .

A. (1) ACB 1415 to OPEN, de-energizing bus 141X and ACB 1413 to REMAIN CLOSED; (2) RE-ENERGIZE 141X if Service Water pumps are required to supply fire protection.

B. (1) ACBs 1413 and 1415 to REMAIN CLOSED, there is NO undervoltage on Unit-2; (2) VERIFY all electrical buses are energized and the 0 DG is NOT overloaded

C.✓ (1) ACBs 1413 and 1415 to OPEN, and then 1413 to RECLOSE on undervoltage; (2) RE-ENERGIZE 141X if Service Water pumps are required to supply fire protection.

D. (1) ACB 1413 to OPEN and ACB 1414 to CLOSE, fast transferring to the Unit -2 SAT; (2) VERIFY all electrical buses are energized and return the 0 DG to Standby

Answer C is correct. It is the only choice which correctly describes breaker response and expected procedural actions.

The other answers are incorrect. An ECCS signal will trip the DG output breaker (1413) if closed. When 1413 opens, the X-Y tie breaker (1415) will trip on undervoltage. There is NO fast transfer feature to off-site power through the unit tie breaker (1414).

Reference:
LOP-DG-02, Revision 37, pages 7 and 8, Steps D.4.3.1 and 4.3.2
System Description 011, page 49, Section V.C.2.b
LOA-AP-101, Revision 19, page 2, TOC

49. 262002 A3.01 001/262002/A3.01/2.8/3.1/RO/MEMORY/012.00.05J/

(1.00 Point) Which one of the following would indicate that the Plant Process Computer (PPC) Uninterruptible Power Supply (UPS) should have automatically transferred to the Alternate Source?

A.✓ INVERTER FAILURE light is ON

B. 250 vdc battery supply voltage reads zero

C. SYNC FAILURE light is ON

D. Static Bypass Switch INVERTER light is ON

Answer A is correct. Loss of both the Normal AC Source and the Backup DC Source [or failure of the 25 KVA Inverter as indicated by the INVERTER FAILURE white light] will cause the Static Transfer Switch to swap to the Alternate AC Source.

The other answers are incorrect. The SYNC FAILURE light indicates that the UPS is unable to synchronize between the Alternate Source and the Inverter Output for Static Bypass Switch operation. The INVERTER light on the Static Bypass Switch indicates that the UPS is on the inverter (Normal or Backup supplies). On loss of 250 vdc Backup Supply the UPS will remain on the Normal Supply.

Reference:
LOP-CX-08, Revision 04, page 8, step E.2
System Description 050, page 37
System Description 012, Figure 12-03
Photo of PPC UPS

50. 263000 A4.03 001/263000/A4.03/2.7/2.8/RO/HIGH/006.00.14/

(1.00 Point) A loss of ALL 125 vdc Battery Chargers has occurred on Unit-1.

Assume equal loads of 25 amperes are being supplied by each battery, which one of the following lists the expected relationship between the Unit-1 battery voltages after 2 hours?

A. Division 1, 2 and 3 battery voltages approximately equal.

B. Division 2 and 3 battery voltage approximately equal and greater than Division 1.

C.✓ Division 1 and 2 battery voltage approximately equal and greater than Division 3.

D. Division 1 and 3 battery voltage approximately equal and greater than Division 2.

Answer C is correct. The Division 1 and Division 2 125 vdc Batteries are rated at 1128 amp hours. The smaller Division 3 125 vdc Battery is rated at 308 amp hours. Therefore it is expected that the Division 3 Battery voltage will decrease at a faster rate than the other two batteries.

At 25 amps per hour, the Division 1 and 2 batteries will last 45 hours. Division 3 battery will last only 12 hours. Therefore the Division 3 battery voltage is dropping at almost 4 time as fast as the other 2 batteries.

Reference:
System Description 006, page 24, Section 1.a and 1.b

51. 264000 G2.1.30 001/264000/2.1.30/3.9/3.4/RO/MEMORY/011.00.05/

(1.00 Point) You have been directed by the Unit Supervisor to place the 1B DG Maintenance-Auto Transfer Switch in the MAINT position.

Where is the switch located?

A.✓ In the 1B DG Room on Local Control Panel (1E22-P301B).

B. In 143 Switchgear room in the auxiliary compartment above the 1B DG Output Breaker.

C. In the Main control room on panel 1H13-P601.

D. In the 1B DG Room next to the 1B DG Governor.

Answer A is correct. The Maintenance-Auto Switch is located on the local control panel in the 1B DG room (1E22-P301B).

Reference:
LOP-DG-01, Revision 30, page 22, Step E.3.2

52. 300000 K1.05 001/300000/K1.05/3.1/3.2/RO/MEMORY/097.00.05H/

(1.00 Point) With Unit-1 operating at full power, a spurious PCIS Group 10 isolation occurred. During the recovery, the NLO reports that the IN Rupture Disc, 1IN22M has ruptured and needs to be replaced.

Based on the above event, which one of the following describes the minimum actions required to ensure the Inboard MSIVs will remain open during the replacement of 1IN22M?

NOTE:
1) 1IN059 - DW Nitrogen Inst Air Downstream Stop Valve
2) 1IN060 - DW Nitrogen Inst Air Upstream Stop Valve
3) 1IN017 - DW Inst N2 Regulated Hdr Drywell Supply Valve

A. START 1A IN Compressor and OPEN 1IN017 ONLY

B. OPEN valve 1IN017 ONLY

C. OPEN valves 1IN059 and 1IN060 ONLY

D.✓ OPEN valves 1IN059, 1IN060, and 1IN017

Answer D is correct. Following a PCIS Group 10 isolation, the IN Suction Isolation valves close and the IN Compressors trip on low suction pressure. 1IN059 and 1IN060 are opened to allow SA to supply pressure to the pneumatically operated IN isolation valves. To allow SA to supply the regulated IN header, 1IN017 must also be opened.

The other answers are incorrect. Without opening all three valves, SA can NOT supply IN to the MSIVs. You can NOT replace 1IN22M with the IN Compressor in operation.

Reference:
System Description 097, page 28, Section X.A.3 and X.A.4
LOA-IN-101, Revision 05, page 13, Attachment 1A

53. 400000 K2.01 001/400000/K2.01/2.9/2.9/RO/MEMORY/114.00.16/

(1.00 Point) Loss of bus 241Y will render ________ inoperable due to loss of power.

A. both 0 and 2B RBCCW Pumps

B. ONLY the 2B RBCCW Pump

C.✓ ONLY the 2A RBCCW Pump

D. both 2A and 2B RBCCW Pumps

Answer C is correct. The RBCCW Pumps are powered as follows:

Power Supply	*Components*
241Y via 233	*2A RBCCW Pump*
242Y via 234X	*2B RBCCW Pump*
142Y via 134X	*0 RBCCW Pump*

Reference:
System Description 114, page 11, Power Supply Table
System Description 005, Figure 05-07

54. 201003 K3.01 001/201003/K3.01/3.2/3.4/RO/HIGH/208.00.02/

(1.00 Point) Unit-1 is operating at 60% reactor power on a 80% Flow Control Line.

A control rod is being positioned from position 10 to 08. While settling, it is discovered that a complete failure of the collet fingers has occurred.

Based on the above failure and NO operator action, total core flow will ...

A.✓ decrease due to an increase in two-phase flow resistance.

B. increase due to a decrease reactor recirculation ratio.

C. remain constant since rod position does NOT affect total core flow.

D. increase due to a decrease in two-phase flow resistance.

Answer A is correct. A collet finger failure would result in the control rod drifting out (full out with NO operator action). Reactor Power will increase as result of the rod withdrawal. The increase power would cause increased boiling and a corresponding increase in flow resistance due to two-phase flow.

Reference:
LOA-RD-101, Revision 07, page 8, step B.1.12

55. 201006 K5.11 001/201006/K5.11/3.2/3.3/RO/MEMORY/048.00.14/

(1.00 Point) A rod position being displayed in magenta on the RWM indicates that ...

A. that control rod has a substituted value.

B.✓ only that control rod can be withdrawn.

C. only that control rod can be inserted.

D. that control rod is electrically out of service.

Answer B is correct. An insert error is indicated by Magenta font used to indicate rod position on the RWM display. When an insert error exists, an insert rod block is generated if the RWM is enforcing block (less than the LPSP or Blocks to Full). At LSCS RWM is normally operated in Blocks to Full mode. Therefore when control rod position is indicated in Magenta, the RWM will be generating an Insert Block.

Reference:
LOP-RW-01, Revision 14, page 4, Step D.2.1.1
System Description 048, page 7, Section III.C.2.b.4)

56. 202002 K6.03 001/202002/K6.03/2.8/2.8/RO/HIGH/023.00.05J/

(1.00 Point) A seal failure on the 1A Reactor Recirculation (RR) pump develops while operating in Mode 1 with power <25%. This causes the following:
- Drywell pressure increases to 2.0 psig
- 1A RR pump trips on overcurrent
- Narrow Range level indication remains on-scale during the event

Which one of the following correctly states the expected loop flow controller indications for the RR Flow Control Valves (FCVs) following the event?

	1A RR-FCV Position	1B RR-FCV Position
A.	15% open	Full-open
B.	Full-open	15% open
C.✓	Full-open	Full-open
D.	15% open	15% open

Answer C is correct. While operating at 25% power, RR is in slow speed with the FCVs full-open. The RR-FCVs will lockup on high drywell pressure so they would remain at their position PRIOR to the event (full-open). The other answers are therefore incorrect.

Reference:
LOR-1H13-P602-A301, Revision 3
System Description 023, page 16, section V.A.4

57. 214000 K3.01 001/214000/K3.01/3.0/3.2/RO/MEMORY/048.00.14/

(1.00 Point) Following a reactor scram from full power, when the RWM Scram Mode is enabled, IF multiple rods are at unknown positions due to Rod Position Information System (RPIS) failures, and all other control rods indicate full-in, the box will say ...

A.✓ ROD UNKNOWN in a yellow box

B. ROD OUT in a red box

C. ROD OUT in a yellow box

D. ROD UNKNOWN in a red box

Answer A is correct. If rods are at unknown positions, but none are known to be beyond 00, the box will be colored yellow and contain the words "ROD UNKNOWN."

Reference:
LOP-RW-01, Revision 14, page 19, second paragraph of note at tope of page.

58. 216000 A1.04 001/216000/A1.04/3.9/4.0/RO/HIGH/040.00.14/

(1.00 Point) The Unit-1 is at 100% power.

An NLO reports that an RPV Instrument Line is cracked and is slowly venting to the Unit-1 Reactor Building atmosphere.

The NSO scanned RPV pressure and RPV level instruments associated with the cracked instrument line.

Which one of the following sets of readings would indicate that the leak is associated with an instrument reference leg?

	Indicated RPV Pressure:	Indicated RPV Level:
A.✓	980 psig	40 inches
B.	1019 psig	34 inches
C.	960 psig	32 inches
D.	1015 psig	39 inches

Answer A is correct. RPV Pressure instruments are connected to instrument reference legs (vice variable legs) and therefore would indicate lower than actual pressure if the reference leg is vented. Differential pressure across level instruments would decrease (or even reverse) causing level to indicate abnormally high. Therefore the correct answer is the only choice that has pressure less than normal (<1005 psig) and level greater than normal (>36 inches). The other answers are therefore incorrect.

Reference:
System Description 040, page 42, Section C.1. (2nd paragraph)

59. 219000 A2.03 001/219000/A2.03/3.1/3.2/RO/HIGH//

(1.00 Point) Unit-2, Division 2 RHR is running in Suppression Pool Cooling with flow established at 5000 gpm. 2E12-F048B, RHR Heat Exchanger Bypass and 2E12-F003B, RHR Heat Exchanger Outlet valves have been adjusted to mid-position in order to establish the required cooldown rate. The Suppression Pool cooldown rate has NOT required adjustment for approximately 1 hour.

Subsequently a short causes the 2E12-F048B valve to travel to the full CLOSED position.

As a result of the above event, the Suppression Pool cooldown rate will (1)_____________ and the NSO must throttle the 2E12-F003B, RHR Heat Exchanger Outlet valve in the (2)_____________ direction in order to re-establish the previous cooldown rate.

A.✓ (1) increase; (2) CLOSED;

B. (1) decrease; (2) OPEN

C. (1) increase; (2) OPEN

D. (1) decrease; (2) CLOSED

Answer A is correct. Per LOP-RH-13, Suppression Pool Cooling Operation, you are directed to ESTABLISH desired cooling by THROTTLING 2E12-F048B and THROTTLING 2E12-F003B as required. When 2E12-F048B closes, more flow is forced through the Heat Exchanger increasing the cooldown rate. The operator will have to close the 2E12-F003B to reduce the cooldown rate to the previous rate.

Reference:
LOP-RH-13, Revision 26, pages 6 and 7, Step E.1.5

60. 223001 A3.04 001/223001/A3.04/4.2/4.3/RO/HIGH/090.00.05A5/

(1.00 Point) Under which one of the following conditions would you expect the Suppression Chamber-to-Drywell Vacuum Breakers to remain CLOSED?

A. Isolating the steam leak following a LOCA.

B.✓ Initiation of Suppression Chamber Spray during a LOCA.

C. Initiation of Drywell Spray during a LOCA.

D. Opening an SRV with a tail pipe broken in the Suppression Chamber air space.

Answer B is correct. The function of the Suppression Chamber-to-Drywell Vacuum Breakers is to relieve vacuum in the Drywell. They allow air and steam to flow from the Suppression Chamber to the Drywell when the Drywell is at a negative pressure with respect to the Suppression Chamber. A negative differential pressure across the Drywell wall is caused by rapid depressurization of the drywell. Events that cause this rapid depressurization are cooling cycles, inadvertent Drywell Spray actuation, and steam condensation from sprays or subcooled water reflood of a break in the event of a primary system rupture.

The other answers are incorrect. Drywell Spray will rapidly condense steam in the drywell causing negative pressure on opening the vacuum breakers. Isolating a steam leak in the Drywell will allow steam to condense on the cooler drywell wall and other components causing drywell pressure to decrease (although not as rapidly as caused by drywell spray). Opening an SRV with a broken tail pipe in the Suppression Chamber will cause the Suppression Chamber to pressurize without pressurizing the Drywell. This will also result in drywell pressure being negative with respect to the Suppression Chamber and the vacuum breakers will open.

Reference:
System Description 090, page 21, Section VIII.E.5 and VIII.E.7, page 23, Section VIII.G.

61. 239001 A4.02 001/239001/A4.02/3.2/3.2/RO/HIGH/091.00.16/

(1.00 Point) Unit-1 is operating in Mode 1.

After receiving annunciator 1H13-P603-A508, 1A RPS MG Set Trouble, the following valves indicate OPEN in the main control room:

- 1E51-F086, RCIC Turbine Exhaust Vacuum Breaker Upstream Isolation Valve
- 1B21-F019, MSIV Drain Header Outboard Stop Valve
- 1CM022A, 1A Post LOCA H2/O2 Monitor Drywell Suction Valve
- 1WR040, RBCCW Return Header Outboard Isolation Valve

Which one of the listed valves is NOT in its expected position?

A.✓ 1B21-F019 **B.** 1WR040 **C.** 1E51-F086 **D.** 1CM022A

Answer A is correct. The 1A RPS MG Trouble Alarm is caused by a trip of the MG set which de-energizes its associated RPS Bus (in this case A RPS bus is de-energized).

A loss of RPS-A will cause the following:

- *Deenergizes Logic A(A1) and C(A2)*
- *1/2 Isolation of MSIV (all MSIVs remain open)*
- *Deenergizes Outboard Isolation Logic to all OUTBOARD Isolation valves for PCIS Groups 1, 2, 3, 5, 6, 7 and 10, with the exception of MSIVs, VP and RBCCW. Additionally, Division 1 Post LOCA Monitor will automatically START.*

PCIS Group 8 is not affected, so the 1E51-F086 should remain open. The 1A Post LOCA monitor will start, so the 1CM022A will reposition open (PCIS Group 2). WR is exempted, and will remain open on a loss of RPS A. The MSIV drain line isolation valves are not exempted and therefore should have isolated.

Reference:
LOA-RP-101, Revision 07, page 6
System Description 091, page 41, Section VII.A

62. 256000 G2.4.6 001/256000/2.4.6/3.1/4.0/RO/HIGH/400.00.19/

(1.00 Point) An LGA event occurred on Unit-1:
- the reactor scrammed following a trip of both TDRFPs
- MSIVs automatically closed on low level
- RCIC is out of service for emergent maintenance
- All control rods are full-in
- Bus 152 tripped on overcurrent
- HPCS has tripped on overcurrent
- RPV level is -130 inches on WR and decreasing consistent with decay heat load

Based on the above conditions, which one of the following level control strategies would be appropriate?

A. Lineup but don't start Alternate Injection Systems, wait until level is below -150 inches then start and control level with Alternate Injection Systems.

B. Start the Motor Driven Reactor Feed Pump, then control level using the FRVs.

C.✓ Reduce RPV pressure using Safety Relief Valves, then control level using the Condensate Pumps and the FRVs.

D. Initiate ADS per the LGAs, then control level with low pressure ECCS systems.

Answer C is correct. Per the strategies document, "Establish a reactor pressure band of 450 to 650 psig. This pressure band will be sufficiently below the Condensate/Condensate Booster pump discharge pressure such that the MDRFP can be secured and condensate can be used for level control. This band would only be established after verification that an RPV leak was not present which would result in a cool down rate in excess of 100°F per hour."

The other answers are incorrect. The MDRFP has no power available without the SAT. You don't do a blowdown for level control unless level cannot be restored and maintained above -150 inches and this hasn't been proven yet because pressure is still high and all sources of makeup haven't been tried (also level is still above -150 inches). Although lining up alternate injection systems is a good idea, just sitting back and waiting for level to drop below -150 inches is definitely not appropriate.

Reference:
Strategies for Successful Transient Mitigation, Revision 01, page 7, first bullet under step 3.b
LGA-001, Revision 06

63. 268000 K1.05 001/268000/K1.05/2.9/3.2/RO/MEMORY/121.00.02/

(1.00 Point) Which one of the following tank levels will increase as a result of the Unit-1 Drywell Equipment Drain Sump (1RE02) pumping down?

A. Reactor Building Equipment Drain Tank (1RE01T)

B. Chem Waste Collector Tank (1WZ01T)

C. Waste Surge Tank (1WE02T)

D.✓ Waste Collector Tank (1WE01T)

Answer D is correct. One of the inputs to the 1WE01T is the Drywell Equipment Drain Sump.

Reference:
LOP-RE-01T, Revision 12, page 2
System Description 121, page 10, Section IV.A

64. 288000 K5.02 001/288000/K5.02/3.2/3.4/RO/HIGH/117.00.05/

(1.00 Point) All of the following will result in Reactor Building Differential Pressure becoming LESS negative, EXCEPT?

A.✓ Loss of air to the VR Exhaust Differential Pressure Control dampers 1VR07YA/B/C/D.

B. Trip of the running Station Heat Recovery Pump.

C. Trip of the operating VR Blast Coils.

D. Loss of air to VR Supply Flow Control Damper 1VR06Y.

Answer A is correct. VR Exhaust Differential Pressure Control Dampers (1VR07YA/B/C/D) fail open on loss of air and therefore exhaust flow would increase. This would cause Reactor Building differential pressure to increase (become MORE negative).

The other answers are incorrect. Tripping the Blast Coils would cause colder (more dense) air to enter the building. As the air heats it will expand causing differential pressure to become less negative. The VR Supply Flow Control Damper (1VR06Y) fail open on loss of air, causing more supply flow than exhaust flow, this would cause differential pressure to be less negative. Tripping a Station Heat Recovery pump would have the same effect as tripping the Blast Coils.

Reference:
LOA-PC-101, Revision 07, pages 5 and 6, Section B.1, Steps 3 and 4
LOA-PC-101, Revision 07, page 14, Discussion step C.1
System Description 118, page 09, and page 14

65. 290002 K4.03 001/290002/K4.03/3.2/3.2/RO/MEMORY/020.00.05P/

(1.00 Point) Reactor Pressure Vessel Internal design provides for installation of Core Orifices in the ...

A. Lower Fuel Tie Plate.

B. Baffle Plate.

C. Core Bottom Plate.

D.✓ Fuel Support Pieces.

Answer D is correct. There are two types of fuel support pieces; four-lobed and peripheral. The four-lobed support pieces are used in the central core region while the peripheral support pieces are located at the perimeter of the core. One of the primary functions of the fuel support pieces is to control the flow through each fuel bundle by use of replaceable orifice plates.

Reference:
System Description 020, pages 23 and 24, Section Q.

66. GENERIC 2.1.1 001/GENERIC/2.1.1/3.7/3.8/RO/HIGH/790.020/

(1.00 Point) A licensed operator worked on the following safety related hours during a seven-day period:

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
12 hours	12 hours	12 hours	0 hours	16 hours	12 hours	4 hours

All work periods began at 08:00 on each work day. Upon review, it was determined that this employee exceeded the overtime guidelines stated in LS-AA-119, Overtime Controls.

When did the employee exceed the overtime guidelines?

A. Both Wednesday and Saturday

B.✓ Saturday ONLY

C. Sunday ONLY

D. Both Saturday and Sunday

Answer B is correct. The employee's hours for Friday and Saturday exceeded the guideline for 24 hours in a 48 hour period (guideline was exceeded starting at 16:00 on Saturday). All other work periods met the guidelines, therefore the other answers are incorrect.

The guidelines stated in LS-AA-119 allow the following:
(1) 16 hours in a 24 hour period
(2) 24 hours in a 48 hour period
(3) 72 hours in a 7 day (168 hour) period
(4) must have 8 hour break between work periods

Reference:
LS-AA-119, Revision 02, page 3, step 2.5.1, 2.5.2, and 2.5.3

67. GENERIC 2.1.31 001/GENERIC/2.1.31/4.2/3.9/RO/HIGH/125.00.06/

(1.00 Point) Unit-1 and Unit-2 are both operating in Mode 1 with no equipment out of service. A valving error caused Fire Protection Header Pressure to drop to 116 psig for 30 seconds.

Based on the above event, the control room NSOs should verify proper operation of the Diesel Fire Pumps (DFPs) by observing on ...

A. 1PM09J that 0A DFP red light is lit and on 2PM09J that 0B DFP green light is lit.

B. 1PM09J that 0A DFP red light is lit and on 2PM09J that 0B DFP red light is lit.

C. 1PM09J that 0A DFP red light is lit and 0B DFP green light is lit.

D.✓ 1PM09J that both 0A and 0B DFP red lights are lit.

Answer D is correct. The 0A DFP automatically starts at 124 psig and the 0B DFP starts at 120 psig. Therefore if FP Header Pressure drops to 116 psig, both 0A and 0B DFPs should automatically start.

Controls and indication for the DFPs and the Fire Jockey Pumps are located on 1PM09J. There is one fire siren pushbutton are located on each unit (1PM09J and 2PM09J).

The other answers are therefore incorrect.

Reference:
LOP-FP-02, Revision 16, page 5, step D.2 and D.3
System Description 125, page 36, Table

68. GENERIC 2.2.11 001/GENERIC/2.2.11/2.5/3.4/RO/HIGH//

(1.00 Point) Which one of the following is considered a formal Temporary Configuration Change that would require an entry in the Operations Temporary Change Tracking Log as described in CC-AA-112, Temporary Configuration Changes?

A.✓ A temporary strip chart recorder connected to read the points normally monitored by a recorder that has failed.

B. A temporary pressure gauge installed on an engineered test point being used for troubleshooting.

C. Removal of RHR Pump motor control power fuses as part of a Clearance Order to allow repair of the pump motor.

D. A charging hose with a pressure gauge attached being used to charge an HCU accumulator per LOP-RD-20.

Answer A is correct. It is the only choice that requires a formal TCCP per CC-AA-112.

If a temporary configuration change ... is reviewed and controlled in other processes, or controlled by other procedures ... then a formal TCCP with content described in this procedure is NOT required.

A TCCP is not required for MT&E installed for troubleshooting efforts on equipment without engineering test points that meet the ... requirements.

Reference:
CC-AA-112, Revision 08, page 22, first paragraph, page 25, step 5.b

69. GENERIC 2.2.12 002/GENERIC/2.2.12/3.0/3.4/RO/HIGH/400.00.15/

(1.00 Point) Refer to the ACTIONs Table provided in Technical Specification Example 1.3-6 below to answer the following question.

EXAMPLE 1.3-6

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One channel inoperable.	A.1 Perform SR 3.x.x.x.	Once per 8 hours
	OR	
	A.2 Reduce THERMAL POWER to ≤ 50% RTP.	8 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

One channel is declared inoperable at 08:00 on June 1. The designated Surveillance Requirement (SR 3.x.x.x) is completed at 12:00 on June 1.

Including any extensions permitted by Technical Specifications, which one of the following describes the LATEST time and date to perform the Surveillance next without requiring entry into Condition B?

A. 20:00 on June 1 **B.**✓ 22:00 on June 1 **C.** 00:00 on June 2 **D.** 02:00 on June 2

Answer B is correct. Action A.1 is a "once per ... " completion time which qualifies for the 25% extension, per SR 3.0.2, to each performance after the initial performance [12:00 + (8 hours x 1.25) = 22:00 on June 1]. If Required Action A.1 is followed and the Required Action is NOT met within the Completion Time (plus the extension allowed by SR 3.0.2), Condition B is entered.

The other choices are incorrect because they represent typical calculational errors (using incorrect start time, etc.):
1) without an extension; 12:00 + 8 hours = 20:00 on June 1
2) without an extension starting at time of discovery; 08:00 + 8 hours + 8 hours = 00:00 on June 2
3) starting at time of discovery, applying an extension; 08:00 + 8 hours + 10 hours = 02:00 on June 2

Reference:
Technical Specification 1.3, pages 1.3-10 and 1.3-11.
Technical Specification SR 3.0.2. page 3.0-4

70. GENERIC 2.2.28 001/GENERIC/2.2.28/2.6/3.5/RO/MEMORY//

(1.00 Point) Who maintains the master copy of the Nuclear Component Transfer List (NCTL) and is responsible for signing off the completed NCTL sheets while performing component movements within the Unit-2 reactor or spent fuel storage pool.

A. Refuel Hoist Operator

B.✓ Fuel Handling Supervisor

C. Unit-2 Unit Supervisor

D. Unit-2 NSO

Answer B is correct. All fuel movements shall be performed in accordance with an approved Nuclear Component Transfer List (NCTL). The Fuel Handling Supervisor shall initial each step completed and sign off the completed sheet.

Reference:
LFP-400-1, Revision 24, page 8, Step D.2
LFP-100-2, Revision 11, page 8, Step E.3

71. GENERIC 2.3.1 001/GENERIC/2.3.1/2.6/3.0/RO/HIGH//

(1.00 Point) You are a 25 year old Occupational Radiation Worker and have NOT exceeded any legal or administrative exposure limits through the year 2003.

In 2004 you received 3.0 Rem of Routine Exposure and 4.0 Rem of authorized Planned Special Exposure (PSE).

What is your 10 CFR 20 NRC Exposure Limit, for Routine Occupational Radiation Work, during the year 2005?

A. 0.0 rem **B.** 1.0 rem **C.** 3.0 rem **D.✓** 5.0 rem

Answer D is correct. Including his 2004 exposure, the employee in question has NOT exceeded any exposure limit. The 10 CFR 20 limit for ROUTINE exposure is 5.0 Rem and the limit for PSE is an additional 5.0 Rem (up to a lifetime dose of 25 Rem PSE).

The other answers are incorrect because they contain math errors based on common misconceptions.

Reference:
RP-AA-203, Revision 2, page 1, step 2.6, and page 2, Table 1.

72. GENERIC 2.3.4 001/GENERIC/2.3.4/2.5/3.1/RO/MEMORY//

(1.00 Point) The Station Emergency Director is assigned the non-delegable responsibility for authorizing personnel exposure under emergency conditions recommended NOT to exceed __________ Rem TEDE for protecting valuable property.

A.✓ 10 **B.** 15 **C.** 20 **D.** 25

Answer A is correct. The Station Emergency Director must authorize exceeding 10 CFR 20 guidelines. Up to 10 Rem TEDE to protect valuable property and up to 25 Rem TEDE for lifesaving or protection of large populations.

Reference:
EP-AA-1000, Revision 16, page K-1, Section K, step 1
EP-AA-113, Revision 05, page 6, Step 4.3.3

73. GENERIC 2.3.10 002/GENERIC/2.3.10/2.9/3.3/RO/HIGH//

(1.00 Point) Per HU-AA-101, Human Performance Tools and Verification Practices, which one of the following correctly states the philosophy to be applied while performing Independent Verification (IV) of safety related valves located in the Outboard MSIV Room while operating in Mode 1?

A. Request that the Shift Manager waive the IV due to the low frequency of personnel traffic in the areas and complete the IV for the rest of the checklist.

B. Request that the WEC SRO waive the IV due to the low frequency of personnel traffic in the areas and complete the IV for the rest of the checklist.

C.✓ Request that the Shift Manager waive the IV for these valves to reduce personnel exposure and complete the IV for the rest of the checklist.

D. Perform the IV after receiving High Radiation and ALARA briefs from the WEC SRO.

Answer C is correct because the Shift Manager may waive the verification requirements for ALARA concerns. Alternative verification techniques shall be considered. Outboard MSIV room is an infrequently accessed Locked High Radiation Area.

Reference:
HU-AA-101, Revision 2, page 6, Step 4.3.1.1

74. GENERIC 2.4.1 001/GENERIC/2.4.1/4.3/4.6/RO/MEMORY/304.010/

(1.00 Point) During a ATWS with power greater than 3%, which one of the following actions can the panel operators take without Unit Supervisor direction?

A.✓ Initiate Standby Liquid Control

B. Trip RR pumps

C. Inhibit ADS

D. Prevent injection from ECCS

Answer A is correct. The scram hardcard directs the operator to 1) Initiate SBLC per LGA-010; 2) Initiate ARI; and 3) Insert Control Rod per LGA-NB-01 or LOA-RD-101 IF control rods remain out following a reactor scram. These actions are taken regardless of the Unit Supervisors place in the LGA flow charts.

The other answers are incorrect because direction to perform those steps is directed by the LGA flow charts only.

Reference:
LGP-3-2, Revision 50, page 18, Attachment E (Scram Hardcard)

75. GENERIC 2.4.34 001/GENERIC/2.4.34/3.8/3.6/RO/MEMORY//

(1.00 Point) LOA-RX-101, Unit-1 Control Room Evacuation Abnormal procedure directs you to OPEN RPS System A and B feed breakers (CB2A and CB2B) located at the (1)______________ on the 749 foot elevation of the Auxiliary Building. These breakers are left open until recovery to (2)______________ .

A. (1) RPS MG Sets
(2) prevent resetting the reactor scram

B.✓ (1) RPS Distribution Panel
(2) ensure against inadvertent isolation reset and valve opening caused by shorts

C. (1) RPS MG Sets
(2) ensure against inadvertent isolation reset and valve opening caused by shorts

D. (1) RPS Distribution Panel
(2) prevent resetting the reactor scram

Answer B is correct. Per UFSAR discussion, it is assumed that the operator can manually scram the reactor before leaving the Main Control Room. However, the RPS System A and B feed breakers are opened as a backup means of scramming the reactor AND to close the containment and reactor vessel isolation valves. The breakers are left open until recovery to ensure against inadvertent isolation reset and valve opening caused by shorts.

The other answers are incorrect. RPS scram cannot be remotely reset.

Reference:
LOA-RX-101, Revision 04, pages 5 and 15

76. 295003 G2.4.4 001/295003/2.4.4/2.9/3.6/SRO/HIGH/400.00.15/

(1.00 Point) A breaker trip event occurred on Unit-2, some of the equipment de-energized is listed below:

- 2A Diesel Cooling Water Pump
- 2C and 2D RHR Service Water Pump
- 2B Fuel Pool Emergency Makeup Pump
- 2B Primary Containment Vent Fan
- 2B Primary Containment Chiller

Technical Specification 3.6.3.1 (Primary Containment Hydrogen Recombiner) is not being met because (1)______________ Hydrogen Recombiner is OPERABLE for Unit-2, and the Unit Supervisor should direct actions to recover power per LOA-AP-201, Unit-2 AC Power System Abnormal for (2)______________ .

A. (1) ONLY Unit-1
(2) Loss of Bus 235X/Y;

B. (1) neither
(2) Loss of Bus 236X/Y;

C.✓ (1) ONLY Unit-1
(2) Loss of Bus 236X/Y;

D. (1) neither
(2) Loss of Bus 235X/Y;

Answer C is correct. All items listed as de-energized are powered from 236X and 236Y. Therefore LOA-AP-201 entry for Loss of Bus 236X/Y is appropriate. These busses are required by Technical Specifications.

Two primary containment hydrogen recombiners, including the associated Residual Heat Removal (RHR) pumps, piping and valves necessary to provide recombiner cooling, must be OPERABLE. Attachment K of LOP-AP-242Y lists the Division 2 power supplies to the following HG system valves:

2HG001A, Unit-2 HG Unit-2 Drywell Suction - 236Y-1 compartment G1
2HG002A, Unit-2 HG Unit-2 Drywell Suction - 236Y-1 compartment G2
2HG009, Unit-2 HG Unit-1 Cross Over, 236Y-1 compartment G5

Reference:
Technical Specification B 3.8.1, pages B 3.8.1-4 and B 3.8.1-7
Technical Specification B 3.6.3.1, page B 3.6.3.1-2
LOP-AP-242Y, page 204, Attachment K
System Description 094, Figure 094-01

77. 295004 AA2.02 001/295004/AA2.02/3.5/3.9/SRO/HIGH//

(1.00 Point) While operating at full power with the RCIC turbine running at 600 gpm for a surveillance, an event occurred on Unit-1.

The NSO observed the following indications as a direct result of the event:

- RCIC turbine tripped on overspeed but no trip alarm was received
- Division 1 Post LOCA monitor automatically started
- All SRV OPEN and CLOSED position indicating lights are out
- PCIS Group 4 outboard valves automatically closed

As the Unit Supervisor, your FIRST priority is to direct the NSO to enter ...

A. LOA-PC-101, Primary/Secondary Containment Trouble due to a Group 2 isolation.

B. LOA-PC-101, Primary/Secondary Containment Trouble due to a Group 4 isolation.

C. LOA-DC-101, Unit 1 DC Power System Failure due to loss of 112Y.

D.✓ LOA-DC-101, Unit 1 DC Power System Failure due to loss of 111Y.

Answer D is correct. Per the referenced procedure, loss of 125 vdc Bus 111Y would cause all of the listed indications. Entering LOA-DC-101 is the highest priority because step 1 on loss of 111Y is to manually scram the reactor.

The other answers are incorrect because loss of all of the listed symptoms are Division 1 and therefore 112Y is incorrect. Although there are indications of both a PCIS Group 2 and Group 4 isolation, entering LOA-PC-101 before entering LOA-DC-101 would be imprudent becuase LOA-PC-101 does NOT require a manual scram.

Reference:
LOA-DC-101, Revision 07, page 52
LOA-PC-101, Revision 07, pages 16 to 18, Attachment A, hard card

78. 295016 G2.2.25 001/295016/2.2.25/2.5/3.7/SRO/MEMORY//

(1.00 Point) The Remote Shutdown Monitoring System LCO provides for operability of instrumentation that is required for all of the following EXCEPT?

A. RPV pressure control using SRVs

B. RPV inventory control using RCIC

C. Decay heat removal using Shutdown Cooling

D.✓ Containment control using Drywell Spray

Answer D is correct. Although control of 1E12-F016B is located on the Remote Shutdown Panel (RSP), you can NOT initiate Drywell Spray because controls for 1E12-F017B are NOT located on the RSP. Control for 1E12-F016B are only provided to STOP DW Sprays if initiated prior to exiting the control room or if the fire caused a short and opened the valve before control was transfered to the RSP.

The other answers are incorrect. The Remote Shutdown Monitoring System LCO provides the requirements for the OPERABILITY of the instrumentation ... that is required for:
1) Reactor pressure vessel (RPV) pressure control
2) Decay heat removal; and
3) RPV inventory control.

Reference:
Technical Specification B 3.3.3.2, page B 3.3.3.2-2
UFSAR, pages 7.4-18 through 7.4-21, Section 7.4.4
LOP-RX-01T, Revision 10, entire list (doesn't have control switch for drywell spray valves)

79. 295021 AA2.05 001/295021/AA2.05/3.4/3.5/SRO/MEMORY//

(1.00 Point) Unit-1 is in Mode 4 with reactor coolant temperature at 190°F. The operating loop of Shutdown Cooling trips and can NOT be restarted. Both Reactor Recirculation pumps are out of service and Reactor Water Cleanup (RWCU) is isolated. It has been determined that it will take 2 hours to align and start the standby Shutdown Cooling loop.

As the Shift Manager you should ...

A. authorize raising RPV level to between 50 and 60 inches in order to provide the extra Net Positive Suction Head (NPSH) needed to start the standby Shutdown Cooling pump when coolant temperature is above 180°F.

B.✓ authorize raising RPV level to between 220 and 260 inches in order to more accurately determine vessel metal temperatures and demonstrate that stratification is NOT occurring.

C. authorize raising RPV level to between 220 and 260 inches in order to increase the water volume available for removal of decay heat which increases heat transfer rate to the containment atmosphere.

D. direct maintaining RPV level between 30 and 40 inches in order to increase the Time to Boil allowing extra time to start the standby Shutdown Cooling loop.

Answer B is correct. The Shift Manager has to direct increasing reactor water level to a range of +220 inches to +260 inches enhances vessel metal temperature determination to demonstrate that stratification is not occurring. Additionally, this aids natural circulation, which starts to occur at +50 inches (bottom of skirt).

Reference:
LOA-RH-101, Revision 07, page 20

80. 295023 G2.4.4 001/295023/2.4.4/4.0/4.3/SRO/MEMORY/091.00.08/

(1.00 Point) An event occurs on Unit-2 that results in the following alarms:
- 2H13-P601-E306, Fuel Pool Vent Rad Hi
- 1H13-P601-E306, Fuel Pool Vent Rad Hi
- 2H13-P601-F205, Div 1 Fuel Pool Rad Hi-Hi

An Extra NSO verified that Fuel Pool Monitors 2A and 2B have tripped.

The crew should be directed to enter (1)_____________ to verify isolations are complete to prevent (2)_____________ .

A.✓ (1) both Unit-1 and Unit-2 LGAs;
(2) off-site doses from exceeding 10 CFR limits

B. (1) only the Unit-2 LGA;
(2) over exposure of personnel on the refuel floor

C. (1) both Unit-1 and Unit-2 LGAs;
(2) over exposure of personnel on the refuel floor

D. (1) only the Unit-2 LGA;
(2) off-site doses from exceeding 10 CFR limits

Answer A is correct. The operators should be directed to enter LGAs for both units because annunciator 2H13-P601-F205 indicates that the high radiation trips set point has been exceeded (the other two annunciators are only alarms). When the trip setpoint is exceeded on either unit, it causes a PCIS Group 4 isolation on BOTH units. The crew should therefore verify isolations are complete because the TS Bases states that the VR and Fuel Pool Radiation Monitor trip setpoints are based on NOT exceeding 10CFR20 and 10CFR100 limits. The other answers are therefore incorrect.

Reference:
2H13-P601-F205, Revision 02
Technical Specification Bases 3.3.6.1, pages B 3.3.6.1-14 and 15
Technical Specification Bases 3.3.6.2, pages B 3.3.6.2-6

81. 295028 G2.1.32 001/295028/2.1.32/3.4/3.8/SRO/HIGH/400.00.12/

(1.00 Point) Unit-1 was manually scrammed due to a small leak in the primary containment. The following conditions exist:

- Drywell pressure is 2.0 psig and slowly rising
- Drywell temperature is 215°F and slowly rising

Which one of the following identifies whether LGA-VP-01, Primary Containment Temperature Reduction can be used to reduce Drywell temperature and the basis for that decision?

A. No, because neither LGA-001, RPV Control nor LGA-003, Primary Containment Control have entry conditions that are met.

B.✓ No, because even though LGA-003, Primary Containment Control has entry conditions that are met, Drywell temperature is greater than 212°F with a LOCA in the containment.

C. Yes, because LGA-001, RPV Control and LGA-003, Primary Containment Control both have LOCA entry conditions that are met.

D. Yes, because LGA-003, Primary Containment Control has entry conditions met, and temperature in the drywell is greater than 135°F.

Answer B is correct because LGA-003 should be entered when drywell temperature is above 135°F and LGA-VP-01, Prerequisites, Entry Conditions state "There has NOT been a LOCA (large or small) on the Unit which has raised DW temperature above 212°F."

The other answers are incorrect because LGA-001 does not have any entry conditions that are met.

Reference:
LGA-VP-01, Revision 08, page 1, Step B.1.a.
LGA-001, Revision 06
LGA-003, Revision 05

82. 295031 EA2.02 001/295031/EA2.02/4.0/4.2/SRO/HIGH//

(1.00 Point) An ATWS event has occurred on Unit-1.

- Drywell pressure is +0.5 psig
- A PCIS Group 1 Isolation has occurred
- One SRV was open and maintaining reactor pressure in LLS

You are maintaining RPV level per the level band prescribed by step 9 of LGA-010 when the Unit NSO reports that at -100 inches on the Wide Range the SRV went closed. Reactor pressure is approximately 900 psig and steady.

As the Unit Supervisor, you should ...

A. exit level band 9 and control level per level band 8 because power is still ABOVE 3%.

B. continue to control level in the currently prescribed level band because power is still ABOVE 3%.

C. exit level band 9 and control level per level band 7 because power has decreased BELOW 3%.

D.✓ continue to control level in the currently prescribed level band even though power has decreased BELOW 3%.

Provide LGA-010 to the examinee as a handout.

Answer D is correct. Once you enter level band 9 you remain there until LGA-010 is exited because it is the actions of Step 9 that will reduce power until cold shutdown boron is injected or all control rod are inserted or the QNE determines that the reactor will remain shutdown under all conditions.

The other choices are incorrect because the erroneously state that power is above 3% or have you change level bands.

Reference:
LGA-010, Revision 06
LGA Flowchart Use Lesson Plan, page 21, Steps I and J

83. 295009 AA2.03 001/295009/AA2.03/2.9/2.9/SRO/HIGH/027.00.05H/

(1.00 Point) Unit-2 was operating in Mode 2. RWCU Reject to the Main Condenser is being used to control RPV level per LOP-RT-09, RWCU Sytem - Coolant Rejection.
- RPV Water Level was +34 inches and steady

The NSO made an adjustment to the blowdown flow rate, and 20 minutes later the RPV Low Water Level alarm (Level-4) was received.

Based on the above information, the NSO increased the reject flow rate by approximately (1)______________ and the Unit Supervisor should then direct the NSO to restore RPV level to the band directed by (2)_______________ .

A. (1) 50 gallons per minute;
(2) LOP-RL-01, Operation of the Reactor Water Level Control System

B.✓ (1) 25 gallons per minute;
(2) LGP-1-1 Normal Unit Startup

C. (1) 25 gallons per minute;
(2) LOP-RL-01, Operation of the Reactor Water Level Control System

D. (1) 50 gallons per minute;
(2) LGP-1-1 Normal Unit Startup

Answer B is correct. Per the reference procedure, there are approximately 200 gallons per inch in the RPV. The RPV low level (level-4) alarm is set at 31.5 inches.
34 - 31.5 = 2.5 inch level decrease
200 gallons/inch x 2.5 inches = 500 gallons drained from the vessel
500/20 minutes = 25 gallon per minute change in the reject flow rate

To cause level to decrease, the NSO must have opened the blowdown flow control valve, or increased the reject rate by 25 gallons per minute. LGP-1-1 is the correct procedure based on the unit operating in Mode 2 (startup) without LGA-001 entry conditions met. The low level alarm is at +31.5 inches and entry condition for LGA-001 is +11 inches. Therefore the other answers are incorrect.

Reference:
LOP-NB-02, Revision 08, page 5, Step D.1.7
LGP-1-1, Revision 72, page 22, Step E.3.12
LOP-SF-06, Revision 12, page 72, Attachment M

84. 295007 G2.1.7 001/295010/2.1.7/3.7/4.4/SRO/HIGH/070.00.14/

(1.00 Point) During a reactor pressure transient, 4 Safety Relief Valves (SRVs) automatically opened when RPV pressure reached 1090 psig. All other SRVs have remained closed during the transient.

Which one of the following correctly states the status of the SRVs and the actions that should be directed by the Unit Supervisor?

A. Four SRVs have opened before their relief setpoint, close the SRVs per LOA-SRV-101, Stuck Open Safety Relief Vales.

B. All thirteen SRVs have functioned as designed, control pressure below 1059 psig per LGA-001, RPV Control.

C.✓ Two SRVs have failed to open at their relief setpoint, control pressure below 1059 psig per LGA-001, RPV Control.

D. One SRV has opened before its relief setpoint, close the SRV per LOA-SRV-101, Stuck Open Safety Relief Valve.

Answer C is correct. The SRV setpoints are as follows:

SRV	*Relief Valve OPEN*	*Relief Valve CLOSE*	*Low-Low Set OPEN*	*Low-Low Set Re-Open*	*Low-Low Set CLOSE*	*Safety Valve OPEN*	*Safety Valve CLOSE*
S/U	*1076*	*976*	*1076*	*1046/1006*	*926/896*	*1150*	*1115*
C/D/E/K	*1086*	*986*	*1086*	--	*946*	*1175*	*1140*
F/P	*1096*	*996*	--/1096	--	--/946	*1185*	*1149*
H, L, M	*1106*	*1006*	--	--	--	*1195*	*1159*
R, V	*1116*	*1016*	--	--	--	*1205*	*1169*

Reference:
LOA-SRV-101, Revision 04, page 11, Table 2

85. 295033 G2.4.6 001/295033/2.4.6/3.1/4.0/SRO/HIGH//

(1.00 Point) Following an event on Unit-1, the control room operators gather the following information:

- RB RCIC Room Area Radiation Monitor is pegged high
- RB North HCU Area Radiation Monitor is pegged high
- SBGT Area Radiation Monitor is reading 100 mrem/hr
- RCIC has received an isolation signal however the isolation valves have failed to close
- Unit-1 continues to operate in MODE 1

The above conditions require a (1)______________ because two (2)______________ values for the same parameter have been exceeded.

A.✓ (1) manual scram (LGP-3-2) and blowdown (LGA-004 or LGA-006);
(2) Max Safe

B. (1) unit shutdown (LGP-2-1);
(2) Max Normal

C. (1) manual scram (LGP-3-2) and blowdown (LGA-004 or LGA-006);
(2) Max Normal

D. (1) unit shutdown (LGP-2-1);
(2) Max Safe

Answer A is correct. When the Reactor Building ARMs in Table R of LGA-002 are pegged high, their Max Safe values have been exceeded. With the unit in MODE 1, the mode switch is in run and the reactor is pressurized. The same parameter (radiation) in two or more areas above Max Safe, indicates that the problem is wide spread. With RCIC NOT isolated, the LGAs will direct a manual scram and two or more areas above Max Safe for the same parameter, a blowdown is required to reduce the leak rate and spread of contamination.

The other answers are incorrect. Without a primary system discharging into the reactor building the LGAs only require a unit shutdown when two Max Safe values are reached for the same parameter.

Reference:
LGA-002 Lesson Plan, page 21, Section X.A
LGA-002, Revision 03, Table R

86. 209001 A2.03 001/209001/A2.03/3.4/3.6/SRO/HIGH/063.00.14/

(1.00 Point) A transient has occurred on Unit-1 resulting in the following conditions:
- 142Y is de-energized
- RPV pressure is 290 psig and slowly decreasing
- RPV level is -30 inches and rising at 50 inches per minute

Subsequently, annunciator 1PM01J-A313 Feed to 135X/Y 133 Auto Trip (SER R-point R0218 Bus 141Y Fd Bkr to 135X/Y A-Trip) is received.

Based on the above conditions, the Unit Supervisor should direct action to ...

A.✓ trip the LPCS pump and locally close the LPCS Injection valve per LOP-AA-04, Operation of valves.

B. locally close the LPCS Injection valve per LOP-AA-04, Operation of Valves, but leave the LPCS Pump running until plant conditions are stabilized.

C. return the LPCS system to standby when level is above the scram setpoint per LOP-LP-03, Shutdown of LPCS After an Automatic Initiation.

D. return the LPCS system to standby when level is above the LPCS initiation setpoint per LOP-LP-03, Shutdown of LPCS After an Automatic Initiation.

Answer A is correct. LPCS is NOT needed for level control because level is rising rapidly. Therefore LPCS injection should be stopped per LGA-001, RPV Control. Tripping the pump from the control room will stop injection, however, the injection valve is de-energized (loss of 135X/Y) and must be manually closed per LOP-AA-04. LOP-LP-03 is not applicable because it assumes that power is available to the LPCS components. LPCS can NOT be placed in standby when a component that is required to automatically re-align for injection is de-energized and not available.

Reference:
LGA-001, Revision 06,
LOP-AA-04, Revision 21, pages 11 through 14
LOP-AP-141Y, Revision 02, page 81, Attachment G

87. 212000 G2.4.30 001/212000/2.4.30/2.2/3.6/SRO/HIGH/715.001/

(1.00 Point) Unit-2 was operating at full rated conditions when an event occurred requiring a manual scram:
1) The NSO armed and depressed all manual scram pushbuttons
2) All group scram lights remained lit and control rods did NOT move
3) The NSO manually initiated both divisions of ARI
4) All control rods fully inserted following ARI initiation

Based on the above event, (1)______________ and therefore, (2)______________ are required to be notified per Nuclear Accident Reporting System (NARS)

A. (1) NONE of the EALs are applicable;
(2) NO outside agencies

B.✓ (1) EAL MA3 is the highest applicable EAL;
(2) ONLY Illinois EMA and REAC

C. (1) EAL MS3 is the highest applicable EAL;
(2) Illinois EMA and REAC, the local county Sheriff and EMA, and LaSalle County ESDA

D. (1) EAL MS3 is the highest applicable EAL;
(2) ONLY Illinois EMA and REAC

Provide EP-AA-1005, pages LS 3-11, LS 3-61, and LS 3-62 to the examinee as a handout.

Answer B is correct. The above event is classified as an Alert per EAL MA3 based on manual initiation of ARI prior to automatic initiation as described in EAL MS3. Per the NARS Form, when the event is classified as a Unusual Event, Alert, or Site Emergency use NARS (dial) Code 20 to notify: 1) Illinois EMA, and 2) Illinois REAC. The only time state agencies are contacted using the initial NARS transmittal form, is when the initiating event is classified as a General Emergency.

Reference:
EP-AA-1005, Revision 17, pages LS 3-11, LS 3-61, and LS 3-62
EP-MW-114-100-F-01, Revision A, page 2

88. 261000 A2.05 001/261000/A2.05/3.0/3.1/SRO/HIGH/095.00.05B/

(1.00 Point) Several hours after an automatic initiation during a LOCA, and with the initiation signal still present, the Unit-1 Standby Gas Treatment Primary Fan trips.

After the trip, the Unit-1 Assist NSO observed the following at panel 1PM07J:

- SBGT Primary Fan - OFF
- SBGT Cooling Fan - OFF
- SBGT Heater - OFF
- SBGT Flow - 0 scfm
- 1VG001, SBGT Inlet Isolation damper - CLOSED
- 1VG003, SBGT Outlet Isolation damper - OPEN

The SBGT train (1)_____________ to the Primary Fan trip and the Unit Supervisor should direct the operator to (2)_____________ .

A. (1) responded as expected;
(2) SHUTDOWN the SBGT train per LOP-VG-02, Shutdown of the SBGT System

B. (1) responded as expected;
(2) START the standby SBGT per LGA-VG-101, Secondary Containment Pressure Control

C.✓ (1) did NOT respond correctly;
(2) manually START the Cooling Fan per LOR-1PM07J-A502, SBGT Pri Fan Auto Trip

D. (1) did NOT respond correctly;
(2) CLOSE the Outlet Isolation damper per LOR-1PM07J-A502, SBGT Pri Fan Auto Trip

Answer C is correct. When the Primary Fan trips the Cooling Fan should automatically start to remove decay heat from the charcoal. This would also be indicated by 200 scfm flow through the train. The Cooling Fan has failed to automatically start. The outlet damper has to remain open to allow for cooling flow.

Reference:
LOR-1PM07J-A502, Revision 02

89. 300000 G2.4.4 001/300000/2.4.4/4.0/4.3/SRO/HIGH/062.00.22/

(1.00 Point) Unit-1 is being shutdown for emergent maintenance. The Shutdown Cooling Isolation Interlocks have just cleared and Main Turbine Bypass valves are being used to control reactor pressure.

While troubleshooting ADS Accmulator alarms, the FIN Team reports that the ADS Accumulator Supply header pressures are reading 145 psig.

Based on the above information, which one of the following is appropriate for the Unit Supervisor?

A.✓ Direct actions per annunciator procedures ONLY because ECCS subsystems are capable of providing flow into the RPV.

B. Direct actions per the IN abnormal procedure AND take actions per TS 3.5.1 required action G.1 AND G.2 because ADS does not meet the single failure criteria used in the accident analysis.

C. Direct actions per the IN abnormal procedure AND take actions per TS 3.5.1 required action G.2 ONLY because low pressure ECCS subsystems are currently incapable of providing flow into the RPV.

D. Direct actions per annunciator procedures AND take actions per TS 3.5.1 required action F.1 ONLY because even though portions of ADS are inoperable, ADS still meets the single failure criteria used in the accident analysis.

Provide Technical Specification 3.5.1, pages 3.5.1-1, -2, -3, -4 and -5 to the examinee as a handout.

Answer A is correct. Annunciator 1H13-P601-F102 will alarm when any low accumulator is received (pressure less than 151 psig) and therefore actions should be taken per the LOR. The abnormal procedure (LOR-IN-101) does NOT cover ADS accumulator pressure events. The ADS portion of TS 3.5.1 is applicable in MODE 1, and in MODES 2 and 3 when reactor steam dome pressure is >150 psig. TS 3.5.1 is NOT applicable per the bases because when ≤150 psig the low pressure ECCS systems are capable of providing flow to the RPV. The other answers are incorrect because they assume that TS 3.5.1 pressure is greater than 150 psig.

Reference:
LOR-1H13-P601-F102, Revision 03
Steam Tables
Technical Specification 3.5.1 pages 3.5.1-1, through 3.5.1-5.

90. 400000 A2.03 001/400000/A2.03/2.9/3.0/SRO/HIGH//

(1.00 Point) Unit-1 is operating at full power and Unit-2 is in an extended maintenance outage.

The Ice Melt Line was just taken out of service to support emergent maintenance activities on the Unit-2 Circulating Water Piping. Maintenance is expected to last another 4 days.

The following conditions exit:
- Circulating Water Inlet temperature is 55°F
- Outside Air Temperature is 10°F and forecasted to drop over the coming week
- The 0A Service Water Jockey Pump is the only Service Water Pump running
- Service Water Pressure is 107 psig

Over the next week, Service Water pressure is expected to (1)______________ , and the Unit Supervisor should direct system pressure be controlled by (2)______________ .

A. (1) decrease;
(2) isolating unnecessary Service Water loads per LOA-WS-101, Service Water System Abnormal.

B. (1) decrease;
(2) start an additional Service Water Pump per LOP-WS-02, Service Water Pump and Service Water Jockey Pump Startup and Operation.

C.✓ (1) increase;
(2) throttling flow through an idle RBCCW Heat Exchanger Outlet Valve per LOP-WS-02, Service Water Pump and Service Water Jockey Pump Startup and Operation.

D. (1) increase;
(2) placing a Service Water Strainer on continuous backwash per LOP-WS-05, Service Water Strainer Operations.

Answer C is correct. Without Ice Melt in service, Circulating Water Inlet temperature will decrease, loads will automatically throttle back and Service Water (WS) pressure will increase. With only one pump running, pumps can NOT be turned off to control pressure, therefore, LOP-WS-02 directs increasing flow through an idle RBCCW heat exchanger to control pressure.

Reference:
LOP-WS-02, Revision 14, pages 8 and 9
LOP-WS-02, Revision 14, page 13, NOTE at top of page

91. 202002 G2.1.14 001/202002/2.1.14/2.5/3.3/SRO/MEMORY//

(1.00 Point) The Shift Manager is REQUIRED to notify the Duty Station Manager per OP-AA-106-101, Significant Event Reporting, for which one of the following events?

A.✓ Entering a 12 hour shutdown time clock due to an inoperable RR Flow Control Valve.

B. Entering a 4 hour time clock requiring restoration of ECCS due to a scheduled surveillance.

C. Personnel injury that was treated and released by the site nurse.

D. Load reduction of 20% per a pre-approved Electric Power Operations request.

Answer A is correct. OP-AA-106-101, Significant Event Reporting requires the Shift Manager to notify the Duty Station Manager to make notifications for the following Technical Specification reasons:
1) forced entry into a 72 hours or less shutdown LCO, or
2) if a LCO will not be met within the time requirement.

Reference:
OP-AA-106-101, Revision 05, pages 3, Step 4.2.1, and pages 6 and 7, Attachment 1

92. 216000 A2.07 001/216000/A2.07/3.4/3.5/SRO/HIGH/400.00.01/

(1.00 Point) An ATWS and LOCA have occurred on Unit-1 and the appropriate LGAs have been entered. Power was 6% and the NSO was trying to maintain level at -130 inches, however level continued to drop slowly.

The following conditions exist now:
- Power is 5% and decreasing slowly
- Seven ADS valves are open
- RPV Pressure is 40 psig and decreasing slowly
- Drywell pressure is 22 psig and steady
- Suppression Pool temperature is 102°F and rising slowly
- Drywell temperature is 290°F and steady
- Fuel Zone is reading upscale
- All other RPV water level instruments indicate on-scale and rising quickly

Which one of the following represents the next required LGA action and why?

A. Wait until RPV pressure is below that indicated in Table G to take advantage of steam cooling before re-injecting into the vessel.

B. Cool down to Cold Shutdown using Shutdown Cooling per LOP-RH-07 to allow entering the recovery phase of EOP actions.

C.✓ Enter the EOP for RPV Flooding because reference legs have flashed.

D. Bypass isolations per LGA-MS-01 to maintain the condenser as a heat sink.

Provide LGA-003, LGA-005 and LGA-010 to the examinee as a handout.

Answer C is correct. Based on RPV pressure and Drywell temperature, the RPV Saturation Temperature limit has been exceeded. This does not automatically mean that reference legs have flashed, however the NSO should be trying to maintain level between -150 and -60 inches per LGA-010 step 8 and with level rising rapidly during an ATWS when attempting to maintain level low you have indications that reference leg flashing has taken place. Therefore per the overriding step, Enter LGA-005 at step 13, where the first action block directs preventing all injection except Boron, CRD and RCIC.

The other answers are incorrect. Waiting for RPV pressure to drop or waiting for Cold Shutdown Boron injection are both appropriate per LGA-010 however when level is unknown the override directs you to LGA-005. If LGA-MS-01 was appropriate it should have been done prior to establishing a level band per LGA-010 step 8.

Reference:
LGA-003, Revision 05
LGA-005, Revision 06
LGA-010, Revision 06

93. 234000 A4.01 001/234000/A4.01/3.7/3.9/SRO/HIGH//

(1.00 Point) During a refueling outage the reactor core is being loaded.
- All SRMs are fully inserted
- All control rods are fully inserted
- The signal to noise ratio for all SRMs is 15:1
- There are at least 6 fuel assemblies adjacent to each SRM
- There are more than 10 fuel assemblies loaded in each quadrant
- Fuel assemblies are being loaded into the same quadrant where SRM A is located

While lowering a Fuel Assembly into the same quadrant as SRM A is located, the NSO takes the following SRM readings:

SRM A = 2.5 SRM B = 2.0 SRM C = 4.0 SRM D = 3.0

Based on the above SRM indications core alterations should be ...

A. allowed to continue because SRM D is operable and is located in an adjacent quadrant to where core alterations are taking place.

B. suspended immediately because the capability to detect local reactivity changes in the core is degraded with SRM B inoperable.

C. allowed to continue because SRMs D and A are operable and are located in an adjacent quadrant and a quadrant where core alterations are taking place.

D.✓ suspended immediately because the capability to detect local reactivity changes in the core is degraded with SRM A inoperable.

Provide Technical Specification 3.3.1.2, pages 3.3.1.2-1 through 3.3.1.2-6 to the examinee as a handout.

Answer D is correct. With one or more required SRMs inoperable (signal to noise ratio is <20:1 so must read >3.0 to be operable) in MODE 5, the capability to detect local reactivity changes in the core during refueling is degraded. CORE ALTERATIONS must be immediately suspended, and action must be immediately initiated to fully insert all insertable control rods in core cells containing one or more fuel assemblies.

Reference:
Technical Specification 3.3.1.2 and bases

94. GENERIC 2.1.11 001/GENERIC/2.1.11/3.0/3.8/SRO/MEMORY/400.00.15/

(1.00 Point) Unit-1 is performing a normal unit shutdown. The containment is being de-inerted when annunciator 1H13-P603-B501, Pri Cnmt Pressure Hi/Lo is received. Drywell pressure indication is verified to read negative 0.6 psig (-0.6 psig).

The NEXT action required by Technical Specifications is to ...

A.✓ restore pressure to within the limits in 1 hour so that containment pressure remains within design values if Drywell Spray is initiated.

B. place the mode switch in SHUTDOWN immediately because containment design limits will be exceeded if Suppression Chamber Spray is initiated.

C. place the mode switch in SHUTDOWN immediately because containment design limits will be exceeded if Drywell Spray is initiated.

D. restore pressure to within the limits in 1 hour so that containment pressure remains within design values if Suppression Chamber Spray is initiated.

Answer A is correct. TS 3.6.1.4 LCO requires Drywell and Suppression Chamber pressure be maintained >-0.5 psig and <+0.75 psig. If pressure is outside of these bounds then Required Action A.1 states "Restore drywell and suppression chamber pressure to within limits" in 1 hour. So that containment pressure remains within the design values, the basis for the LCO says that containment pressure must be below the upper limit for the LOCA analysis and must be above the lower limit during inadvertent operation of drywell sprays.

Reference:
Technical Specification 3.6.1.4, page 3.6.1.4-1
Technical Specification B 3.6.1.4, page B 3.6.1.4-1 and B 3.6.1.4-2

95. GENERIC 2.1.13 001/GENERIC/2.1.1/2.0/2.9/SRO/MEMORY//

(1.00 Point) A casualty has occurred resulting in the following:

- A leak has developed in the Reactor Water Cleanup (RWCU) Heat Exchanger room and off-site release rates are increasing
- RWCU has failed to automatically isolate and can NOT be isolated from the main control room

Ten minutes following the initial transient, it was deemed necessary to dispatch an NLO to manually close the 1G33-F004, RWCU Suction Outboard Isolation valve. It is estimated that the NLO will exceed his federal exposure limits.

The Technical Support Center (TSC) is NOT ready to assume command and control.

As the Unit Supervisor, you should ...

A. Obtain RP Manager AND Station Manager authorization AND then direct the NLO to enter the room and close the valve per EP-AA-113, Personnel Protective Actions.

B.✓ Obtain Emergency Director authorization AND then allow the NLO to enter the room to close the valve per EP-AA-113, Personnel Protective Actions.

C. Authorize the NLO to enter the room AND close the valve per RP-AA-460, Controls for High and Very High Radiation Areas.

D. Obtain RP Manager authorization AND then direct the NLO to enter the room and close the valve RP-AA-460, Controls for High and Very High Radiation Areas.

Answer B is correct. RWCU outboard room is a Locked High Radiation Area (LHRA) during power operations. Failure RWCU (a PCIS line) to isolate is a GSEP condition requiring implementation of the E-Plan. This requires the Shift Manager to become the Emergency Director who has the authority to authorize emergency exposure (can NOT be delegated).

Reference:
EP-AA-113, Revision 05, page 5, step 4.3.3

96. GENERIC 2.2.23 001/GENERIC/2.2.23/2.6/3.8/SRO/HIGH/400.00.15/

(1.00 Point) Unit-1 is in Mode 1 at 100% power:

- at 12:00 on June 1, the 1A RHR WS pump is declared inoperable
- at 20:00 on June 1, the 1B RHR WS pump is declared inoperable
- at 15:00 on June 2, the 1A RHR WS pump is restored to OPERABLE

Including any extensions permitted by Technical Specifications, which one of the following is the latest time and date allowed to restore the 1B RHR WS pump to OPERABLE status without entering a shutdown timeclock?

A. 20:00 on June 1 **B.** 04:00 on June 2 **C.**✓ 12:00 on June 8 **D.** 20:00 on June 8

Provide Technical Specifications 3.7.1, pages 3.7.1-1 and 3.7.1-2 to the examinee as a handout.

Answer C is correct. Examinee must recognize that 1A and 1B RHR WS pumps are in the same subsystem (pump numbering does NOT follow the normal numbering scheme) and therefore NO extensions apply. Per the Technical Specification Bases, both pumps in the same subsystem must be operable for the subsystem to be operable. When the first pump goes inoperable, start a 7-day clock per Required Action A.1. The second pump going inoperable does NOT affect the time clock. When the first pump is returned to operable, the subsystem remains inoperable because of the second pump and therefore the clock can NOT be reset. The clock will expire 7 days after the first pump goes inoperable (12:00 on June 8).

The other answers are incorrect because they assume that 1A and 1B pumps are in opposite subsystems and therefore incorrectly applies the 8-hour time clock per Required Action B.1.

NOTE: Technical Specification 3.4.9, Residual Heat Removal (RHR) Shutdown Cooling System - Hot Shutdown is NOT applicable in Mode 1, it is ONLY in Mode 3.

Reference:
Technical Specification 3.7.1, pages 3.7.1-1 and 3.7.1-2 and bases page B 3.7.1-1.

97. GENERIC 2.2.20 001/GENERIC/2.2.20/2.2/3.3/SRO/MEMORY//

(1.00 Point) You are the Unit Supervisor when an IMD Technician requests to troubleshoot sluggish response of the selected CRD Flow Valve. The troubleshooting activity would involve the lowering CRD Flow Controller Setpoint by 5 gpm, then returning the controller to its original setpoint while IMD observes the CRD Flow Control Valve in the field.

As the Unit Supervisor, you should ...

A. require the IMD Technicians to produce a work package with a troubleshooting plan previously approved by the Work Week Manager per MA-AA-716-004, Conduct of Troubleshooting.

B. permit the troubleshooting activity, provided the Licensed NSO makes all adjustments to the controller setpoint per LOP-RD-29, Determination of CRD System Problems.

C.✓ require the IMD Technician to produce a work package with a troubleshooting plan prior to approving the troubleshooting activity per MA-AA-716-004, Conduct of Troubleshooting.

D. permit the IMD Technicians to perform the troubleshooting activity ONLY under the direct supervision of a Licensed NSO per LOP-RD-29, Determination of CRD System Problems.

Answer C is correct. For simple cases of unknown repair activity designated as "troubleshooting" the Troubleshooting Log, Attachment 1 (MA-AA-716-004, Conduct of Troubleshooting), should be used with the troubleshooting WR/AR or Work Order task. Specific Operations authorization is required for the troubleshooting to commence in the field. Simple Troubleshooting Plans - the WR/AR or Work Order task and Attachment 1 constitutes the Troubleshooting Plan. Beyond the WR/AR or Work Order approval, the First Line Supervisor/Project Manager and Shift Supervisor approval is required on Attachment 1.

Reference:
MA-AA-716-004, Revision 02, step 1.3.2 and step 4.10.2

98. GENERIC 2.3.2 002/GENERIC/2.3.2/2.5/2.9/SRO/HIGH/648.10/

(1.00 Point) Rad Protection (RP) has surveyed a work site and determined that personnel working in the area would be exposed to 300 mrem/hr gamma radiation. During an ALARA review, four options were discussed.

Which one of the following four options listed would be in alignment with ALARA principles?

A. Option 1: TWO mechanics install 2 layers of lead shielding in a 300 mrem/hour field for 20 minutes, then ONE operator completes the task in a 60 mrem/hour field in 30 minutes, then the TWO mechanics return to remove the shielding in a 300 mrem/hour field for 20 minutes.

B.✓ Option 2: ONE mechanic installs 1 layer of lead shielding in a 300 mrem/hour field for 20 minutes, then ONE operator completes the task in a 80 mrem/hour in 30 minutes, then the mechanic returns to remove the shielding in a 300 mrem/hour field for 20 minutes.

C. Option 3: TWO mechanical install 2 layers of lead shielding in a 300 mrem/hour field for 20 minutes, then TWO operator completes the task in a 50 mrem/hour field in 30 minutes, then the TWO mechanics return to remove the shielding in a 300 mrem/hour field for 20 minutes.

D. Option 4: ONE mechanic installs 1 layer of lead shielding in a 300 mrem/hour field for 20 minutes, then TWO operators completes the task in a 100 mrem/hour field in 30 minutes, then the mechanic returns to remove the shielding in a 300 mrem/hour field for 20 minutes.

Answer B is correct because Option 2 would only expose the crew to 240 mrem.

Option 1:
2 x (300/60) x 20 = 200 mrem to hang shielding
1 x (60/60) x 30 = 30 mrem to complete task
2 x (300/60) x 20 = 200 mrem to remove shielding
Total exposure to crew = 430. mrem

Option 2:
1 x (300/60) x 20 = 100 mrem to hang shielding
1 x (80/60) x 30 = 40 mrem to complete task
1 x (300/60) x 20 = 100 mrem to remove shielding
Total exposure to crew = 240 mrem

Option 3:
2 x (300/60) x 20 = 200 mrem to hang shielding
2 x (50/60) x 30 = 50 mrem to complete task
2 x (300/60) x 20 = 200 mrem to remove shielding
Total exposure to crew = 450 mrem

Option 4:
1 x (300/60) x 20 = 100 mrem to hang shielding
2 x (100/60) x 30 = 100 mrem to complete task
1 x (300/60) x 20 = 100 mrem to remove shielding
Total exposure to crew = 300 mrem

Reference:
RP-AA-401, Revision 04, page 1, step 2.1, page 4, step 5.F and page 17, ALARA Briefing Checklist

99. GENERIC 2.4.22 001/GENERIC/2.4.22/3.0/4.0/SRO/HIGH/400.00.02/

(1.00 Point) Given the following plant conditions:
- Suppression Pool level is +15 inches and slowly increasing
- Suppression Chamber pressure is 11 psig and slowly increasing
- Drywell pressure is 15 psig and slowly increasing
- Suppression Pool temperature is 190°F and steady
- RPV level is -165 inches and decreasing
- RPV pressure is 200 psig and steady
- All control rods are full-in
- RCIC is injecting into the RPV
- RR Pumps are in Pull-To-Lock
- MSIVs are isolated

When returned to service, the Unit Supervisor should direct the 2B RHR Pump to be used ...

A. Per LGA-003, start lowering Suppression Pool level to prevent exceeding the SRV Tail Pipe Level Limit because of the high Suppression Pool level.

B. Per LGA-003, start Drywell Spray to prevent exceeding the PSP limit because of high Suppression Chamber pressure.

C.✓ Per LGA-001, start injecting into the RPV to prevent loosing adequate core cooling because of low RPV water level.

D. Per LGA-003, start Suppression Pool Cooling to prevent exceeding the HCTL because of the increasing Suppression Pool temperature.

Provide LGA-001 and LGA-003 to the examinee as a handout.

Answer C is correct. Possible loss of adequate core cooling exists with the given conditions and therefore RPV level is the highest priority.

The other answers are incorrect. Drywell Spray is only initiated when it is determined that you cannot restore and hold SC pressure and SP level below the PSP. Although Suppression Pool temperature is high enough that the EOP directs starting all available pool cooling, it also says do NOT use pumps needed for core cooling. Lowering pool level can wait because the SRV Tail Pipe Level Limit will not be exceeded with out level increasing several feet (not several inches).

Reference:
LGA-001, Revision 06
LGA-003, Revision 05

100. GENERIC 2.4.49 001/GENERIC/2.4.49/4.0/4.0/SRO/MEMORY//

(1.00 Point) Unit-1 is at 100% power and Unit-2 is in Cold Shutdown. The 0A VC/VE Train is out-of-service for scheduled maintenance and the appropriate Technical Specification time clocks per LCO 3.7.4 have been entered.

Subsequently the 0B VC Supply Fan trips and can NOT be restarted.

Which one of the following actions is directed by Technical Specifications?

A.✓ Immediately enter and take actions per LCO 3.0.3 since two Control Room Air Filtration (CRAF) subsystems are inoperable and may be incapable of performing their intended function.

B. Immediately place the Unit-1 Reactor Mode Switch to shutdown since both Control Room Air Filtration (CRAF) subsystems are inoperable and may be incapable of performing their intended function.

C. Start the 0B Emergency Makeup Unit Fan within 1 hour since both Control Room Air Filtration (CRAF) subsystems are inoperable and may be incapable of performing their intended function.

D. No additional time clocks are required since the 0B Emergency Makeup Fan will still operate without the 0B VC Supply Fan and it is capable of performing its intended function.

Answer A is correct. Per LCO 3.7.4, two CRAF systems shall be operable. With both subsystems inoperable, Condition D is entered and Required Action D.1 requires immediately entering LCO 3.0.3. The other answers are therefore incorrect.

Reference:
Technical Specification 3.7.4, pages 3.7.4-1, 3.7.4-2 and 3.7.4-3 and bases page B 3.7.4-5