Final Submittal

(Blue Paper)

HATCH OCTOBER/NOVEMBER 2005 EXAM

05000321/2005301 & 05000366/2005301

OCTOBER 28, 2005, (WRITTEN) AND
OCTOBER 31 - NOVEMBER 4, 2005

FINAL RO

WRITTEN EXAMINATION

11/28/05

QUESTIONS REPORT
for HATCHEXAM FINAL 2005-301R1

1. 201002A1.01 001

While attempting to free a stuck control rod, the Unit Operator observes that the Drive Water Flow Indication does not change when rod insertion is attempted.

Which ONE of the following is a possible cause of this indication?

A. Directional control valve failed closed.

B. Drive water pressure control valve failed closed.

C. Cooling water pressure control valve failed closed.

D. Associated drive water stabilizing valve failed open.

K/A: A1.01 Ability to predict and/or monitor changes in parameters associated with operating the REACTOR MANUAL CONTROL SYSTEM controls including: CRD drive water flow.

References: LT-LP-00101, Rev.4, pg 12
TP-3 System Drawing

A. Correct answer. These valves are always in the closed position.

B. Incorrect since this would decrease drive water flow.

C. Incorrect since this would decrease drive water flow.

D. Incorrect since this would increase drive water flow.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A C D B A C B C B A Scramble Range: A - D

2. 201003A2.06 001

Unit 2 is operating at 100% RTP when alarm CRD HYD TEMP HIGH is received. You verify on temperature recorder 2C11-R018, (130 Rx Bldg) that control rod 22-35 is reading 355^{O}F. Control Rod 22-35 is at position 24.

Which ONE of the following describes the **initial** actions that should be taken in accordance with the above annunciator alarm?

A. Fully insert control rod 22-35 and isolate the CRD with cooling flow established.

B. Raise CRD system flow in steps to a maximum of 90 gpm until the CRD temperature is below 350^{O}F.

C. Confirm CRD cooling water flow and pressure are within 34SO-C11-005-2, Control Rod Drive Hydraulic System, specifications.

D. Initiate a condition report to have the CRD flushed per 34SO-C11-005-2, Loss of CRD System, during the next cold shutdown. No further actions are required.

K/A: A2.06 Ability to (a) predict the impacts of the following on the CONTROL ROD AND DRIVE MECHANISM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of CRD cooling water flow.

References: Annunciator Response 34AR-603-901-1S, Tile 603-140

A. Incorrect since this is the action taken if the CRD has a leaking scram valve.

B. Incorrect since no guidance is given to raise system flow even though this could cool the CRD Mechanism.

C. Correct answer since the CRD temp is above 250^{O}F and the High Temp alarm is annunciated.

D. Incorrect since this is the action taken if CRD temp stabilizes below 350^{O}F.

Hatch Edit - Corrected Rod number and Recorder Number to Hatch Specific. Deleted "Plugged cooling water orifice is suspected." and modified the correct answer (C) to match 34AR-603-901-1S, Tile 603-140. Modified "C" answer feedback.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C A A B C D A C B B Scramble Range: A - D

3. 202002K5.02 001

Unit 2 is operating at 100% RTP. The 2A and 2B Recirc MG sets are in Auto control with the Master controller in Manual.

Which ONE of the following describes the operation of the 2A Recirc MG set if the MG set oil temperature control valve fails open?

2A Recirc MG set speed will...

A. increase and the Individual controller ouput signal will cause the scoop tube to reposition and bring speed back to the original value.

B. decrease and the Individual controller ouput signal will cause the scoop tube to reposition and bring speed back to the original value.

C. increase and the scoop tube will lock due to positioner motor overload.

D. decrease and the scoop tube will lock due to positioner motor overload.

K/A: K5.02 Knowledge of the operational implication of the following concepts as they apply to the RECIRCULATION FLOW CONTROL: Feedback signals.

References: SI-LP-00401-02, Pg. 24 and 36

A. Correct answer.

B. Incorrect since Recirc Speed will increase.

C. Incorrect since there is no indication that the scoop tube has a lock signal.

D. Incorrect since the speed of the MG set increases and there is no indication that the scoop tube has a lock signal.

Hatch Edit - Added Recirc to MG sets. Modified "A" and "B" answers to individual controller, since the master is in manual, its output will not change.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A A C C B B D B B A Scramble Range: A - D

4. 203000K6.01 001

An event has occurred on **Unit 1** which required control of the unit to be transferred to the Remote Shutdown Panels (RSDP). No Unit 2 RSDP actions will be performed.

The Following occurs:

Time:	Event/Condition
12:00	All **Unit 1** RSDP transfer switches are in "EMERG" No other operator actions have been performed from the RSDP "B" D/G select switch is in the "**Unit 1**" position Drywell pressure is 0.8 psig and stable Reactor Water Level is -30 inches and decreasing
12:01	Complete Loss of Offsite Power occurs
12:01	All 5 Emergency Diesels start and tie to their respective buses
12:11	**Unit 1** Reactor Water Level decreases to -101 inches
12:15	**Unit 2** Reactor Water Level decreases to -101 inches

Which ONE of the following describes the condition of the **Unit 1** and **Unit 2** RHR systems at 12:20, assuming no operator actions?

A. Unit 1 A and B RHR pumps running; Unit 2 A and B RHR pumps running.
All other pumps are off.

B. Unit 1 A RHR pump running; Unit 2 A and B RHR pumps running.
All other pumps are off.

C. Unit 1 A RHR pump is running; All Unit 2 RHR pumps are running.
All other pumps are off.

D. Unit 1 A, C and D RHR pumps running; Unit 2 A and B RHR pumps running.
All other pumps are off.

K/A: K6.01 Knowledge of the effect that a loss or malfunction of the following will have on the RHR/LPCI: INJECTION MODE: A.C. electrical power.

References: SI-LP-00701-02 pg 19 and 23 of 53
SI-LP-02802-01 pg 11 and 52 of 76

A. Incorrect since the B RHR pump should not be running due to operations from the Unit 1 remote shutdown panel is in progress. Since LOCA/LOSP on both units then the "B" D/G would not supply either unit.

B. Correct answer.

C. Incorrect since the Unit 2 C and D RHR pumps should not be running.

D. Incorrect since the Unit 1 C and D RHR pumps should not be running.

Hatch Edit - Reformatted question, added that all Remote Shutdown Panel transfer switches have been place in the "EMERG" position, DW pressure and RWL. Also that no RSDP operations on Unit 2.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B A B D B D C B C D Scramble Range: A - D

6. 205000K2.01 001

Unit 1 is in Mode 4 with both Division I RHR Pumps running in Shutdown Cooling. An overcurrent condition developes on Emergency Bus "F" which causes it to de-energize.

Which ONE of the following indicates the status of Shutdown Cooling?

A. The "C" RHR Pump has stopped and the "A" RHR Pump is running at full flow.

B. The "B" RHR Pump has stopped and the "A" RHR Pump is running at full flow.

C. The "A" RHR Pump has stopped and the "C" RHR Pump is running at full flow.

D. The "A" and "C" RHR Pumps remain running at the current flows.

K/A: K2.01 Knowledge of electrical power supplies to the following: Pump motors.

References: SI-LP-00701-02, Pg 10 and 19
Figure 01

A. Correct answer since the "C" RHR Pump is fed from this bus. The "A" RHR Pump assumes all of the flow.

B. Incorrect since the "B" RHR Pump is not in Division I and is not running at this time.

C. Incorrect since the "A" RHR Pump is not powered by Emergency Bus "F". This powers the "C" and "D" RHR Pumps.

D. Incorrect since the "C" RHR Pump loses power.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A D B B C A D D B C Scramble Range: A - D

7. 206000K6.03 001

Unit 2 is operating at 100% power. A reactor scram occurs due to a complete loss of Offsite and Onsite AC Power. Five minutes later reactor water level is at minus 40 inches.

Determine which ONE of the following describes the HPCI System response to this failure AND the effect on the system.

A. HPCI **will not** inject due to a loss of power to the HPCI Aux Oil Pump.

B. HPCI **will not** inject due to a loss of power to 2E41-F001, Turb Steam Supply Valve.

C. HPCI **will** inject, but should be secured as soon as possible.

D. HPCI **will** inject and is the preferred injection source.

K/A: K6.03 Knowledge of the effect that a loss or malfunction of the following will have on the HPCI SYSTEM: A.C. power.

References: E41-HPCI-LP-00501-01, Pg. 54
34SO-E41-001-2, HPCI System, Attachment 2, Electrical Lineup
34AB-R22-003-2, Station Blackout, Pg 4

A. Incorrect since HPCI will inject and the Aux Oil Pump Power supply is DC.

B. Incorrect since HPCI will injext and 2E41-F001 power supply is DC.

C. Correct since HPCI will inject, but should be secured asap per 34AB-R22-003-2.

D. Incorrect, even though HPCI would inject, it should be secured asap per 34AB-R22-003-2.
Hatch Edit - The K/A is for AC power loss and the Question was for DC power loss. Wrote a new question to match K/A K6.03
MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C C C D A C C A D B Scramble Range: A - D

8. 209001A3.02 001

Unit 2 was operating at 80% rated thermal power when a total Loss of Offsite power occurred. All Diesel Generators tie to their respective buses. One minute later a transient occurred causing RPV level to drop rapidly to -101 inches.

Which ONE of the following correctly describes the Unit 2 Core Spray system response?

A. All Unit 2 Core Spray pumps start immediately upon reaching the Core Spray Initiation setpoint.

B. All Unit 2 Core Spray pumps start 12 seconds after reaching the Core Spray Initiation setpoint.

C. Core Spray pump 2A starts immediately upon reaching the Core Spray Initiation setpoint and Core Spray pump 2B starts 12 seconds after reaching the Core Spray Initiation setpoint.

D. Core Spray pump 2A starts 12 seconds after reaching the Core Spray Initiation setpoint and Core Spray pump 2B starts 22 seconds after reaching the Core Spray Initiation setpoint.

K/A: A3.02 Ability to monitor automatic operations of the LOW PRESSURE CORE SPRAY SYSTEM including: Pump start.

References: SI-LP-02801-01, pg 46 and 51

A. Correct answer since all of the DGs are already supplying their respective buses the CS pumps will start immediately.

B. Incorrect since all Core Sray pumps start immediately.

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C. Incorrect since all Core Sray pumps start immediately.

D. Incorrect since all Core Sray pumps start immediately. The 22 seconds is for the LPCI pump starts.

Hatch Edit - Two possible right answers based on assumption of timing of LOCA and LOSP. Modified stem to add time sequence to events and made "A" the correct answer.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A D C C C C B B A D Scramble Range: A - D

9. 211000K2.01 001

An ATWS has occurred on Unit 2 requiring the initiation of Standby Liquid Control (SLC). Bus 2R24-S012 is de-energized.

Given these conditions, the ____ SLC Pump should be started and _____.

A. "A"; both squib valves should fire.

B. "A"; only the "A" squib valve should fire.

C. "B"; both squib valves should fire.

D. "B"; only the "B" squib valve should fire.

K/A: K2.01 Knowledge of electrical power supplies to the following: SBLC pumps.

References: SI-LP-01101-01, Pg 9 and 11

A. Incorrect since only the "A" squib valve should fire. The "B" squib valve is supplied from the affected bus.

B. Correct answer.

C. Incorrect since power is only available to the "A" squib valve.

D. Incorrect since power from these components is unavailable.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B B D D B B A B B B Scramble Range: A - D

11. 212000K4.08 001

Which ONE of the following describes the purpose of the 10 second time delay for resetting a reactor scram signal?

A. To ensure all of the Scram Valves complete their stroke.

B. Allows time for all HCU Accumulators to discharge.

C. Allows the Scram Discharge Volume to complete draining.

D. To ensure the control rods reach the fully inserted position.

K/A: K4.08 Knowledge of REACTOR PROTECTION SYSTEM design feature(s) and/or interlocks which provide for the following: Complete control rod insertion following SCRAM signal generation.

References: SI-LP-01001-03, pg. 23.

A. Incorrect since scram valves stroke immediately.

B. Incorrect since HCU Accumulators discharge as pressure decreases. No requirement for the accumulators to discharge.

C. Incorrect since the scram must be reset prior to the SDV being drained since the vent and drain valves are closed upon a scram signal.

D. Correct answer.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D D D D D B A B C C Scramble Range: A - D

12. 214000A3.02 001

During a **Unit 1** reactor startup at 5% power, the operator notches a control rod from position 06 to 08 and the following indications/alarms occur:

- CONTROL ROD DRIFT annunciator and drift indication on full core display
- 4 rod display indication is blank for all four rods.
- RPIS INOPERATIVE printed out on process computer alarm typer

Which ONE of the following is correct regarding the RWM/RMCS response?

A. Withdraw block only.

B. Insert block only.

C. Withdraw and Insert block; the rod will remain selected.

D. Withdraw and Insert block; the rod will be de-selected from the full core display.

K/A: A3.02 Ability to monitor automatic operation of the ROD POSITION INFORMATION SYSTEM including: Alarm and indicating lights.

The RWM will apply both withdraw and insert blocks for a failed rod position. Also, a RPIS inop will result in a select block.

References: SI-LP-05403-03, pg.6
34AB-C11-002-1, Section 2.0

A. Incorrect since an insert block is also initiated due to RPIS failure.

B. Incorrect since a withdraw block is also initiated due to RPIS failure.

C. Incorrect since the select block unlatches the control rod. The RWM aborts the program.

D. Correct answer.

Hatch Edit - added Unit 1 and "printed out on process computer alarm typer" since RPIS inop is not a panel alarm. Also changed "for the selected rod" to "for all four rods" for the 4 rod display indication since all of the display would be blank. Added RMCS to RWM response (RWM/RMCS) since there would be no completely correct answer for RWM only.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D D A D A C C A A D Scramble Range: A - D

15. 215003K4.01 001

Unit 1 is in Mode 2 with the following Intermediate Range Monitor readings:

- IRM A indicates 75 on Range 2
- IRM B indicates 28 on Range 4
- IRM C indicates 22 on Range 3
- IRM D indicates 85 on Range 2
- IRM E indicates 30 on Range 4
- IRM F indicates 24 on Range 3
- IRM G indicates 3 on Range 1
- IRM H indicates 13 on Range 3

Which ONE of the following correctly identifies the status of the Rod Block circuitry?

A Rod Block exists due to .....

A. IRM B.

B. IRM D.

C. IRM A and G.

D. IRM E and F.

K/A: K4.01 Knowledge of INTERMEDIATE RANGE MONITOR design feature(s) and/or interlock(s) which provide for the following: Rod withdrawal blocks.

References: SI-LP-01202-03 pg 21 and 22

A. Incorrect since reading is >10 and <80 with mode switch in S/U and not on range 1.

B. Correct since >80 with mode switch in S/U and IRM on range 3.

C. Incorrect since the rod block signal is bypassed with IRM on range 1.

D. Incorrect since these readings are >10 and <80 with mode switch in S/U and not on range 1.

Hatch Edit - Ranges were wrong in the Stem (75 on Range 1, 0-40 scale). Corrected ranges to match answers.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B B A C A A B B B D Scramble Range: A - D

17. 215004K4.06 001

The range switches for IRMs A, C, E, and G are on Range 3 with the Mode Switch in Start/Hot Stby.

Which ONE of the following identifies the SRM "A" rod blocks that are still active for this condition?

A. Downscale, INOP

B. INOP, SRM Hi

C. Downscale, Detector Not Full In

D. SRM Hi, Detector Not Full In

K/A: K4.06 Knowledge of the SOURCE RANGE MONITOR design feature(s) and /or interlock(s) which provide for the following: IRM/SRM interlock.

References: SI-LP-01201-00, pg.13
Revised such that the question asks which rod blocks are still active vice which rod blocks are bypassed.

A. Incorrect since the Downscale trip is bypassed at this time. Must be on Range 1 or 2 with the Mode Switch in Start/Hot Stby.

B. Correct answer.

C. Incorrect since both of these rod blocks are bypassed under these conditions.

D. Incorrect since the "Detector not full In" trip is bypassed at this time.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B D B A A C D C C B Scramble Range: A - D

18. 215005A4.05 001

Which ONE of the following describes the Unit 2 APRM system bypass capabilities?

A. One APRM channel in each RPS division may be bypassed by use of the keylock mode switch on the respective APRM chassis.

B. Only one APRM channel may be bypassed by the joy-stick on Panel 603.

C. Up to two APRM channels may be bypassed by the joy-stick on Panel 603 at the same time.

D. One APRM channel may be bypassed by the joy-stick on Panel 603 and another may be bypassed by the keylock mode switch on the APRM chassis.

K/A: A4.05 Ability to manually operate and/or monitor in the control room: Trip bypasses.

References: SI-LP-01203-01 Figure 19

A. Incorrect since the keylock mode switch either INOPs the APRM or it is in OPERATE. It doesn't bypass the APRM.

B. Correct answer.

C. Incorrect since there is only one bypass switch and it can only be placed in one position at a time.

D. Incorrect since the keylock mode switch does not bypass the APRM.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B C D A C D C D B D Scramble Range: A - D

19. 215005K5.06 001

A "Rod Out Block" alarm has been generated from APRM "B" on Unit 1. The following times indicate when an LPRM was bypassed for APRM "B".

Time	# of LPRMs in Operate
0100	18 inputs
0130	17 inputs
0145	16 inputs
0200	15 inputs

Which ONE of the following indicates the time that the Rod Out Block was generated?

A. 0100

B. 0130

C. 0145

D. 0200

K/A: K5.06 Knowledge of the operational implications of the following concepts as they apply to AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM: Assignment of LPRM's to specific APRM channels.

References: 34AR-603-238-1S, Rev.3

Each APRM must have at least 17 LPRM inputs. Once the LPRM inputs drop to 16 a Rod Out Block is generated. This makes answer C the correct answer.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C D C A C D C A D B Scramble Range: A - D

20. 216000G2.1.28 001

Which ONE of the following describes the purpose and function provided by the Reactor Water Level Narrow Range Keepfill System?

A. Provides a continuous backfill to condensing chambers to prevent buildup of noncondensibles in the variable legs.

B. Supplies cool water to the reference legs to prevent the water from flashing to steam during depressurization.

C. Provides a continuous backfill to condensing chambers to prevent buildup of noncondensibles in the reference legs.

D. Supplies cool water to the variable legs to prevent the water from flashing to steam during depressurization.

K/A: G2.1.28 Knowledge of the purpose and function of major system components and controls.

References: SI-LP-04404-01, pg.5

A. Incorrect since the Keep Fill system provides CRD water to the reference leg condensing pots.

B. Incorrect since the purpose is to prevent non-condensibles from migrating down the reference leg and not to prevent flashing to steam.

C. Correct answer.

D. Incorrect since the Keep Fill system provides CRD water to the reference leg condensing pots and is used to prevent non-condensibles from migrating down the reference leg and not to prevent flashing to steam.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C B A D C B A B D C Scramble Range: A - D

21. 217000A4.08 001

An event has occurred on **Unit 1.** RCIC started and is required for reactor water level control. The following conditions exist 2 minutes after RCIC started:

RWL	-45" and slowly decreasing
Rx Pressure	985 psig, controlled by LLS
RCIC Speed	300 RPM
RCIC Discharge pressure	50 psig
RCIC Flow Indication	500 GPM (Upscale)
RCIC Flow Controller Output	0 (Downscale)
RCIC Flow Controller	Automatic

Which ONE of the following describes the action to be taken?

A. Continue to inject with RCIC at maximum flow rate.

B. Trip RCIC. It is pumping out a feedwater line break.

C. Place the controller in Manual and increase the controller output until RCIC discharge pressure is 100 psig above Rx pressure.

D. Place the controller in Manual and decrease the controller output until RCIC flow is 400 gpm.

K/A: A4.08 Ability to manually operate and/or monitor in the control room: System flow.

References: LR-LP-03901-07, pg 8

A. Incorrect since RCIC is not injecting due to a controller failure.

B. Incorrect since RCIC is in auto and should be pumping 400 gpm, but since the controller is failed, it indicates 500 and is acutally pumping 0 gpm.

C. Correct answer. RCIC speed should be increased manually until discharge pressure is higher than Rx pressure to get injection to the RPV.

D. Incorrect since the controller is failed. 500 gpm is not valid.

Hatch Edit - Question is not at RO level. Replaced question with RO level question that more closely matches K/A.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C D C D B C D A D A Scramble Range: A - D

22. 218000G2.1.28 001

Which ONE of the following describes the purpose of the Automatic Depressurization System (ADS) Initiation Timer upon a valid initiation signal?

A. Delays opening of the ADS valves long enough to allow HPCI time to recover level, yet not so long to prevent Core Spray and LPCI from adequately cooling the reactor if HPCI should fail.

B. Delays opening of the ADS valves long enough to allow RCIC time to recover level, yet not so long to prevent Core Spray and LPCI from adequately cooling the reactor if RCIC should fail.

C. Delays the start of the Core Spray and LPCI system until sufficient time has elapsed for HPCI and/or RCIC to restore vessel level above Level 3. ADS valves open upon sufficient LPCI or Core Spray discharge pressure.

D. Delays the start of the Core Spray and LPCI systems until drywell pressure and vessel level exceed the scram setpoint concurrently. ADS valves open upon sufficient LPCI or Core Spray discharge pressure.

K/A: G2.1.28 Knowledge of the purpose and function of major system components and controls.

References: Tech Spec Bases B 3.3.5.1 pg B 3.3-96, 109 and 110
SI-LP-03801-01, pg 6.

A. Correct answer. Allows HPCI time to come up to speed and perform its function.

B. Incorrect since RCIC is not sufficient to restore level upon a small break LOCA.

C. Incorrect since the timer does not delay the start of Core Spray or LPCI. Core Spray or LPCI discharge pressure is required to start the ADS timer.

D. Incorrect since the timer does not delay the start of Core Spray or LPCI. Core Spray or LPCI discharge pressure is required to start the ADS timer.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A A C D B C D D D A Scramble Range: A - D

23. 219000K3.01 001

Unit 2 is at 100% power.

The 2B RHRSW pump has been tagged for maintenance and the 2D RHRSW pump is available for normal operation.

While placing Unit 2 "B" loop of RHR in service for Torus Cooling, the Unit Operator mistakenly attempts to open 2E11-F068A, "A" RHR HX. RHRSW Outlet valve. No other actions have been performed on the "A" loop RHRSW.

Which ONE of the following statements describes the consequences of this action?

A. 2E11-F068A does NOT OPEN. Torus temperature remains constant.

B. 2E11-F068A OPENS, "A" RHRSW HX. flow remains 0. Torus temperature remains constant.

C. 2E11-F068A OPENS, then CLOSES when the handswitch is released. Torus temperature starts dropping and then remains constant.

D. 2E11-F068A OPENS, "A" RHRSW HX. flow rises. Torus temperature starts dropping.

K/A: K3.01 Knowledge of the effect that a loss or malfunction of the RHR/LPCI: TORUS/SUPPRESSION POOL COOLING MODE will have on the following: Suppression pool temperature control.

References: SI-LP-00701-02 pg 18 of 53
Figure 04

A. Correct since there is an interlock that prevents this valve from opening under these conditions.

B. Incorrect since there is an interlock that prevents this valve from opening under these conditions.Incorrect answer.

C. Incorrect since there is an interlock that prevents this valve from opening under these conditions.Incorrect answer. Also, the valve is a throttle valve and does not reclose after releasing the switch even if it did open.

D. Incorrect since there is an interlock that prevents this valve from opening under these conditions.Incorrect answer.

Hatch Edit - corrected MPL #s, added no other actions have been performed on the "A" loop of RHRSW.
Changed correct answer to "A" because a F068A/B valves will not open without a RHRSW pump suppling 30 psig pressure in the loop unless the override switch is in override.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A B C B A A A D B C Scramble Range: A - D

25. 223002K3.03 001

Unit 2 was operating at 100% RTP when a fuel element failure and a Group 1 isolation occurred. Main Condenser back pressure is at 0 psig due to the rupture discs failing.

Which ONE of the following combination of primary containment isolation valves failing to close would most likely result in the highest off-site radioactive release rates?

A. 2B21-F022A INBD MSIV, 2B21-F028B OTBD MSIV, and all turbine control valves.

B. 2B21-F022C INBD MSIV, 2B21-F028D OTBD MSIV, and all turbine stop valves.

C. 2B21-016 INBD Steam Line Drain and 2B21-019 OTBD Steam Line Drain.

D. 2B31-F019 Rx Wtr INBD Sample Valve and 2B31-F020 Rx Wtr OTBD Sample Valve.

K/A: K3.03 Knowledge of the effect that a loss or malfunction of the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF will have on the following: Off-site radioactive release rates.

References: SI-LP-
SI-LP-01301-02, Rev.SI-02, pg 46
Dwg. MPL No. 2B21-1010, Rev.38

A. Incorrect since the turbine stop valves are closed and there is not a flow path to the condenser.

B. Incorrect since there is not a flow path to the turbine due to the control valves being closed and only one MSIV open in each of 2 lines.

C. Correct answer since both steam line drains are open and there is an orifice open around F021 with the condenser breached.

D. Incorrect since these valves alone being open do not provide a path outside secondary containment.

Hatch Edit - Changed F028A to F028B in the "A" answer. With a steam line open, all steam lines will be pressurized due to the common connections in the Bypass valve chest. Example, the MSR 2nd Stage drains to the Main condenser would have more flow than through the restricting orifice around the F021. (Ref - N22-MSRFW-LP-01501 ver 1, section V.C., Drains)

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C B A B B C D D D A Scramble Range: A - D

26. 233000A1.07 001

The following sequence of events occurred for Unit 2:

Entered Mode 3	Sept 1, 2005 at 0500
Entered Mode 5	Sept 3, 2005 at 0700
Core fully offloaded	Sept 16, 2005 at 1500
Rx Vessel level at vessel flange	Sept 20, 2005 at 0700
Total loss of Fuel Pool Cooling	Sept 21, 2005 at 0800

All attempts to re-establish Fuel Pool Cooling per 34AB-G41-001-2, Loss of Fuel Pool Cooling, have failed.

Which ONE of the following is the predicted date and time that water level will reach the top of active fuel if cooling cannot be restored?

(Reference provided)

A. Sept 24, 2005 at 1441.

B. Sept 24, 2005 at 1741.

C. Sept 25, 2005 at 0501.

D. Sept 28, 2005 at 1833.

K/A: A1.07 Ability to predict and/or monitor changes in parameters associated with operating the FUEL POOL COOLING/CLEANUP controls including: System temperature.

Reference provided: 34AB-G41-001-2

References: SI-LP-04501-01, pg 4 and 9 of 36
34AB-G41-001-2, Attachment 1, 2 and 3.

A. Incorrect since this date corresponds to 18 days after shutdown. It has been 18 days since Mode 5 was entered.

B. Correct answer. It has been 20 days after entering Mode 3 with the full core offloaded and the fuel pool gates installed. See attachment 2.

C. Incorrect since this data corresponds to 20 days after shutdown with the fuel pool gates removed with the cavity flooded. Per stem the vessel level is at the flange which implies the fuel pool gates are installed.

D. Incorrect since this data corresponds to the correct 20 days after shutdown with the gates installed but this is for a partial offload.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B C D D B A A D D A Scramble Range: A - D

27. 234000K3.01 001

The following **Unit 2** plant conditions exist:

- Unit 2 is conducting refueling operations
- The Rx Mode Switch is in Refuel
- It is determined that the "Hoist Loaded" setpoint is set at 785 pounds instead of the 485 pounds.
- The refueling bridge operator is currently lifting a fuel bundle from the Fuel Pool fuel racks and observes the "Hoist Loaded" light is not Illuminated.

Which ONE of the following describes the condition of the Reactor Manual Control System at this time?

A. A control rod block exists due to the mast not being full up with the refuel bridge near the core.

B. A control rod may be withdrawn from the core since the refuel bridge is not near the core.

C. A control rod block exists due to the fuel bundle loaded on the hoist.

D. A control rod may be withdrawn from the core since the Hoist Loaded light is not illuminated.

K/A: K3.01 Knowledge of the effect that a loss or malfunction of the FUEL HANDLING EQUIPMENT will have on the following: Reactor manual control system.

References: SI-LP-04502-01, pg 12 and 16

A. Incorrect since the refuel platform is not near or over the core.

B. Correct answer. The typical weight of a fuel bundle is 750# and since the setpoint of the main hoist is set at 785# then the refuel bridge is not near the core.

C. Incorrect since the hoist doesn't indicate loaded.

D. Incorrect since a rod can be withdrawn with the Mode switch in Refuel.

Hatch Edit - modified stem to state that the Mode switch is in refuel and that the bridge operator is lifting a bundle from the Fuel Pool fuel racks and observes the "Hoist Loaded" light is not Illuminated. (This is to give a clearer picture of where the bridge is located and make the question more operationally valid.) Modified "B" and "D"

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9

Answer: B B C D D D A B C A Scramble Range: A - D

28. 239002A2.06 001

Unit 2 is in an ATWS condition with the following conditions present:

- Reactor Power — Cycling 30% to 35%
- MSIV's — Open
- Turbine — Tripped with all Bypass Vlvs failed closed
- Reactor Pressure — 1120 psig maximum
- SRV's — Some cycling at their relief setpoints
- LLS Logic A/C Loss of Power annunciator Illuminated
- LLS Logic B/D Loss of Power annunciator Illuminated

The Shift Supervisor directs you to open SRV's to reduce reactor pressure below 960 psig using the preferred sequence of RC RPV Control (ATWS) Table 1.

Which ONE of the following indicates the number of SRV's that are cycling and which sequence the SRV's should be opened to reduce reactor pressure per RC RPV Control (ATWS)?

A. Only 2 SRV's cycling; sequence open SRV F013H and F013A to stabilize reactor pressure.

B. Only 4 SRV's cycling; sequence open SRV F013M, F013B, F013G and F013F to stabilize reactor pressure.

C. Up to 5 SRV's cycling; sequence open SRV F013B, F013G, F013F, F013D and F013L to stabilize reactor pressure.

D. Up to 8 SRV's cycling; sequence open SRV F013H, F013E, F013A, F013C and F013K to stabilize reactor pressure.

K/A: A2.06 Ability to (a) predict the impacts of the following on the RELIEF/SAFETY VALVES; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Reactor high pressure.

References: 31EO-EOP-011-2S, Rev.6
SI-LP-01401-03, pg 9,16 and 35 of 52

A. Incorrect since 4 MSRV's should be open at 1120 psig per electrical setpoint. Two SRV's open is not enough to stabilize pressure since each SRV can only handle 8% steam flow. Reactor power is 35%.

B. Correct answer. 4 SRV's can stabilize reactor pressure due to each SRV handles 8% steam flow with 5% steam flow going to RFP's, SJAE's and steam seals. The SRV's are in the correct sequence per Table 1.

C. Incorrect since 5 SRV's will not be open under these conditions. The sequence is also not correct per Table 1.

D. Incorrect since 8 MSRV's should not be open at this time. The sequence is backwards from that listed in Table 1.

Hatch Edit - modified stem to read that the bridge operator is lifting a bundle from the Fuel Pool fuel racks and observes the "Hoist Loaded" light is not Illuminated. (This is to give a clearer picture of where the bridge is located and make the question more operationally valid.)
Modified "B"

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B C A D C C B B D C Scramble Range: A - D

29. 241000K1.03 001

During a plant cooldown on **Unit 1**, an operator opens the bypass valves for 2 minutes, then rapidly closes them.

Which ONE of the following describes the effect this has on Reactor Water Level (RWL)? (Reactor Feedwater makeup rate remains constant.)

RWL initially _____ while opening the bypass valves, then _____ when the bypass valves close.

A. increases, decreases

B. increases, stabilizes

C. decreases, stabilizes

D. decreases, increases

K/A: K1.03 Knowledge of the physical connections and/or cause-effect relationships between REACTOR/TURBINE PRESSURE REGULATING SYSTEM and the following: Reactor water level.

References: N32-EHC-LP-01901

A. Correct answer.

B., C. , and D. - Incorrect since swell causes level to increase and closing valves causes level decrease.

Hatch Edit - Replaced question
MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A B A B B D C C C A Scramble Range: A - D

30. 256000A4.02 001

Unit 1 is at 8% RTP during a startup from a refueling outage. Reactor water level is being maintained using 1N21-F036, Startup Level Control Isolation Valve. The following annunciator is in the alarm condition:

Panel 603-1 FEEDWATER STARTUP VALVE LOCKED UP

The Shift Supervisor directs you to maintain reactor water level between +15 and +45 inches. Reactor water level is currently +50 inches and steady.

Which ONE of the following methods should be used to return reactor water level within the specified band?

Place 1C32-R619, FW S/U Lvl Control Vlv Controller, in manual and....

A. throttle 1N21-F036 open. No other valve manipulations are required.

B. open 1N21-F406, S/U Level Control Bypass Valve. No other valve manipulations are required.

C. throttle 1N21-F036 closed and verify closed 1N21-F406. 1N21-F036 will provide better level control at this power level.

D. close 1N21-F036 and fully open 1N21-F406. 1N21-F406 will provide better level control at this power level.

K/A: A4.02 Ability to manually operate and/or monitor in the control room: System motor operated valves.

References: 34AR-603-901 (603-116)

A. Incorrect since the valve should be throttled closed to decrease water level to the specified band.

B. Incorrect since this valve is closed and opening the valve would increase water level.

C. Correct answer.

D. Incorrect since F036 will provide better control at this power level.

Hatch edit - Changed control level to return level (level is out of band high) and worded such that annunciator is in alarm condition. Answer "D" implies that the F406 valve is open, this would make "D" correct. Modifed answers to make only "C" correct.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C D D C C B B C C A Scramble Range: A - D

31. 259002G2.1.33 001

Unit 1 was operating at 100% RTP when reactor vessel water level started to drop.

Which ONE of the following indicates the vessel level that would require a direct entry into the Unit 1 Technical Specifications?

(Assume all plant systems operate as designed)

A. Low Level 3 is reached.

B. Low Low Level 2 is reached.

C. Low Low Low Level 1 is reached.

D. Vessel level goes below the Top of Active Fuel.

K/A: G2.1.33 Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.

References: Tech Spec 2.1.1.3

A. Incorrect since reaching the scram setpoint is not a Tech Spec entry.

B. Incorrect since reaching the HPCI/RCIC initiation setpoint is not a Tech Spec entry.

C. Incorrect since reaching the ECCS initiation setpoint is not a Tech Spec entry.

D. Correct answer. This is a safety limit and requires entry into TS 2.2.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D B C C B C D C B A Scramble Range: A - D

32. 261000G2.4.31 001

A LOCA has occurred on **Unit 2**. One minute later 600 VAC "2D" de-energizes due to a fault. The following alarm has just been received:

- SBGT FLTR A HI-HI TEMP TRIP OR FAN/HTR S/D

Visual inspection indicates a fire does not exist.

Which ONE of the following actions should be performed per the annunciator response procedure?

A. Place 2A SBGT train to OFF and manually start 2B SBGT train.

B. Place 2A SBGT train to OFF and verify 2B SBGT train starts automatically.

C. Locally operate the SYSTEM RESET and attempt to restart 2A SBGT train.

D. Momentarily place 2A SBGT train control switch to OFF and then restart 2A SBGT train.

K/A: G2.4.31 Knowledge of annunciator alarms and indications and use of the response instructions.

References: SI-LP-03001-03 Table 2
34AB-R23-001-2 Page 4
34AR-657-901-2 (657-093 or 084)

A. Incorrect since the 2A SBGT train is needed. No power to "2B" SBGT

B. Incorrect since the 2B SBGT train will not automatically start.

C. Correct answer.

D. Incorrect since placing the C/S to off does not reset the trip.

Hatch Edit - Stem does not state that "B" SBGT will not start, just implies it did not start. An operator would be expected to start the "B" SBGT in this condition. Modified stem to state that 600vac "2D" de-energized, and deleted that "2A" SBGT was the only fan starting. The operators will have to determine that "2A" is the only fan available.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C A B D C D A C C C Scramble Range: A - D

33. 262001A3.04 001

A LOCA has occurred on Unit 2 with the following sequence of events:

Time 0	LOCA signal present
Time +.5 sec	RHR A / Core Spray A start
Time +10.5 sec	RHR C / Core Spray B start
Time +20.5 sec	RHR B and D start

Which ONE of the following correctly supports the listed sequence of events?

A. 4160V Emergency Bus "G" is being supplied from offsite power and 4160V Emergency Bus "E" and "F" are being supplied from a Diesel Generator.

B. 4160V Emergency Bus "E" is being supplied from offsite power and 4160V Emergency Bus "F" and "G" are being supplied from a Diesel Generator.

C. 4160V Emergency Bus "E" and "F" are being supplied from offsite power and 4160V Emergency Bus "G" is being supplied from a Diesel Generator.

D. 4160V Emergency Bus "F" and "G" are being supplied from offsite power and 4160V Emergency Bus "E" is being supplied from a Diesel Generator.

K/A: A3.04 Ability to monitor automatic operations of the A.C. ELECTRICAL DISTRIBUTION including: Load sequencing.

References: E11-RHR-LP-00701, pg 37 and 40
E21-CS-LP-00801, pg 21

A. Incorrect since Core Spray B and RHR B would start at time 0.5 sec if they were being supplied from offsite power.

B. Correct answer.

C. Incorrect since RHR C and D would start at time 0.5 sec if "F" bus was being supplied from offsite power.

D. Incorrect since RHR C and D would start at time 0.5 sec if "F" bus was being supplied from offsite power.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B C B D C A A C C B Scramble Range: A - D

34. 262001K2.01 001

Which ONE of the following describes the power source for the **Unit 1** and **Unit 2** Start-up Transformers (SAT's)?

A. All Unit 1 and Unit 2 SAT's are fed from the 230KV grid system.

B. All Unit 1 and Unit 2 SAT's are fed from the 500KV grid system.

C. Unit 1C and 1D SAT's are fed from the 230KV grid system and Unit 2C and 2D SAT's are fed from the 500KV grid system.

D. Unit 1C and 1D SAT's are fed from the 500KV grid system and Unit 2C and 2D SAT's are fed from the 230KV grid system.

K/A: K2.01 Knowledge of the electrical power supplies to the following: Off-site sources of power.

References: SI-LP-02701, pg 76 Figure 1

A. Correct answer. Fed from 230KV Bus 1.

B,C and D. Incorrect per referenced drawing.

Hatch Edit - deleted Bus 1 and Bus 2 from "A" and "B" answers due to Hatch's ring bus configuration and changed "C" answer to match "D" and eliminate "C" as a write answer.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A A B D C D B C B B Scramble Range: A - D

35. 262002K1.06 001

While operating at 94% RTP on **Unit 2**, an event causes the following conditions: (this is a partial list)

- FEEDWATER CONTROL SYSTEM TROUBLE annunciator.
- Loss of rod position information system.
- Loss of Process computer Plasma Displays.
- Loss of reactor level and pressure recorders.
- MSL flow indicators (2C32-R603A-D) indicate downscale

Which ONE of the following is indicative of these conditions?

A. Loss of Vital AC Bus.

B. Loss of Instrument Bus "A".

C. Loss of Essential Cabinet "B".

D. Loss of 125/250 VDC Bus "A".

K/A: K1.06 Knowledge of the physical connections and/or cause-effect relationships between UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) and the following: Unit computer.

References: 34AB-R25-001-2, pg.1 and 6
34ABR25-002-2, pg.2

A. Correct answer.

B, C and D. Incorrect since these loads are indicative of loss of Vital AC although some alarms are common to loss of the other systems.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A C B B A D C C B B Scramble Range: A - D

36. 262002K4.01 001

Which ONE of the following correctly describes the Unit 2 Vital AC bus normal power supply?

(Assume normal Vital AC alignment as the initial condition)

A. With the Return Mode switch in Manual, if power swaps to the alternate supply due to loss of normal power, it will automatically swap back to normal if power is regained.

B. With the Return Mode switch in Automatic, if power swaps to the alternate supply due to loss of normal power, it will automatically swap back to normal if power is regained.

C. If the battery charger supplying the Static Inverter loses power this will cause the Static Inverter Switch to swap to its battery power source regardless of whether alternate power is available.

D. If the battery charger supplying the Static Inverter loses power then the Static Inverter Switch must be manually swapped to the alternate power source before the battery backup goes below 210V.

K/A: K4.01 Knowledge of UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) design feature(s) and/or interlocks which provide for the following: Transfer from preferred power to alternate power supplies.

References: SI-LP-02705, pg 5 and 6
Figure 1

A. Incorrect since the power supply will not automatically swap back with the Return Mode switch in Manual.

B. Correct answer.

C. Incorrect since the power supply will not immediately swap due to battery backup.

D. Incorrect since the static inverter switch will auto swap to the alternate source on low voltage.

Hatch Edit - correctly spelled supply, "B" and "C" correct. Modified "C" to state swaps to batteries regardless of alternate available.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B C D C C A D A D D Scramble Range: A - D

37. 263000K5.01 001

Which ONE of the following is a concern to plant operation if the Station Service Battery Room ventilation units are not operating properly?

A. The design limit for hydrogen concentration in the rooms may be reached when the batteries are being charged.

B. The batteries may not be able to meet their design capabilities unless both HVAC fans are operating.

C. The lead-calcium batteries tend to release lead into the atmosphere and access to the room would be limited when the ventilation is not working properly.

D. The Quarterly Battery SR frequency is lowered to weekly when one HVAC fan is inoperable.

K/A: K5.01 Knowledge of the operational implications of the following concepts as they apply to the D.C. ELECTRICAL DISTRIBUTION: Hydrogen generatin during battery charging.

References: SI-LP-02704, pg 9

A. Correct answer.

B. Incorrect since the temperature band is room temperature for optimum comfort and is not the battery temperature.

C. Incorrect since lead is not released into the atmosphere.

D. Incorrect since the surveillance frequency would not be changed..

Hatch Edit - Modified stem due to conflict with temperatures and FSAR . Also "B" and "D" distractors dealt with temperature.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A B C A C B D D D A Scramble Range: A - D

38. 263000K6.01 001

Which ONE of the following describes the immediate effects on the loads supplied by the **Unit 1** 125/250 VDC system upon a loss of 600 V Essential Bus 1C?

A. No effect on plant loads at this time due to 125/250 VDC Bus 1A being supplied by **1A** 125/250 VDC Station Battery.

B. No effect on plant loads at this time due to 125/250 VDC Bus 1A being supplied by **1B** 125/250 VDC Station Battery.

C. Unit 1 Turbine will trip but the output breakers will have to be tripped manually and the RCIC system will be Inoperable.

D. Unit 1 Reactor Water Cleanup System will isolate and the HPCI system will be Inoperable.

K/A: K6.01 Knowledge of the effect that a loss or malfunction of the following will have on the D.C. ELECTRICAL DISTRIBUTION: A.C. electrical distribution.

References: SI-LP-02704, pg 7-9, and Table 2

A. Correct answer.

B. Incorrect since bus 1A cannot be supplied by battery 1B.

C. Incorrect since no loads would be lost. This is correct if bus 1A was lost.

D. Incorrect since no loads would be lost. This is correct if bus 1B was lost.

Hatch Edit - added immediate to stem for clarification. "C" answer would be correct as the battery voltage decreases due to no battery chargers.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A D B B C B A D C C Scramble Range: A - D

39. 264000A1.01 001

The 1B Diesel Generator is running in the TEST Mode per 34SV-R43-002-1, DIESEL GENERATOR 1B MONTHLY TEST. The following conditions are present for the diesel:

- Lube Oil Pressure — 26 psig and steady
- Lube Oil Temperature — 225°F and increasing
- Jacket Coolant Temperature — 180°F and increasing
- Jacket Coolant Pressure — 15 psig and increasing

Which ONE of the following describes the current condition of 1B Diesel Generator and the predicted condition if parameters continue on the current trend?

The 1B Diesel Generator is....

A. still operating and will continue to operate until failure due to all trips associated with the above parameters are bypassed in this condition.

B. tripped due to high Lube Oil Temperature and will remain tripped until the Lockout is reset with a LOCA signal.

C. still operating and will trip momentarily due to high Lube Oil Temperature.

D. tripped due to low Jacket Coolant Pressure and will remain tripped until the Lockout is reset with a LOCA signal.

K/A: A1.01 Ability to predict and/or monitor changes in parameters associated with operating the EMERGENCY GENERATORS (DIESEL/JET) controls including: Lube oil temperature.

References: 34SO-R43-001-1, pg 5

A. Incorrect since all the trips are not bypassed and will trip when a setpoint is reached. The DG should still be operating.

B. Incorrect since the DG should still be operating.

C. Correct answer.

D. Incorrect since the DG should still be operating.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C C B A D D D A B C Scramble Range: A - D

40. 264000K3.03 001

Unit 2 has experienced a total loss of offsite power with the "2C" D/G failing to start.

Which ONE of the following components is affected by this situation?

(Assume no manual actions have been taken)

A. 2A Plant Service Water Pump.

B. 2B Control Rod Drive Pump.

C. 2C Residual Heat Removal Pump.

D. 2D Residual Heat Removal Service Water Pump.

K/A: K3.03 Knowledge of the effect that a loss or malfunction of the EMERGENCY GENERATORS (DIESEL/JET) will have on the following: Major loads powered from electrical buses fed by the emergency generator(s).

References: SI-LP-02702, Table 01 and Figure 02

A, B and C are incorrect since these components are not supplied by Emergency Bus 2G. On a loss of offsite power 2C D/G powers Emergency Bus 2G.

D. Correct answer.

Hatch Edit - quotation mark on left side of "2C" added

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D D D B C B B C B B Scramble Range: A - D

41. 290001K1.08 001

Unit 1 Reactor Building Ventilation is running with the Standby Gas Treatment (SBGT) Systems in a normal standby lineup. An event occurs with the following conditions present on **Unit 1**:

- Reactor Water Level	increasing from a low of -25 inches
- Drywell Pressure	1.5 psig and steady
- Rx Zone Exhaust radiation	10 mR/hr and increasing slowly
- Refueling Zone Exhaust radiation	16 mR/hr and steady

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

The SBGT systems are ...

A. running with their exhaust to the Main Stack; Reactor Building supply and exhaust dampers closed.

B. running with their exhaust to the Reactor Building Vent Stack; Reactor Building supply and exhaust dampers closed.

C. in their standby lineup; Reactor Building ventilation remains in the normal lineup exhausting to the Reactor Building Vent Stack.

D. in their standby lineup; Reactor Building supply dampers are isolated with the exhaust dampers open to the Reactor Building Vent Stack.

K/A: K1.08 Knowledge of the physical connections and/or cause-effect relationships between SECONDARY CONTAINMENT and the following: Exhaust stack.

References: SI-LP-03001, pg. 14 and 16

A. Incorrect since the conditions do not exceed the setpoints for SGT start and Rx Bldg vent isolation.

B. Incorrect since the conditions do not exceed the setpoints for SGT start and Rx Bldg vent isolation. Also, SGT does not exhaust to the Rx Bldg Exhaust stack.

C. Correct answer.

D. Incorrect since the Rx Bldg supply dampers do not isolate.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C A D B C D B A D B Scramble Range: A - D

44. 295001AA1.08 001

The following conditions exist on **Unit 2**:

- Reactor Scram	Unsuccessful
- Reactor Power	4%
- Turbine Generator	On line
- Recirc Pump speeds	"A" tripped, "B" at minimum

Concerning the operation of the Standby Liquid Control (SLC) system, which ONE of the following should be performed and why?

A. Continue to run B Recirc Pump to prevent tripping the Turbine Generator and transferring Aux power.

B. Continue to run B Recirc Pump to provide better mixing for the sodium pentaborate.

C. Trip B Recirc Pump to quickly lower power to prevent mandatory initiation of SLC prior to 110^{o}F in the Torus.

D. Trip B Recirc Pump because natural circulation provides adequate mixing for the sodium pentaborate.

K/A: AA1.08 Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Standby liquid control.

References: Unit 2 RCA flowchart

A. Incorrect since the power level is well within the capacity of the bypass valves and tripping the turbine is not a concern.

B. Correct answer.

C. Incorrect since the Recirc Pumps should be left running to provide of mixing of sodium pentaborate. Also, at this power level tripping the Recirc Pumps have little or no effect.

D. Incorrec since the Recirc Pumps should be left running. Second portion of answer could be correct since natural circulation is adequate at all power levels.

Hatch Edit - add Reference provided. Give RC-A flowchart.
MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B B D B C A B A B C Scramble Range: A - D

46. 295003AK1.05 001

The following plant conditions exist for Unit 2:

- The plant is operating at 100% power.
- All systems are in a normal lineup.
- RPS 'B' MG set trips.

Which ONE of the following isolation valve groups will close?

A. Group 1 Isolation Valve, Inboard only.

B. Group 1 Isolation Valves, Inboard and Outboard.

C. Group 5 Isolation Valve, Outboard only.

D. Group 5 Isolation Valves, Inboard and Outboard.

K/A: **AK1.05** Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: Failsafe component design.

References: 34AB-C71-002-2, Attachment 2 and 3

A. Incorrect since the Outboard steam line drain isolation closes.

B. Incorrect since the inboard steam line drain isolation valves doesn't close.

C. Correct answer. 2G31-F004 closes.

D. Incorrect since the inboard Group 5 valve (2G31-F001) does not close.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C D C A B D C D D D Scramble Range: A - D

48. 295004AK3.02 001

Unit 2 is operating at 100% RTP when the following alarm occurs:

- 125/250V BATTERY GND FAULT

Which ONE of the following is the reason why it is important to take action to locate and isolate the ground immediately?

A. A single ground frequently results in spurious equipment operation.

B. Procedures require the Unit be shutdown if the ground is not isolated.

C. The DC bus must be declared inoperable if a second ground occurs.

D. To avoid a personnel or equipment hazard if a second ground occurs.

K/A: AK3.02 Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: Ground isolation/fault determination.

References: SI-LP-02704, pg.22

A. Incorrect since multiple grounds can cause spurious equipment actuation, but single grounds normally do not.
Plausible since a single ground could result in spurious equipment operation with use of a low resistance ground detection system.

B. Incorrect since Unit shutdown would only be required after the faulted load is determined and then only if required by Tech Spec and/or procedure.

C. Incorrect since a second ground could occur and the bus would remain operable.

D. Correct answer per CAUTION in AR procedure.

Hatch Edit - More than one correct answer. Modified answers to so that only one answer is completely accurate.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D A A A A B B B A B Scramble Range: A - D

49. 295005AK2.07 001

A **Unit 1** reactor startup is in progress at 29% power when a turbine trip occurs.

Which ONE of the following describes how the plant will respond?

(Assume no operator action)

The reactor will ...

A. remain critical; the SRVs will open to control RPV pressure.

B. remain critical; the bypass valves will open to control RPV pressure.

C. scram when the Turbine Stop valves are 90% open; the bypass valves will open to control RPV pressure.

D. scram when the Turbine Control valves are 90% open; the bypass valves will open to control RPV pressure.

K/A: AK2.07 Knowledge of the interrelations between MAIN TURBINE GENERATOR TRIP and the following: Reactor pressure control.

References: N30-MTA-LP-01701, pg. 46

A. Incorrect since the reactor will scram with power above 28% and a turbine trip occurs. The Bypass valves will open to control reactor pressure.

B. Incorrect since the reactor will scram with power above 28% and a turbine trip occurs.

C. Correct answer.

D. Incorrect since the reactor scrams from TSV closure and not TCV fast closure at 90%.

Hatch Edit - Added Unit 1 and changed from MSRVs to SRVs
MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C A D B D A A C D B Scramble Range: A - D

51. 295006AK1.03 001

Unit 2 has received a scram signal, but the white Scram Group Lights are illuminated and all of the control rods failed to insert. The Shift Supervisor has directed you to insert control rods as directed by 34AB-C11-005-2, Control Rod Insertion Methods.

Which ONE of the following actions is the most advantageous method for Control Rod insertion in accordance with 34AB-C11-005-2?

A. De-energizing scram solenoids.

B. Depressurizing Scram Air Header.

C. Individually driving control rods.

D. Increasing CRD Cooling Water Dp.

K/A: AK1.03 Knowledge of the operational implications of the following concepts as they apply to SCRAM: Reactivity control.

References: 34AB-C11-005-2

A. Correct answer.

B. Incorrect since actions are taken locally in the Reactor Building.

C. Incorrect since actions are taken locally to close the charging header isolation valve.

D. Incorrect since actions are taken locally to close the charging header isolation valve.

Hatch Edit - Since the "A" answer must assume the white scram lights were still lit, then the CRD system would still have ample pressure to perform "C" and "D" answer. Modified the stem allow "A" being the only correct answer.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A C A B D D A C D C Scramble Range: A - D

52. 295008G2.1.2 001

Unit 1 is in Mode 3 with Shutdown Cooling in service. The following conditions exist:

- Recirculation Pumps — Both secured
- RHR flow — 7500 gpm
- Reactor pressure — 70 psig

Which ONE of the following indicates the minimum reactor water level that is required under these conditions?

A. at least +32"

B. greater than +33"

C. at least +42"

D. greater than +53"

K/A: G2.1.2 Knowledge of operator responsibilities during all modes of plant operation.

References: 34GO-OPS-013-1, pg. 29
34SO-E11-010-1, pg. 24

A. Incorrect since this is the minimum level for the normal band of Rx Water Level prior to placing SDC in service.

B. Incorrect since this is the minimum Rx Low Water Level if a Recirc Pump is operating or RHR flow is >7700 gpm.

C. Incorrect since this is the maximum level for the normal band of Rx Water Level prior to placing SDC in service.

D. Correct answer per 34SO-E11-010-1.

Hatch Edit - changed "prior to" to "after" to eliminate to correct answers, because prior to is not definitive enough to understand where the operator is in the procedure and 32" to 42" is a required band in step 65 of placing SDC inservice and only 9 steps later (in step 76) requires 53".

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D B A C D B B A B D Scramble Range: A - D

53. 295009AA1.04 001

Which ONE of the following will result in a Reactor Water Cleanup Isolation signal?

A. RWCU Heat Exchanger Room temperature at 130°F.

B. Reactor Water Level at -38".

C. RWCU differential flow between inlet and outlet of 53 gpm for one minute.

D. Local start of Standby Liquid Control Pump "A".

K/A: AA1.04 Ability to operate and/or monitor the following as they apply to LOW REACTOR WATER LEVEL: Reactor water cleanup.

References: G31-RWCU-LP-00301, pg. 34
C41-SBLC-LP-01101, pg. 25

A. Incorrect since the stepoint is 140°F.

B. Correct answer. Setpoint is -35".

C. Incorrect since differential flow setpoint is $\geq$ 56 gpm.

D. Incorrect since the isolation is from a start of SBLC from the control room.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B C A A A B D C B D Scramble Range: A - D

54. 295010AA2.02 001

Drywell pressure has just reached 1.95 psig on **Unit 2**. Reactor water level is +37 inches and being controlled by feedwater.

Which ONE of the following actuations is consistent with this condition?

A. Reactor Scram, RCIC and HPCI Initiation.

B. Reactor Scram, MCREC shifts to Pressurization mode and HPCI Initiation.

C. Low pressure ECCS, MCREC shifts to Isolation mode and HPCI initiation.

D. Low pressure ECCS, ADS and RCIC initiation.

K/A: AA2.02 Ability to determine and interpret the following as they apply to HIGH DRYWELL PRESSURE: Drywell pressure.

References: C71-RPS-LP-01001, pg. 49
E41-HPCI-LP-00501, pg. 28
34SO-Z41-001-1, pg. 4

A. Incorrect since RCIC initiation does not occur.

B. Correct answer.

C. Incorrect since MCREC shifts to pressurization mode..

D. Incorrect since ADS and RCIC actuations do not occur from high drywell pressure alone.

Hatch Edit - More than 1 correct answer since low pressure ECCS starts at 1.95 psig Drywell pressure and stem did not indicate where RWL is at. Also our CREV is MCREC shifts to pressuriztion mode. Added RWL at +37" in stem, answers corrected CREV to MCREC....., and modified to make " C" wrong.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B A A C C C A D D B Scramble Range: A - D

57. 295016AK3.03 001

Unit 1 has undergone a transient due to a fire which resulted in the Control Room being abandoned. The Shift Supervisor is directing actions per 31RS-OPS-001-1, Shutdown from Outside the Control Room.

Which ONE of the following conditions would require opening of breaker 19 in panel 1R25-S001 and breaker CB5A in panel 1C71-P001 to close the MSIV's?

The MSIV's are open and ...

A. reactor water level at -110 inches.

B. an uncontrolled cooldown at 75^{o}F/hr is occuring.

C. SRV "B" is stuck open

D. containment Hi Rad condition exists.

K/A: AK3.03 Knowledge of the reasons for the following responses as they apply to CONTROL ROOM ABANDONMENT: Disabling control room controls.

References: 31RS-OPS-001-1, pg. 5

A. Correct answer since level is <-101 inches.

B. Incorrect since cooldown has to be in excess of 100^{o}F/hr.

C. Incorrect since the requirement is indication of a steam leak.

D. Incorrect since containment Hi Rad is not one of the considerations.

Hatch Edit - Change Reactor Coolant system leak to Reactor Water Clean-Up system leak in the "C" answer. If the Reactor coolant system leak was a main steam line, "C" would be a correct answer. (Reactor Coolant leak can be steam or water.)

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A C A D A A D A A B Scramble Range: A - D

59. 295018AA1.02 001

Unit 1 is operating at 80% power, when fouling of the RBCCW heat exchanger is causing rising RBCCW temperatures. Efforts are underway to place the spare heat exchanger in service.

Which ONE of the following is the primary reason that the operating RWCU pump is tripped?

A. Anticipates the automatic isolation of RWCU system.

B. Increases flow to the Recirc pump fluid drive M/G sets.

C. Reduces heat load on RWCU NRHX.

D. Reduces heat load on the RBCCW system.

K/A: AA1.02 Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER: System loads.

References: 34AB-P42-001-1, pg. 2

A. Incorrect since the pump is tripped to reduce heat load although an auto isolation may eventually occur.

B. Incorrect since this does not increase flow to the M/G sets although cooler water will go to the set.

C. Incorrect since it doesn't reduce load but it does lower flow.

D. Correct answer.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D C D D C D B D A B Scramble Range: A - D

60. 295019AA1.01 001

Unit 2 is operating at 80% RTP when a failure occurs somewhere in the plant air system. The following indications exist at this time:

- Service Air Header Pressure 0 psig
- Non-Interuptible Essential Air Pressure 95 psig
- Interuptible Essential Air Pressure 50 psig

Which ONE of the following is the most likely location of the failure?

(Assume no operator action)

A. A major break in the Service Air header downstream of isolation valve F017, Turbine Building Service Air Isolation Valve.

B. A major break in the Non-Essential Instrument Air header downstream of isolation valve F015, Non-Essential Instrument Air Isolation Valve.

C. A major break in the Interuptible Essential Air header.

D. A major break in the Non-Interuptible Essential Air header.

K/A: AA1.01 Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR: Backup air supply.

References: SI-LP-03501, pg. 32
34SO-P51-002-2, pg. 6

A. Incorrect since Interuptible Essential Air pressure would be 70 psig due to F017 closing.

B. Correct answer.

C. Incorrect since Non-essential air pressure would decrease to 0 psig.

D. Incorrect since Interuptible Essential air pressure would decrease to 0 psig.

Hatch Edit - Changed to Non-essential Instrument from non-essential essential.
MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B B C A B D D A C A Scramble Range: A - D

61. 295019AK2.09 001

Unit 1 has been operating at 50% RTP for the past several days when a complete loss of Drywell Pneumatics Nitrogen supply occurs.

Which ONE of the following is expected:

A. The Inboard MSIVs drift shut and the Outboard MSIVs remain Open.

B. The Inboard and Outboard MSIVs remain Open.

C. The Inboard and Outboard MSIVs drift Shut.

D. The Inboard MSIVs remain Open and the Outboard MSIVs drift shut.

K/A: AK2.09 Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR and the following: Containment.

References: SI-LP-03501 Page 53

A. Correct since a loss of Drywell Pneumatics causes the Inboard MSIVs to drift shut,

B. Incorrect since a loss of Drywell Pneumatics causes the Inboard MSIVs to drift shut.

C. Incorrect since the Outboard MSIVs still have air.

D. Incorrect since a loss of Drywell Pneumatics causes the Inboard MSIVs to drift shut and the Outboard MSIVs still have air.

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Hatch Edit - DW cooler valves at Plant Hatch fail open, rather than closed, so question stem and answers were modified to match plant and K/A

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A D B B B B C C C C Scramble Range: A - D

62. 295020AK3.02 001

Unit 2 was operating for a week at 50% RTP when an Instrument Technician accidentally caused a containment isolation signal due to high Drywell pressure. All expected actuations for high Drywell pressure occurred as designed.

Which ONE of the following describes the effect on containment temperature and pressure **only**, including the reason?

Containment temperature will....

A. increase and containment pressure will increase due to loss of containment cooling.

B. increase and containment pressure will decrease due to isolation of nitrogen backup supply.

C. decrease and containment pressure will increase due to reactor trip and loss of containment venting capability.

D. decrease and containment pressure will decrease due to increased containment cooling with lower heat input.

K/A: AK3.02 Knowledge of the reasons for the following responses as they apply to INADVERTENT CONTAINMENT ISOLATION: Drywell/containment pressure response.

References: SI-LP-01301-02, pg. 38

A. Correct answer. Drywell Chillers are interlocked off on high containment pressure of 1.85 psig.

B. Incorrect since containment pressure would be expected to increase under these conditions.

C. Incorrect since containment temperature would be expected to increase under these conditions.

D. Incorrect since containment pressure and temperature would be expected to increase under these conditions.

Hatch Edit - Deleted Group 2 and added All expected actuations for "high Drywell pressure " occurred as designed. (The individual instruments that cause Group 2, do not trip the DW chillers.)

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A D A D A D A A A A Scramble Range: A - D

63. 295021AK2.04 001

"B" Loop Shutdown Cooling is in service on **Unit 1**. Given the following conditions:

- Coolant temperature is currently 170°F
- RHRSW pump "1C" tagged out for repair
- 1E11-F017A tagged closed for repair
- 4160 VAC "1G" de-energized due to a fault
- "1CD" 600 VAC transformer is powering 600 VAC "1D"

Which ONE of the following alignments would be required to provide RHRSW for Shutdown Cooling Loop "B"?

A. Open 1E11-F073B and 1E11-F075B and start the "1A" RHRSW pump for cooling.

B. Open 1E11-F119A and 1E11-F119B and start the "1A" RHRSW pump for cooling.

C. Open 1E11-F073A and 1E11-F075A and start the "1D" RHRSW pump for cooling.

D. No RHRSW crosstie operations are required. Start the "1D" RHRSW pump for cooling.

K/A: AK2.04 Knowledge of the interrelations between LOSS OF SHUTDOWN COOLING and the following: Component cooling water systems.

References: 34SO-E11-010 ver 31.1, page 48 of 222

A. Incorrect since these are the RHR crosstie valves

B. Correct answer

C. Incorrect since 1D RHRSW has no power and this is an RHR crosstie valve lineup.

D. Incorrect since 1D RHRSW has no power.
Hatch Edit - Original question had multiple correct answers, Replaced with a new question.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B A A C B B B A A B Scramble Range: A - D

64. 295022AK1.01 001

While starting up, **Unit 2** CRD pump 2A receives a trip signal and will not restart. The 2B CRD pump is tagged for maintenance and is not available. Eventually, several accumulator low pressure lights begin to illuminate on the full core display associated with withdrawn control rods. A reactor scram is directed by 34AB-C11-001-2, LOSS OF CRD SYSTEM, based on LOW REACTOR PRESSURE.

Which ONE of the following is the CORRECT reactor pressure limit which requires immediately entering the scram procedure per 34AB-C11-001-2 and the reason for the limit?

A. < 800 # reactor pressure, because this is the ideal pressure for scramming control rods as verified during scram time testing.

B. < 900 # reactor pressure, because this provides a margin to the lowest pressure that rod insertion can be ensured due to the loss of accumulators.

C. 940 # reactor pressure, because this will ensure that any control rods that are declared "slow" will meet the maximum scram insertion time.

D. 965 # reactor pressure, because this coincides with the lowest accumulator pressure alarm setpoint such that multiple accumulator alarms actuate.

K/A: AK1.01 Knowledge of the operational implications fo the following concepts as they apply to LOSS OF CRD PUMPS: Reactor pressure vs. rod insertion capability.

References: Tech Spec 3.1.5 Bases
34AB-C11-001-2, pg.3

A. Incorrect since 800# is not the limit required by the abnormal procedure but it is the pressure used for scram timing.

B. Correct answer.

C. Incorrect since the reason is wrong. The Mode Switch does not need to be placed in Shutdown immediately.

D. Incorrect since the pressure is too high and the reason is wrong.

Hatch Edit - corrected spelling (coincides) added immediately in front of scram in the stem and a < sign in fron of each pressure in the "A" and "B" answers

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B D B B C D A A B B Scramble Range: A - D

65. 295023G2.4.4 001

Unit 2 is in a refueling outage and a fuel shuffle has just been completed. You have just taken the shift and note the following conditions exist:

- Shutdown cooling is in service on Loop B
- Approximately one fourth of the core is unloaded to the Spent Fuel Pool
- Fuel pool temperature is 135^{o}F
- RHR Heat Exchanger outlet temperature is 145^{o}F
- All SBGT Systems have just been declared INOPERABLE

Based on the above conditions, which ONE of the following procedures should be implemented?

A. 34AB-T41-001-2, Loss of ECCS, MCREC or Area Ventilation System(s).

B. 34AB-E11-001-2, Loss of Shutdown Cooling.

C. 34AB-G41-001-2, Loss of Fuel Pool Cooling.

D. 34AB-J11-001-2, Irradiated Fuel Damage During Handling.

K/A: G2.4.4 Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.

References: 34AB-E11-001-2
34AB-G41-001-2

A. Incorrect since loss of all SGT systems does not affect Reactor Building Ventilation. Plausible since it is used to maintain the Reactor Building at a negative pressure.

B. Incorrect since RHR Hx Outlet temp is not rising. If temp was increasing then this would be a correct answer.

C. Correct answer due to SFT >125^{o}F.

D. Incorrect since no fuel damage indications has occurred.

Hatch Edit - Added "and increasing" to match AB entry condition.
MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C B D A A B D B C A Scramble Range: A - D

66. 295024EA2.06 001

A steam line break inside containment has occurred on Unit 1. Drywell pressure is steady at +10.5 psig. All automatic actions occurred as designed. Drywell or Torus sprays have not yet been initiated.

Which ONE of the following best describes the effect on Torus water temperature?

A. The saturation temperature of the Torus water will be lower than at normal operating parameters due to the non-condensible gases discharged to the Torus.

B. The Torus water temperature will initially heat up evenly throughout the Torus due to the design of the downcomers.

C. The Torus water temperature will heat up more quickly below the area of the leak in the drywell due to more energy being distributed to the Torus in that area.

D. The Torus water average temperature is unreliable until suppression pool cooling is established to provide even mixing of the water.

K/A: EA2.06 Ability to determine and/or interpret the following as they apply to HIGH DRYWELL PRESSURE: Suppression pool temperature.

References: Steam Tables

A. Incorrect since the saturation temperature is higher due to the higher pressure.

B. Correct answer.

C. Incorrect since with a steam leak the steam is distributed evenly through the downcomers.

D. Incorrect since the temperature monitors of the torus still work and the average temp is just an average of all the monitors.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B A C A B B D B A B Scramble Range: A - D

67. 295025EK2.06 001

An event has occurred on **Unit 2** that requires operation of HPCI in pressure control mode.

Select the alignment which will result in the maximum cooldown rate:

	Controller Mode	Action
A.	Auto	Reduce HPCI flow controller setpoint
B.	Auto	Throttle 2E41-F008 in the Closed direction
C.	Manual	Reduce HPCI flow controller output
D.	Manual	Throttle 2E41-F008 in the Open direction

K/A: EK2.06 Knowledge of interrelations between HIGH REACTOR PRESSURE and the following: HPCI.

References: SI-LP-00501, pg. 28

B. Correct answer since this requires the most work from HPCI.

A, C, and D are incorrect since they require equal or less work from HPCI

Hatch Edit - Conflicts between FSAR (1210 psid), T.S. Basis (1185 psig) and lesson plan (1169 psid) Replaced question to make more bullet proof.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B A A C B C A B B B Scramble Range: A - D

68. 295026EA2.03 001

Unit 1 was operating at 100% RTP when SRV 1B21-F013A failed open. All attempts to close the valve have failed. Suppression Pool average temperature has reached 125°F.

If Suppression Pool average temperature remains above 125°F for the next 24 hours, which ONE of the following is the **highest** acceptable reactor pressure for the current plant conditions?

(Reference provided)

A. 0 psig

B. 50 psig

C. 100 psig

D. 200 psig

K/A: EA2.03 Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Reactor pressure.

Provide Tech Spec 3.6.2.1 Conditions

References: SI-LP-01401, Table 4
Tech Spec 3.6.2.1, Required Action E.1 and E.2

A. Correct since Mode 4 is required after 36 hours which requires 0 psig.

B. Incorrect since Mode 4 is required after 36 hours which requires 0 psig.

C. Incorrect since Mode 4 is required after 36 hours which requires 0 psig.

D. Incorrect since Shutdown Cooling is required after 36 hours. Plausible since Required Action E.1 requires pressure to be lowered <200 psig within 12 hours of exceeding 125°F.

Hatch Edit - Changed from 36 to 37 hours to clearly be above condition time in TS. Made "A" the right answer because Mode 4 is <212°F, which is equal to 0 psig.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C A A A B B A A C C Scramble Range: A - D

70. 295028EA2.06 001

Unit 2 was operating at 100% RTP when SRV 2B21-F013M failed open. All attempts to close the valve failed and the unit was manually tripped. A Small Break LOCA occurred when the reactor was scrammed with Drywell pressure reaching 5.5 psig. The RO noted that the Suppression Chamber air space temperature suddenly increased to approximately Drywell temperature.

Which ONE of the following conditions would account for this temperature increase?

A. SRV 2B21-F013M discharge line vacuum breaker has failed open.

B. One HPCI exhaust vacuum breaker check valve has failed open.

C. One Suppression Chamber - Drywell vacuum breaker has failed open.

D. One Reactor Bldg - Suppression Chamber vacuum breaker has failed open.

K/A: EA2.06 Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE: Torus/suppression chamber air space temperature.

References: SI-LP-01301, pg. 9 and 10

A. Incorrect since the SRV discharge line vacuum breakers are located in the Drywell.

B. Incorrect since one vacuum breaker failing open should have no affect on Suppression Chamber air space temp since there are two check valves in series.

C. Correct answer. This valve open is a direct path to the Suppression Chamber air space.

D. Incorrect since opening of this vacuum breaker will not equalize temperature between the Drywell and Suppression Chamber.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C C B A B A C A A C Scramble Range: A - D

71. 295030EA2.02 001

PC-1, Primary Containment Control, has been entered on **Unit 2** for high Suppression Pool temperature. The following conditions are present:

- Suppression Pool level 130 inches
- RPV pressure 600 psig

Which ONE of the following is the highest Suppression Pool temperature **before** action would be required per Graph 2, Heat Capacity Temp Limit?

(Reference provided)

A. 202°F

B. 195°F

C. 189°F

D. 179°F

K/A: EA2.02 Ability to determine and/or interpret the following as they apply to LOW SUPPRESSION POOL WATER LEVEL: Suppression pool temperature.

Provide reference: Graph 2, Heat Capacity Temp Limit

References: PC-1, Primary Containment Control
Heat Capacity Temp Limit, Graph 2

A. Incorrect since this value is above the limit for 600 psig.

B. Incorrect since this value is above the limit for 600 psig.

C. Correct answer

D. Incorrect since this is still within the limit of the 600 psig curve but is not the highest value.

Hatch edit - Changed from Curve 3 to Graph 2, verified reference and correct
MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C B D B C C D A D D Scramble Range: A - D

73. 295031EK1.02 001

Which ONE of the following identifies why reactor power goes down when reactor water level is lowered below -60 inches during an ATWS?

Lowering RPV water level....

A. directly decreases the value of the void coefficient.

B. reduces the natural circulation driving head and core flow.

C. reduces the amount of inventory in the vessel which requires less power to maintain boiling.

D. below the moisture separator removes the flow path thereby minimizing flow through the core.

K/A: EK1.02 Knowledge of the operational implications of the following concepts as they apply to the REACTOR LOW WATER LEVEL and the following: Natural circulation.

References: LR-LP-20327, pg. 9

A. Incorrect since void coefficient will increase.

B. Correct answer.

C. Incorrect since inventory does not affect amount of power required for boiling.

D. Incorrect since decreasing temperature and increasing sub-cooling causes power to increase.

Hatch Edit - Changed "D" answer because water level could be above moisture seperators, and if it was, lowering below them would decrease power.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B A D C B A A D C A Scramble Range: A - D

75. 295032EK2.04 001

Unit 1 is operating at rated power with HPCI in operation for the Quarterly flow rate surveillance. A small steam leak develops on the steam supply line. The following conditions are present:

- HPCI equipment area temperature 183°F
- Torus area temperature 137°F
- HPCI flow rate 4300 gpm (steady)

Which ONE of the following describes the expected response to these conditions?

The HPCI turbine should ...

A. trip with the steam line isolation valves F002 and F003 AND suppression pool suction valves F041 and F042 closing after a 14 minute time delay.

B. have tripped with the steam line isolation valves F002 and F003 closing.

C. not have tripped but the system must be manually isolated by closing the steam line isolation valves F002 and F003.

D. not have tripped and the operator should continue to monitor the system until the surveillance is complete.

K/A: EK2.04 Knowledge of the interrelations between HIGH SECONDARY CONTAINMENT AREA TEMPERATURE and the following: PCIS/NSSSS.

References: SC - Secondary Containment Control
SI-LP-00501-05, pg.26

A. Incorrect since HPCI should have tripped but F002 and F003 are already closed under these conditions.

B. Correct answer since HPCI equipment area temp is above the isolation signal of 165°F and a isolation signal is a direct trip signal.

C. Incorrect answer since HPCI has a trip and isolation signal

D. Incorrect answer since HPCI has a trip and isolation signal and the operator could not continue the surveilance.

Hatch Edit - "C" is incorrect answer and "B" is correct due to high room temp. Changed room temp to equipment area temp to match our nomenclature. Added 14 minute time delay to "A" answer.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B B D A D C A A B B Scramble Range: A - D

76. 295034EA1.05 001

Unit 2 has experienced a LOCA. The Secondary Containment ventilation isolations for high Drywell pressure and low RWL have been overridden when an operator reports that **ALL** the radiation monitors for the Refuel Floor Vent Exhaust are reading 6 mR/hr.

Which ONE of the following actions should be taken for this condition?

A. Confirm/manually isolate the Refuel Floor, Reactor Building and Control room ventilation systems.

B. Continue to use the Reactor Building and Refuel Floor normal ventilation.

C. Confirm/manually isolate the Refuel Floor and Reactor Building ventilation and confirm Unit 1 and 2 SGBT initiation.

D. Confirm/manually isolate the Refuel Floor ventilation and confirm Reactor Building normal ventilation lineup.

K/A: EA1.05 Ability to operate and/or monitor the following as they apply to SECONDARY CONTAINMENT VENTILATION HIGH RADIATION: Fuel building ventilation.

References: SI-LP-01303-01, pg 36-38

A. Incorrect since CREV system does not start from the rad monitor readings.

B. Incorrect since the normal ventilation system will be isolated.

C. Correct answer since the setpoint for unit 2 on some rad monitors is 5.7mR/hr.

D. Incorrect since reactor building ventilation should be isolated.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C C A C C C B A A A Scramble Range: A - D

77. 295037G2.1.28 001

An ATWS condition exists on Unit 2 and RCA RPV Control (ATWS) has been entered. Direction is given per RC/Q to confirm ARI Initiation.

Which ONE of the following describes the purpose and function of the ARI system?

A. Automatically backs up any scram signal and can manually be initiated from the control room to depressurize the scram air header by venting to the atmosphere.

B. Provides a redundant means to depressurize the scram air header and reposition the Scram Discharge Volume vent and drain valves by energizing the ARI valves.

C. Allows the operator to manually control scram air header pressure opening the backup scram valves by de-energizing their control relays.

D. Provides a redundant means to depressurize the scram air header and reposition the Scram Discharge Volume vent and drain valves by de-energizing the ARI valves.

K/A: G2.1.28 Knowledge of the purpose and function of major system components and controls.

References: SI-LP-00101, pg. 30 thru 34

A. Incorrect since ARI does not automatically back up all RPS signals.

B. Correct answer.

C. Incorrect since initiation of ARI does not control the backup scram valves.

D. Incorrect since the ARI valves are energized to provide their function.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B B C B D D B C C D Scramble Range: A - D

79. 295038G2.4.31 001

Unit 1 is at 100% RTP when the following alarms are received :

"MAIN STEAM LINE RADIATION HIGH"
"O/G AVG ANNUAL REL LIMIT WILL BE EXCEEDED"
"POSTTREAT OFFGAS RADIATION HIGH"
"PRETREATMENT OFFGAS RADIATION HI HI"

The Main Steam Line Rad Monitors are indicating 10,000 mr/hr and slowly increasing.

Based on these indications, which ONE of the following set of actions should be completed first to mitigate the event?

A. Reduce reactor power per 34GO-OPS-005-1, Power Changes, and 34GO-OPS-013-1, Plant Shutdown

B. Locally at the main injection control panel, 1P73-P600, for the H_2O_2 Injection System, shutdown the H_2O_2 Injection System

C. Scram the Reactor; close 1B21-F022 A-D and 1B21-F028A-D

D. Bypass the Off Gas Carbon Beds per System Shutdown subsection of 34SO-N62-001-1, Off Gas System.

K/A: G2.4.31 Knowledge of annunciators alarms and indications / and use of the response instructions.

References: 34AB-B21-001
34AB-N62-001
34AB-N62-002

A. Incorrect since the highest priority is the Suspected Fuel Element Failure actions. These require a reactor scram.

B. Incorrect since the highest priority is the Suspected Fuel Element Failure actions. These require a reactor scram.

C. Correct answer.

D. Incorrect since the highest priority is the Suspected Fuel Element Failure actions. These require a reactor scram.

Hatch Edit - Added MSL rad monitor reading 10,000 mr/hr and changed to set of actions to be complete first since answers A-C would be entered at the same time. Changed answers to steps out of each procedure that was listed in original answers.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C A A D A B B D A C Scramble Range: A - D

80. 300000A2.01 001

Unit 2 just received the following alarm:

- INSTR AIR DRYER MALFUNCTION

An operator observes the following amber alarm lights at local Panel 2P52-D101A :

- Valve Shift Failure - Illuminated
- Over Temperature - extinguished
- Under Temperature - extinguished
- High Dew Point - extinguished

Which ONE of the following indications would cause this condition and what action(s) should be taken if the problem cannot be repaired?

A. Air Dryer Bypass valve, 2P52-F007A, has opened; shutdown the dryer in accordance with 34SO-P51-002-2, Instrument and Service Air System.

B. The dryer failed to switch towers as required; Open Dryer Bypass valve 2P52-F007A and enter 34AB-P51-001-2, Loss of Instrument and Service Air System.

C. An electronic drain valve failed to cycle as required; manually cycle the drain valve in accordance with 34SO-P51-002-2.

D. The Moisture Load Control valve failed to open when required; Open Dryer Bypass valve 2P52-F007A in accordance with 34SO-P51-002-2, Instrument and Service Air System.

K/A: A2.01 Ability to (a) predict the impacts of the following on the INSTRUMENT AIR; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Air dryer and filter malfunctions.

References: 34AR-700-902-2

A. Incorrect since the bypass valve opening does not cause the alarm and is not automatic on Unit 2.

B. Correct answer.

C. Incorrect since this condition is not associated with Valve Shift Failure light being illuminated.

D. Incorrect since this condition is not associated with Valve Shift Failure light being illuminated.

Hatch Edit - Added locally observed indications to add operational validity and in "B" answer changed from "Verify" to "Open" for F007A due to being a locked Closed valve.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B B A A B B A A C D Scramble Range: A - D

81. 400000A4.01 001

Unit 1 was operating at 100% RTP when a LOCA and LOSP occurred. All Emergency Diesel Generators started and tied to their respective bus. All LOCA and LOSP isolations occurred as designed. Regarding Plant Service Water (PSW),

2 minutes after the LOCA and LOSP, an operator observes that:
- Div 1 PSW pressure is 80 psig and stable
- Div 2 PSW pressure is 105 psig and stable
- PSW Main Header Div I Pressure Low alarm annunciated

Which ONE of the following indicates the correct operator action for the PSW system under these conditions?

(Assume no operator actions up to this point.)

A. Start the "B" PSW Pump only

B. Start the "C" PSW Pump only

C. Start the "D" PSW Pump

D. Start the "B" and "C" PSW Pumps

K/A: A4.03 Ability to manually operate and/or monitor in the control room: Applicable component cooling water pressure.

References: SI-LP-03301, pg 20 and 21

A. Incorrect since the 1P41-F310s are closed automatically, starting B will not increase pressure.

B. Correct answer.

C. Incorrect since the 1P41-F310s are closed automatically, starting B will not increase pressure.

D. Incorrect since the D PSW is in Div II
Hatch Edit - K/A 40000A3.01, Modified to have more operational validity in stem and answers. Changed K/As. Update list of K/As
MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B C D D D C C A B B Scramble Range: A - D

82. 400000K1.02 001

Unit 2 is at rated power when a problem with the Plant Service Water System causes a loss of cooling water to the Stator Water Coolers.

Which ONE of the following describes the expected response of the Main Generator and Stator Water Cooling System?

A. Generator Hydrogen pressure will increase and Stator Water Cooling pressure will automatically increase to stay 3 psig above Hydrogen pressure.

B. The "Generator Protection Circuit Energized" annunciator will be received when generator return water temperature reaches 81°C.

C. The backup Stator Water Cooling Pump will start when Generator return temperature reaches 81°C.

D. The Main Turbine will trip if the Generator fails to run back to 20% of rated Generator load within 3.5 minutes.

K/A: K1.02 Knowledge of the physical connections and/or cause-effect relationships between CCWS and the following: Loads cooled by CCWS.

References: 34AR-651-902-2, tile 651-206

A. Incorrect since stator cooling water pressure does not automatically increase.

B. Incorrect since the 6" valve fails open and the 10" valve fails closed on a loss of air.

C. Incorrect since the pump does not auto start but must be manually started.

D. Incorrect since the runback only has to go to 24%.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B D A D C B B A B A Scramble Range: A - D

83. 600000AK3.04 001

A fire has been reported in the Unit 2 Cable Spreading Room. 34AB-X43-001-2, Fire Procedure, directs opening links BB-10 in panel 2H11-P927 and BB-10 in panel 2H11-P928 which disables the capability of the SRVs to lift on their electrical over pressure setpoints.

Should fire damage to the cables occur, which ONE of the following describes the reason for opening these links under these conditions?

A. This prevents all 11 SRVs from inadvertently opening when control is transferred to the Remote Shutdown panel only. Control room operation will not be effected.

B. This prevents all 11 SRVs from inadvertently opening whether control is transferred to the Remote Shutdown or remains at the Control Room.

C. This prevents only the ADS valves from inadvertently opening when control is transferred to the Remote Shutdown panel only. Control room operation will not be effected.

D. This prevents only the ADS valves from inadvertently opening whether control is transferred to the Remote Shutdown or remains from the Control Room.

K/A: AK3.04 Knowledge of the reasons for the following reponses as they apply to PLANT FIRE ON SITE: Actions contained in the abnormal procedure for plant fire on site.s

References: 34AB-X43-001-2, pg. 2

A. Incorrect since the ADS signal will be unaffected.

B. Correct answer.

C. Incorrect since all of the SRV's are affected.

D. Incorrect since all of the SRV's are affected.

Hatch Edit - Modified stem and answers to better reflect Plant Hatch's required operational knowledge of the procedure.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B A D D C D A C B D Scramble Range: A - D

84. G2.1.19 001

You are requested to determine the current status of rod positions using the Safety Parameter Display System (SPDS) 1 minute after a scram signal.

Which ONE of the following indications would be displayed on SPDS if one control rod was stuck at position 24?

Primary display indicates....

A. the word "Scram" in red indication.

B. the words "All Rods In" in yellow indication.

C. the word "Scram" in orange indication.

D. the words "All Rods In" in red indication.

K/A: G2.1.19 Ability to use plant computer to obtain and evaluate parametric information on system or component status.

References: X75-SPDS-LP-05601, pg. 20

A. Correct answer since greater than 10 seconds after scram signal and all rods not inserted.

B. Incorrect since one rod is still not inserted.

C. Incorrect since greater than 10 seconds after scram signal. Would be correct if less than 10 seconds since scram signal.

D. Incorrect since one control rod still out. Plausible since reactor is analyzed with one control rod fully out.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A B D C A A D D A D Scramble Range: A - D

85. G2.1.29 001

Which ONE of the following describes the method used for verifying the position of a locked and throttled valve?

A. Remove the locking device, carefully close the valve counting the number of turns, then reopen the valve the same number of turns. Reapply a locking device to the valve and record the as left position.

B. Place "NA" in the verification signature space for this valve. Locked and/or throttled valves cannot be independently verified without disturbing the position.

C. Since the valve is already locked, the valve may be assumed to be throttled in the correct position. Complete the locking device operability verification.

D. Independent verification of this valve cannot be performed. Second party verification must be performed during initial valve positioning.

K/A: G2.1.23 Ability to perform specific system and integrated plant procedures during different modes of plant operation.

References: 34GO-SUV-001-0, section 7.1.5 and 7.1.6.

A. Incorrect since independent verification cannot be used for this application.

B. Incorrect since you do not N/A a verification step in this case.

C. Correct answer.

D. Incorrect per step 7.1.5 CAUTION.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C D B A B A D B D A Scramble Range: A - D

86. G2.1.30 001

A fire has been reported in the 2A Diesel Generator room. Power has been lost to the CO_2 actuating solenoid(s) and manual initiation of the system is required.

Which ONE of the following actions are required to be performed to initiate CO_2 flow to the affected area?

A. The master valve at the tank and the master valve outside the 2A D/G room must both be manually opened locally at the respective valve.

B. Only the master valve outside the 2A D/G room must be manually opened locally at the valve.

C. The master valve at the tank must be manually opened and the pushbutton outside the 2A D/G room must be pushed.

D. Only the master valve at the tank must be manually opened locally at the valve.

K/A: G2.1.30 Ability to locate and operate components, including local controls.

References: SI-LP-03601, Rev.2, Page 23 and 24
Figure 21

A. Correct answer.

B. Incorrect since both master valves must be opened to initiate flow.

C. Incorrect since power has been lost to the solenoid valves the valves must be operated locally.

D. Incorrect since both valves must be actuated locally to establish flow.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A B A A C B C A C A Scramble Range: A - D

89. G2.2.11 001

Which ONE of the following changes is required to be controlled by the Temporary Modification process?

A. Hoses are connected to the RCIC system as directed by 31EO-EOP-109-1 during an emergency.

B. Hoses are connected to the piping for an MSIV LLRT for a period of one day.

C. A spool piece is installed to provide spray wash water to the "B" traveling water screen from the "A" traveling water screen supply for a 20 day period.

D. A spool piece is installed, as directed by 34SO-G71-001-0 procedure, to connect the DHR system to the Unit 2 Fuel Pool for a period of 20 days during a RF outage.

K/A: G2.2.11 Knowledge of the process for controlling temporary alterations.

References: 40AC-ENG-018-0, step 8.6, pg. 6
52GM-G71-001-0
34SO-G71-001-0

A. Incorrect since the Emergency Operating Procedures are exempt from any TM requirements. (40AC-ENG-018-0 step 6.0)

B. Incorrect since the LLRT procedure would provide guidance for this configuration change.

C. Correct answer

D. Incorrect since this spool piece is installed IAW 52GM-G71-001-0 and 34SO-G71-001-0

Hatch Edit - Replaced question to better reflect a ROs required knowledge level.
MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C D D A C D D B B D Scramble Range: A - D

92. G2.2.27 001

While moving an irradiated fuel bundle from the East Fuel Prep Machine, the bundle drops and bubbles are observed rising from the bundle. ARMs alarm throughout the Refuel Floor.

DETERMINE which ONE of the following actions listed below is a required operator action.

A. Request the Health Physics Department to establish a manned control point on the Refuel Floor.

B. Evacuate all personnel from the Reactor Building.

C. Lower the Fuel Prep machine to the full down position and attempt to place the bundle back in the machine.

D. Evacuate personnel from the Refuel Floor.

K/A: G2.2.27 Knowledge of the refueling process.

References: 34AB-J11-001-2

A. Incorrect since this would be performed, but not on the Refuel Floor, it would be outside the Refuel Floor.

B. Incorrect since the Refuel Floor must be evacuated and not the Reactor Building.

C. Incorrect since the bundle should not be placed back into the machine at this time.

D. Correct answer.

Hatch Edit - Changed stem to required operator actions, due to 34AB-J11-001 not having Immediate operator actions. This made "A" and "D" answers correct. Changed "A" answer to make incorrect.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D D D A B C D C C C Scramble Range: A - D

93. G2.2.3 001

Which ONE of the following scram signals has a different initiation setpoint for both units?

A. Drywell High Pressure.

B. Reactor Vessel High Pressure.

C. Reactor Vessel Low Water Level.

D. Scram Discharge Volume High Water Level.

K/A: G2.2.3 Knowledge of the design/procedural/and operational differences between units.

References: C71-RPS-LP-01001, pg.46 - 50

A. Incorrect since both units have same setpoint.

B. Incorrect since both units have same setpoint.

C. Incorrect since both units have same setpoint.

D. Correct answer. Unit 1 is 63 gallons and Unit 2 is 57 gallons.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D C A D B B C C D C Scramble Range: A - D

94. G2.3.4 001

A Systems Operator is being sent out on a job in a High Radiation Area. The Dose rate in the area of the job is 280 mRem/hr. The job is expected to take 45 minutes. The operator's actual exposure history to date for the year is 1800 mRem TEDE.

Which ONE of the following correctly indicates if the individual can perform the job and the reason why?

A. Yes, the operator will not exceed his administrative or federal dose limits.

B. Yes, the operator will have to have an approved extension on dose limits after returning from the job.

C. No, the operator will exceed his federal dose limits.

D. No, the operator will exceed administrative dose limits which are not allowed to be extended without proper prior approval.

K/A: G2.3.4 Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.

References: 60AC-HPX-001-0, pg.6

A. Incorrect since administrative limits of 2000 mR/hr will be exceeded. 1800 mR plus 210 mR from the job = 2100 mR exposure.

B. Incorrect since approval to exceed the administrative limits must be authorized prior to receiving the dose.

C. Incorrect since federal limits will not be exceeded. Annual limit of 5 Rem.

D. Correct answer.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D C C C D B B C A B Scramble Range: A - D

96. G2.3.9 001

Unit 2 is commencing a scheduled reactor shutdown due to a leak in the Drywell. The Shift Supervisor has directed that the Drywell and Torus be de-inerted so that an entry team can inspect the Drywell prior to cold shutdown. The unit is currently at 20% power and is scheduled to be <15% power in three hours.

Which ONE of the following describes the process for purging the containment to obtain 19.5% Oxygen for Drywell entry at the earliest possible time?

A. May immediately begin purging the Torus and venting the Drywell.

B. May immediately begin purging the Drywell and the Torus concurrently.

C. Must wait until the unit is <15% power then commence purging the Torus and venting the Drywell.

D. Must wait until the unit is <15% power then commence purging the Drywell and the Torus concurrently.

K/A: G2.3.9 Knowledge of the process for performing a containment purge.

References: 34SO-T48-002-2, pg.17

A. Correct answer.

B. Incorrect since cannot purge the Drywell and Torus concurrently when in Mode 1,2 or 3.

C. Incorrect since you don't have to wait until 15% power to start de-inerting. Since the shutdown is scheduled then you can begin 24 hours prior to reaching 15%.

D. Incorrect since you don't have to wait until 15% power to start de-inerting and you can't purge the Drywell and Torus concurrently when in mode 1,2 or 3.

Hatch Edit - Modified the stem for common statements in the answers. Added May or Must to each answer, and Changed the "A" and "C" answers to purge the Torus and vent the Drywell to reflect Plant Hatch's normal method of de-inerting.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A B C A C B C C C D Scramble Range: A - D

97. G2.4.1 001

Unit 2 is operating at 100% power. In accordance with 31EO-EOP-012-2, PC flowchart DW/T path, RC-1 must be performed per RC point A, before drywell temperature reaches 340°F and before the drywell is sprayed.

Which ONE of the following is the reason for performing RC-1?

A. To prevent exceeding the design temperature of the drywell structure.

B. To prevent exceeding the maximum normal operating temperature of the drywell with the reactor at power.

C. To ensure the reactor is shutdown by control rod insertion should emergency depressurization be required.

D. To ensure drywell temperature remains below the design temperature of the environmentally qualified drywell components.

K/A: G2.4.1 Knowledge of EOP entry conditions and immediate action steps.

References: LR-LP-20310-07, pg. 59

A, B and D are incorrect but are all plausible since they are related to containment temperature.

C. Correct answer.

Hatch Edit - Due to RO level question, added more information in the stem to help an RO determine what RC[A] point A is and the location of the actions on the PC Chart.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C D A A C C C D A B Scramble Range: A - D

98. G2.4.11 001

An event has occurred on **Unit 1,** you note that the HPCI turbine is coming up to rated speed and the valves are repositioning for injection. Plant conditions are as follows:

- Reactor water level +37 inches controlled by Feedwater
- Drywell Pressure +1.9 psig

Which ONE of the following indicates the **immediate** action(s) that should be taken per 34AB-E10-001-1, Inadvertent Initiation of ECCS/RCIC?

A. Confirm initiation signal is not valid and shutdown HPCI per applicable operating procedure.

B. Confirm initiation signal is valid and verify proper system operation per applicable operating procedure.

C. Inhibit ADS using ADS Auto Logic Inhibit Switches 1B21-S7A AND 1B21-S7B on 1H11-P602.

D. Shutdown HPCI by placing E41-F001 (Steam Supply) to close and place the Aux Oil Pump in Pull-to-Lock.

K/A: G2.4.11 Knowledge of abnormal condition procedures.

References: 34AB-E10-001, pg 1 and 2
34SO-E41-001-2, pg 27 (Sect. 7.4)

A. Incorrect since initiation signal is valid.

B. Correct answer.

C. Incorrect since this is a Subsequent Action at Shift Supervisors discretion.

D. Incorrect since this is not an action in the procedure but could be directed if the initiation signal was not valid.

Hatch Edit - Changed stem to "An event has occurred on Unit 1", from is at 100% RTP since 1.9 psig in the drywell would scram the reactor. Changed "D" answer, since this would be an approriate action per the system operating procedure for the given condition.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B C C D A B B A B C Scramble Range: A - D

Final Submittal

(Blue Paper)

HATCH OCTOBER/NOVEMBER 2005 EXAM

05000321/2005301 & 05000366/2005301

OCTOBER 28, 2005, (WRITTEN) AND
OCTOBER 31 - NOVEMBER 4, 2005

FINAL SRO

WRITTEN EXAMINATION

11/28/05

5. 205000G2.1.22 001

Which ONE of the following lists the plant Modes that it is acceptable to have Shutdown Cooling in operation?

A. 2 and 3 only.

B. 2, 3 and 4.

C. 4 and 5 only.

D. 3, 4 and 5.

K/A: G2.1.22 Ability to determine Mode of operation.

References: Tech Spec SR 3.5.1.2
Tech Spec SR 3.9.7
Tech Spec SR 3.9.8

A. Incorrect since the Startup procedure requires Shutdown Cooling to be isolated prior to entering Mode 2.

B. Incorrect since the Startup procedure requires Shutdown Cooling to be isolated prior to entering Mode 2.

C. Incorrect since the Startup procedure requires Shutdown Cooling to be isolated prior to entering Mode 2.

D. Correct answer. System allowed to be in Shutdown Cooling alignment in Mode 3 per TS SR 3.5.1.2.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D C B A C D C C B A Scramble Range: A - D

10. 212000A2.16 001

Unit 1 is shutting down for a maintenance outage with the following conditions present:

- APRMs reading 14-15%.
- IRMs reading mid-scale on range 10.
- Turbine is tripped with bypass valves controlling pressure at 1005 psig.
- MSIVs open.
- OPRM System is Operable.

Which ONE of the following will result from placing the Reactor Mode Switch in the Start/Hot Stby position and what procedure should be used as guidance?

A. MSIVs will close; re-open using 34GO-OPS-001-1, .

B. Reactor Scram; execute 34AB-C71-001-1, Scram Procedure.

C. Control Rod Block; bypass RWM and continue with 34GO-OPS-013-1/2, Normal Plant Shutdown.

D. Turbine Bypass Valves close; control reactor pressure using 34SO-B21-001-1, Automatic Depressurization (ADS) and Low-Low Set System (LLS).

K/A: A2.16 Ability to (a) predict the impacts of the following on the REACTOR PROTECTION SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Changing mode switch position.

References: SI-LP-01001-03, pg. 47 and 53 (Table 1)

A. Incorrect since the MSIV close signal is bypassed when not in RUN.

B. Correct answer since APRMs are >13%.

C. Incorrect since you do not continue with the associated shutdown procedure but use the scram procedure. A rod block does occur due to the scram.

D. Incorrect since the Bypass Valves only close on a low vacuum signal.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B B B C D C A A C A Scramble Range: A - D

13. 215002G2.1.11 001

Unit 2 is starting up after a forced outage. The current power level is 30%. Both Rod Block Monitors are determined to be INOPERABLE at 0900 and cannot be repaired for 24 hours.

Which ONE of the following actions will meet the requirements of the Technical Specifications within the specified time?

A. RBM channel A is placed in trip at 1100.

B. RBM channel B is placed in trip at 1500.

C. Both RBM channels are placed in trip at 1700.

D. Reactor power is reduced to approximately 27% at 0950.

K/A: G2.1.11 Knowledge of less than one hour technical specification action statements for systems.

References: Tech Spec 3.3.2.1
Table 3.3.2.1-1

A. Incorrect since one RBM channel must be placed in trip within 1 hour (by 1000) or power reduced to <29% to exit the applicability.

B. Incorrect since one RBM channel must be placed in trip within 1 hour (by 1000) or power reduced to <29% to exit the applicability.

C. Incorrect since one RBM channel must be placed in trip within 1 hour (by 1000) or power reduced to <29% to exit the applicability.

D. Correct answer. This will place the unit at a power level that the RBMs are not required to be OPERABLE.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D D A B A D D A C C Scramble Range: A - D

14. 215003G2.2.25 001

Which ONE of the following is the basis for requiring the minimum number of IRMs to be OPERABLE when the unit is in Mode 2 or Mode 5?

A. To provide protection against local control rod withdrawal errors to prevent exceeding the peak energy fuel failure threshold criterion.

B. Provides protection against transients where thermal power increases slowly and protects the fuel clad by ensuring that the MCPR safety limit is not exceeded.

C. Provides a backup to the Rod Worth Minimizer system by preventing an out of sequence control rod withdrawal during low power conditions.

D. Ensures the rate of power increase in any part of the core during startup conditions is monitored and prevented from exceeding the analyzed thermal limits.

K/A: G2.2.25 Knowledge of the bases in technical specifications for limiting conditions for operations and safety limits.

References: Tech Spec Bases B3.3.1.1 (1a), pg. B3.3-4

A. Correct answer.

B. Incorrect since the IRMs do provide protection against fuel failure, but not for the MCPR safety limit.

C. Incorrect since the IRMs do not prevent an out of sequence control rod from being moved but it does provided mitigation of the resulting power excursion.

D. Incorrect since the IRMs do not monitor a rate of power increase.

Hatch Edit - Changed to minimum number of operable channels to reduce confusion in the stem. This is due to Hatch TS only requires 2 IRMs when certain limitations and requirements in foot note "D" of TS LCO are met. Also, Changed "B" answer since monitoring core characteristics is a purpose of the IRMs and without the minimum number the purpose would not be met.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A D D B A C A C B B Scramble Range: A - D

16. 215004G2.1.33 001

Core Verification checks have just been completed for **Unit 2** and it has been determined that several fuel bundles need to be repositioned. The SRMs are reading as follows:

- SRM A: 2 cps
- SRM B: 3 cps
- SRM C: 2 cps
- SRM D: 5 cps

Which ONE of the following specifies the locations that fuel movements are permissible?

(Reference Provided)

A. All Quadrants.

B. Quadrants A and C.

C. Quadrants B and D.

D. None of the Quadrants.

K/A: G2.1.33 Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.

References: Tech Specs section 3.3.1.2, SR 3.3.1.2.2
SI-LP-01201-00, Figure 3

A. Incorrect since an SRM has to be OPERABLE in the fueled region and an adjacent region.

B. Incorrect since an SRM has to be OPERABLE in the fueled region and an adjacent region.

C. Incorrect since an SRM has to be OPERABLE in the fueled region and an adjacent region.

D. Correct answer.

Hatch Edit - reference provided (Unit 2 Core Map).
MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D A C D A B A D B B Scramble Range: A - D

24. 223002A2.04 001

Unit 1 is in the process of venting the Torus when rad monitor 1D11-K621A, DW Wide Range Radiation level instrument, failed upscale.

Which ONE of the following describes the effect on the venting evolution and the sequence of actions required to continue the evolution?

(Reference Provided)

A. Since only one rad monitor failed then the evolution is not affected at this time. Notify I&C of the failed instrument and refer to TRM T3.3.3, Non Type A, Non-Category 1 Post Accident.

B. Verify that Torus outboard vent valve 1T48-F326 closes. When the monitor is repaired reset the GRP II, reset the rad monitor, and then re-open the Torus outboard vent valve to continue venting the Torus.

C. Alarm CNMT DIV I/II RADIATION HIGH is received and Torus vent valve 1T48-F318 automatically closes. When the monitor is repaired reset the rad monitor and re-open the Torus vent valves to continue venting the Torus.

D. Verify that Torus inboard vent valve 1T48-F318 closes. When the monitor is repaired reset the rad monitor, reset GRP II, and then re-open the Torus inboard vent valve to continue venting the Torus.

Provide Reference Unit 1, TRM LSFD PCIS-09

K/A: A2.04 Ability to (a) predict the impacts of the following on the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Process radiation monitoring system failures.

References: 34AR-602-436
SI-LP-05101-01, pg. 6
Unit 1, TRM LSFD PCIS-09

A. Incorrect since either rad monitor will cause the GRP II valves to close.

B. Incorrect since you have to reset the GRP II before reseting the rad monitor or the valves will not re-open.

C. Incorrect since the alarm is not initiated from this rad monitor. Also, the GRP II has to be reset.

D. Correct answer.

Hatch Edit - Added noun name and the word sequence to stem. Modified the "B" answer to 1T48-F326 (only) and "D" to 1T48-F318 (only) due to only one valve going closed when one monitor trips. Need Ref LSFD PCIS-09

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D D D B B D C C A B Scramble Range: A - D

42. 290002G2.2.22 001

Unit 2 is operating at 30% RTP shortly after starting up following a refueling outage. After reviewing the current Recirc Loop flow data and Jet Pump Dp's the Shift Technical Advisor determines that Jet Pump 11 is not meeting the requirements of Tech Spec SR 3.4.2, Jet Pump Operability.

Which ONE of the following is the correct action to take and the reason for the action?

A. Place the unit in Mode 3 within 12 hours due to Jet Pump 11 being declared INOPERABLE based on Tech Spec 3.4.2.

B. Reduce power to $\leq$ 25% RTP immediately because the Jet Pump data is not required at this power level.

C. Secure the 2A Recirc Pump since the surveillance requirements are not required to be met during single loop ops.

D. Continue plant start-up and perform the Jet Pump surveillance again within 24 hours.

K/A: G2.2.22 Knowledge of limiting conditions for operations and safety limits.

References: Tech Spec 3.4.2
2-SR-3.4.2.1, Rev.7
34SV-SUV-023-2, pg.2

A. Correct answer.

B. Incorrect since once the unit is >25% RTP the surveillance is due within 24 hours. Lowering power to $\leq$ 25% RTP does not get the unit out of the Mode of Applicability.

C. Incorrect since the surveillance data is available. It is true that the surveillance cannot be run in single loop ops.

D. Incorrect since the data is available at this time. Cannot wait until the surveillance is due again.

Hatch Edit - Deleted "Engineering has not yet established new baseline data for Recirc Loop flows and core plate Dp but is expected to have this data within 12 hours. " as this would have already been performed, and does not add value to the question. Modified answers "A" and "D" to due to stem modification.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A A B A A C C B A D Scramble Range: A - D

43. 290003A2.03 001

Unit 2 had just received a Refuel Floor High Radiation alarm. An operator observes that all Unit 2 Refueling Floor ARMs are above their trip setpoint. A Unit 1 Operator reports that the Pressurization Mode Trip Ch. A & B lights are **NOT ILLUMINATED** on panels 1H11-P657 AND 1H11-P654.

Which ONE of the following describes the expected response of the Control Room Ventilation System and the required action to be taken per 34SO-Z41-001-1, Control Room Ventilation System?

The Control Room Ventilation System should ...

A. have shifted to the isolation mode of operation; verify 1Z41-F016, Outside Air Intake Damper, is closed.

B. have shifted to the pressurization mode of operation; manually initiate the pressurization mode per section 7.1.3.

C. have shifted to the purge mode of operation; stop HVAC units 1Z41-B003A and 1Z41-B003C.

D. remain in the normal lineup; verify HVAC units 1Z41-B003A and 1Z41-B003C are running with the supply dampers open.

K/A: A2.03 Ability to (a) predict the impacts of the following on the CONTROL ROOM HVAC; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Initiation/reconfiguration failure.

References: 34SO-Z41-001-1, pg.7 - 10

A. Incorrect since the HVAC should have shifted to the pressurization mode.

B. Correct answer.

C. Incorrect since the HVAC should have shifted to the pressurization mode.

D. Incorrect since the HVAC should have shifted to the pressurization mode.

Hatch Edit - Added that all refuel floor ARMs are above their trip setpoint.
MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B B D B A B A C A B Scramble Range: A - D

45. 295001G2.1.32 001

Unit 2 is operating at 100% RTP. A fault in the supply breaker for the 2B Recirc Pump causes it to trip. The speed of the 2A Recirc Pump is lowered to approximately 28% as directed by the Shift Supervisor.

Which ONE of the following describes the indications for total core flow and any necessary actions?

Total core flow....

A. indication remains accurate due to the out-of-service loop jet pump flow being subtracted instead of added to the in-service loop jet pump flow. Implement requirements of TS 3.4.1, Recirculation Loops Operating, within 12 hours.

B. indication remains accurate due to the out-of-service loop jet pump flow being added instead of subtracted to the in-service loop jet pump flow. Implement requirements of TS 3.4.1, Recirculation Loops Operating, within 24 hours.

C. indication is inaccurate due to the out-of-service loop jet pump flow being subtracted instead of added to the in-service loop jet pump flow. Jet Pump "A" and "B" flows should be manually added to determine Total Core Flow.

D. indication is inaccurate due to the out-of-service loop jet pump flow being added instead of subtracted to the in-service loop jet pump flow. Increase the running Recirc Pump speed to >32% immediately.

K/A: G2.1.32 Ability to explain and apply all system limits and precautions.

References: 34AB-B31-001-2, pg. 3

A. Incorrect since the Total core flow reading is inaccurate. Also, the Tech Spec is required to be implemented within 24 hours.

B. Incorrect since the Total core flow reading is inaccurate and the out-of-service loop jet pump flow is subtracted from the in-service jet pump flow to obtain total core flow.

C. Correct answer.

D. Incorrect since the out-of-service loop jet pump flow is subtracted from the in-service jet pump flow to obtain total core flow. The speed of the running recirc pump does not need to be increased above 41 X 10^6 lbm/hr immediately.

Hatch Edit - Deleted "ICS" and changed Recirc speed to 28% (below 30%) in stem. In answer "C", deleted that engineer entered subsitute value. Plant hatch has the operator add the jet pump loop flows to determine total core flow.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C D B A D D D B B A Scramble Range: A - D

47. 295003G2.2.25 001

Unit 1 is preparing to startup after a refueling outage. You are verifying the Tech Spec requirements for AC Sources - Operating. Unit 2 is currently in Mode 4.

Which ONE of the following conditions would prevent the Unit 1 from entering Mode 2 from Mode 4?

A. Only one feeder breaker to 1E ESF bus is OPERABLE with 1E ESF bus fed from 1C SAT and 1G ESF bus fed from 1D SAT.

B. 2D SAT is supplying power to both 2E and 2G ESF buses.

C. The 2A and the 2C Diesel Generators are INOPERABLE and unavailable at this time.

D. The 1F ESF bus is being supplied by 1D SAT with the feeder breaker from the 1C SAT out-of-service.

K/A: G2.2.25 Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.

References: Tech Spec Section 3.8.1 Bases (LCO Section)

A. Incorrect since this is allowed per bases.B.B. Incorrect since this meets the power requirments for the LPCI valve power supplies.

C. Correct answer. One of these D/G's is required for SBGT.

D. Incorrect since this is allowed per bases.
Incorrect since this meets the power requirments for the LPCI valve pow

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C A C C D A A D A C Scramble Range: A - D

50. 295006AA2.02 001

Following a **Unit 1** reactor scram from low reactor water level the operator reports that numerous control rods indicated Full-In Over Travel and the remaining control rods indicated Full In.

Based on this information, which ONE of the following actions should be taken by the Shift Supervisor?

A. Direct the operator to Initiate ARI and verify Recirc Pumps are runback ($\leq$ 320 rpm).

B. After entering 31EO-EOP-010-1, RC RPV Control (Non-ATWS), exit RC/Q and direct the operator to perform 34AB-C71-001-2, Scram Procedure.

C. After entering 31EO-EOP-010-1, RC RPV Control (Non-ATWS), direction should be given to manually insert control rods per 34AB-C11-005-1, Control Rod Insertion Methods.

D. Direct the operator to momentarily place the Mode Switch in Refuel to verify the One Rod Permissive light and then move the Mode Switch back to SHUTDOWN.

K/A: AA2.02 Ability to determine and interpret the following as they apply to SCRAM: Control rod position.

References: 34AB-C71-001-2
31EO-EOP-010-1

A. Incorrect since the control rods are fully inserted and the override in 31EO-EOP-010-1 directs exiting the RC/Q leg prior to this action being directed.

B. Correct answer since all of the control rods are fully inserted and 31EO-EOP-010-1 was entered due to low reactor water level.

C. Incorrect since the control rods are fully inserted.

D. Incorrect since 34AB-C71-001-2 does not address moving the mode switch back to Refuel to check this.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B A A B D A C C D A Scramble Range: A - D

55. 295012AA2.02 001

The **Unit 2** reactor has scrammed. A small break LOCA has occurred with the following conditions present:

- Reactor Water level	+8 inches
- Reactor Pressure	940 psig
- HPCI System	Injecting
- Drywell Temperature	270°F steady
- Drywell Pressure	20 psig
- Torus Pressure	19.5 psig
- Suppression Pool level	160 inches

Based upon the above conditions, which ONE of the following actions should the operators perform?

A. Initiate Drywell Sprays per 34SO-E11-010-2.

B. Perform Emergency Depressurization.

C. Vent the Drywell irrespective of offsite release rates per 31EO-EOP-101-2.

D. Stop injecting into RPV from sources external to primary containment except those required adequate core cooling.

K/A: AA2.02 Ability to determine and interpret the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell pressure.

References: PC-1, Primary Containment Control (31EO-EOP-012-2S)
LR-LP-20306-09, various figures

A. Correct answer per PC/P leg and values with graphs 7 and 8.

B. Incorrect since conditions are not met for Emergency Depressurization.

C. Incorrect since this is not performed unless PCP limit (Graph 13) is exceeded.

D. Incorrect since this would only be done due to exceeding the SRV Tailpipe limit (Graph 6). Conditions are not met for this.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A A D C A C B D D A Scramble Range: A - D

56. 295014G2.1.33 001

Unit 1 is in Mode 5 and preparations are being made to support removal of 5 Control Rod Drives. All Tech Spec requirements are met at this time and fuel movement is in progress.

While the operator is withdrawing the last control rod he notices the SRM count rate is increasing and stops withdrawing the control rod. It is determined that the wrong control rod has been withdrawn to position 36. The initial attempt to insert the rod with the rod movement switch fails.

Which ONE of the following describes the actions to be taken and the supporting document that requires the actions?

A. Immediately initiate action to fully insert all other control rods and suspend removal of all CRD mechanisms per Tech Spec 3.10.5, Single CRD Removal - Refueling.

B. Immediately suspend loading fuel, suspend removal of all CRD mechanisms and continue actions to insert the withdrawn control rod per Tech Spec 3.10.6, Multiple CRD Removal - Refueling.

C. Verify all control rods other than the stuck control rod in a five by five array are inserted and disarmed and continue actions to insert the withdrawn control rod per Tech Spec 3.10.5, Single CRD Removal - Refueling.

D. Immediately suspend loading fuel, suspend removal of all CRD mechanisms and initiate actions to electrically disarm the withdrawn control rod per Tech Spec 3.10.6, Multiple CRD Removal - Refueling.

K/A: G2.1.33 Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.

References: Tech Spec 3.10.5
Tech Spec 3.10.6

A. Incorrect since Tech Spec 3.10.5 requirements are suspended per TS 3.10.6.

B. Correct answer.

C. Incorrect since Tech Spec 3.10.5 requirements are suspended per TS 3.10.6.

D. Incorrect since electrically disarming the control rod would not be required until all rod insertion methods proved unsuccessful. Remainder of the answer is correct.

Hatch Edit - modified question
MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B A D C B D A D D C Scramble Range: A - D

58. 295017G2.4.30 001

An event has occurred on Unit 1. A Prompt Offsite Dose Projection indicates an Offsite Release rate of 2.5 mr (TEDE) in an hour.

Which ONE of the following specifies the time frame in which the NRC must be notified of this condition?

The NRC must be notified no later than ...

A. 15 minutes.

B. 1 hour.

C. 4 hours.

D. 8 hours.

K/A: G2.4.30 Knowledge of which events related to system operations/status should be reported to outside agencies.

References: LT-LP-30004-06, pg. 8 and 73EP-EIP-001-0 Ver15.1 Page 9

Licensee to verify that this condition does not warrant an Emergency Declaration. (Changed stem and this is an Emergency declaration.)

A. Incorrect since time limit to NRC is 1 hour. State notification is 15 minutes.

B. Correct since the time limit is 1 hour based on a required Emergency Declaration.

C. Incorrect since time limit is 1 hour.

D. Incorrect since time limit is 1 hour.

Hatch Edit - Revised question to add operational validity, also an Emergency Classification does exist for this question.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B D D A B B D C D D Scramble Range: A - D

69. 295028EA2.04 001

A LOCA has occurred on **Unit 2** with the following conditions present:

- Drywell temperature is 350°F
- Torus water level is below 215 inches

The SRO needs to determine if Drywell Sprays can be initiated.

Which ONE of the following Drywell pressures would be acceptable for initiating Drywell sprays?

(Reference provided)

A. 5 psig

B. 15 psig

C. 25 psig

D. 35 psig

K/A: EA2.04 Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell pressure.

Provide reference: Drywell Spray Initiation Limit, Graph 8

References: 31EO-EOP-012-2S
Drywell Spray Initiation Limit, Graph 8 (LR-20306 Figure 4)

A, C and D. Incorrect since these pressures are outside the safe area of the curve with Drywell temperature at 350°F.

B. Correct answer.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B B D A B D B C A C Scramble Range: A - D

72. 295030EA2.04 001

Unit 2 Torus water level was approaching 150 inches and you directed the water level to be lowered to 147 inches in preparation for a HPCI quarterly surveillance run.

Which ONE of the following describes the effect and subsequent action, if applicable, of lowering Suppression Pool water level on Drywell-to-Suppression Chamber D/P?

Initial DW pressure is 0.5 psig and Torus pressure is 0.3 psig. Drywell-to-Suppression Chamber D/P will...

A. **decrease**. If the D/P decreases by 0.7 psid, place the plant in Mode 3 within 12 hours due to inoperable Drywell to Torus Vacuum breakers.

B. **decrease**. If the D/P decreases by 0.7 psid, continue plant operations. No action is required by Tech Specs for the increased D/P.

C. **increase**. If the D/P increases by 0.7 psid, place the plant in Mode 3 within 12 hours due to inoperable Drywell to Torus Vacuum breakers.

D. **increase**. If the D/P increases by 0.7 psid, continue plant operations. No action is required by Tech Specs for the increased D/P.

K/A: EA2.04 Ability to determine and/or interpret the following as they apply to LOW SUPPRESSION POOL WATER LEVEL: Drywell/suppression chamber differential pressure.

References: Tech Spec section 3.6.2.2
34AR-601-902-2 (Tile 601-127)

A. Incorrect since D/P will increase with lowering Torus level.

B. Incorrect since D/P will increase with lowering Torus level.

C. Incorrect since there is no Tech Spec action. The D/P change is not great enough to declare the vacuum breakers inop and is in the wrong direction.

D. Correct answer.

Hatch Edit - Added initial DW and Torus pressure for clarification of stem. Modified answers to be more specific about pressure and Inop component.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D A D D C A B A A C Scramble Range: A - D

74. 295031G2.4.30 001

Which ONE of the following situations require the NRC to be notified within four (4) hours per 10 CFR 50.72?

A. A reactor startup has just commenced and when the first control rod has been fully withdrawn, a reactor scram occurs from Scram Discharge Volume Hi Level.

B. The off-site power supply to 4160 Bus 2E is lost and Diesel Generator 2A starts and energizes Bus 2E.

C. The unit is operating at 50% RTP when a Feedwater Level Control problem results in a reactor scram on low reactor water level (Level 3). Level is restored after reaching -10 inches.

D. During HPCI logic testing with the unit in Mode 1 the system is inadvertently initiated and injects into the vessel prior to being manually tripped by the operator.

K/A: G2.4.30 Knowledge of which events related to system operations/status should be reported to outside agencies.

References: 10 CFR 50.72

A. Incorrect since the reactor is not critical at this time. This would be an 8 hour report.

B. Incorrect since this meets the 8 hour requirement for a valid start of the DG.

C. Correct answer since the reactor is critical at this time and a valid RPS signal is generated.

D. Incorrect since this is not a valid signal to start the HPCI system.

Hatch Edit - Added reactor sub-critical to clarify "A" answer, since cold shutdown rod configuration does not exist.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C D A D D C A A A D Scramble Range: A - D

78. 295038EA2.03 001

Which ONE of the following is an action that **must** be performed by the Emergency Director and **CANNOT** be delegated?

A. The decision to request state aid during an emergency.

B. Authorization of 10CFR20 exposure limits to be exceeded by plant personnel.

C. The decision to dismiss non-essential personal from the site during an Unusual Event or higher.

D. Authorization to invoke 10CFR50.54X requirements as necessary.

K/A: EA2.03 Ability to determine and/or interpret the following as they apply to HIGH OFF-SITE RELEASE RATE: Radiation levels.

References: 10AC-MGR-006-0, pg.10
73EP-EIP-004-0, pg.3

A. Incorrect since this decision is for Federal and not State help.

B. Correct answer.

C. Incorrect since this decision can be delegated at the Unusual Event classification.

D. Incorrect since this can be invoked by the SRO in charge of the unit.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B B B D D C D B B D Scramble Range: A - D

87. G2.1.34 001

Unit 1 is operating at 100% RTP when RWCU inlet conductivity unexpectedly increases to 5.9 μmhos/cm.

Which ONE of the following describes minimum actions required for this condition?

A. Backwash and precoat the Condensate and Reactor Water Cleanup demins.

B. Reduce power to <400MWE and isolate all Main Condenser Water Boxes.

C. Initiate an orderly shutdown in accordance with 34GO-OPS-013-1, Plant Shutdown.

D. Enter 34AB-C71-001-1, Scram Procedure, and scram the reactor

K/A: G2.1.34 Ability to maintain primary and secondary plant chemistry within allowable limits.

References: 34AB-N61-001-1

A. Incorrect since a scram is required. Action is for step 4.2.2 (lower conductivity).

B. Incorrect since a scram is required. Action is for step 4.2.3 (lower conductivity).

C. Incorrect since a scram is required. Action is for step 4.2.4 (lower conductivity).

D. Correct answer per 34AB-N61-001-1, step 4.2.5

Hatch Edit - Replace question to add more operational validity
MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: D D A A A C C A C C Scramble Range: A - D

88. G2.1.4 001

Given the following conditions:

- **Unit 1** is in a refuel outage with all fuel removed from the reactor
- **Unit 2** is operating at power

Which one of the following is correct concerning staffing requirements per 30AC-OPS-003-0, Plant Operations?

A. A Shift Manager is not required during this condition.

B. Two SRO licensed individuals are required to be onsite.

C. Shift Technical Adviser is not required during this condition.

D. Three Unit Operators are required, two are required for Unit 2 and one for Unit 1.

K/A: G2.1.4 Knowledge of shift staffing requirements.

References: 30AC-OPS-003-0, pg. 10 - 13
Tech Spec section 5.2, Unit Staff
10 CFR 50.54 Table

A. Incorrect since the Shift Manager is required on site at all times per Tech Specs.

B. Correct answer.

C. Incorrect since STA is required with a unit in Mode 1, 2 or 3.

D. Incorrect per procedure. It doesn't designate the positions for each unit.

Hatch Edit - Changed "D" answer. Added the word required for Unit 2. Otherwise it would have been allowable to have 2 on Unit 2 and 1 on Unit 1.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B D B A C A D C B D Scramble Range: A - D

90. G2.2.19 001

Which ONE of the following individuals is authorized to approve maintenance activities without a Maintenance Work Order (MWO)?

A. Nuclear Plant General Manager.

B. Site Vice President.

C. Work Control SRO.

D. Plant Maintenance Manager.

K/A: G2.2.19 Knowledge of maintenance work order requirements.

References: 50AC-MNT-001-0, pg. 21

A. Correct answer. He is one of the individuals acceptable to authorize emergency work.

B, C and D. Incorrect since these individuals are not authorized to approve emergency work without an MWO.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A A C C C A B B B B Scramble Range: A - D

91. G2.2.25 001

Which ONE of the following describes the basis for the Minimum Critical Power Ratio (MCPR) Safety Limit?

A. This limit ensures that more than 99.9% of the fuel rods in the core are expected to avoid transition boiling.

B. This limit ensures that fuel damage will not result in the release of radioactive materials in excess of the guidelines of 10 CFR, Parts 20, 50, and 100.

C. The MCPR safety limit ensures that the 1% limit on the fuel cladding plastic strain is not exceeded during all postulated operational transients.

D. Maintaining the safety limit above the MCPR limit ensures that cladding temperatures stay below that which is required for a zirconium-water reaction for all fuel rods.

K/A: G2.2.25 Knowledge of bases in technical specifications for limiting conditions for operations and safety.

References: TS Bases Section 2.0
TS Bases Section 3.2

A. Correct answer.

B. Incorrect since this is the basis for the LHGR limits.

C. Incorrect since this is the basis for the APLHGR limits.

D. Incorrect since this is not true for all fuel rods. It could be true for 99.9% of the fuel rods.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A D D A B B B B C B Scramble Range: A - D

95. G2.3.6 001

It has been determined that the **Unit 2** Floor Drain Sample Tank (FDST) should be discharged to the river in accordance with 34SO-G11-021-2, Radwaste Sample Tank Operating Procedure, Liquid Effluents Discharge permit. All prerequisites have been met to perform the valve lineup.

Which ONE of the following indicates the final level of authorization, in accordance with the Discharge Permit, to perform the discharge?

A. Chemistry Foreman

B. Shift Supervisor

C. Shift Manager

D. Operations Manager

K/A: G2.3.6 Knowledge of the requirements for reviewing and approving release permits.

References: Form HPX-0149 and 34SO-G11-021-2, pg. 23

A. Incorrect since Chemistry has already sampled the FDST prior to this point.

B. Correct answer

C. Incorrect since this is occuring on Unit 2 and the Shift Supervisor is able to approve this evolution.

D. Incorrect since the Plant Manager approval is not required.

Hatch Edit - Modified question to better match K/A for release permit. Old question did not require release permit.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: B C A A A C B C A D Scramble Range: A - D

99. G2.4.5 001

Which ONE of the following procedures, if entered, will **NOT** be superseded by the EOP's if an EOP entry condition is a DIRECT result of actions taken in the procedure?

A. 34AB-R22-003, Station Blackout.

B. 34AB-E11-001, Loss of Shutdown Cooling.

C. 34AB-C71-001, Scram Procedure.

D. 34AB-P51-001, Loss of Instrument or Service Air.

K/A: G2.4.5 Knowledge of the organization of the operating procedures network for normal / abnormal / and emergency evolutions.

References: 34AB-R22-003

A. Correct answer since the EOP Entry condition is a direct cause of the Station Black.

B, C, and D. Incorrect since the these procedures will not be superseded by an EOP entry condition.

Hatch Edit - At Hatch, 34AB-R22-003 supersedes the EOPs, unless the EOP entry is caused by something other than the Station Black. Modified stem and answers to match Plant Hatch.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: A D C D B C D B B C Scramble Range: A - D

100. G2.4.6 001

During implementation of the EOP's, a major equipment status change occurs such that the answer to a previous **Decision Step** has changed. Re-addressing the **Decision Step** would result in different actions which would improve the condition of the plant. The conditions that changed do not result in a new entry condition to the EOP's.

Which ONE of the following actions should be taken to address this situation?

A. Continue on in the EOP's. EOP flow charts are only re-entered when a new entry condition exists.

B. Go back and re-address the decision step and then continue on in the EOP's.

C. Re-enter the applicable EOP at the beginning to ensure plant conditions are acceptable and perform the decision step at the appropriate point.

D. Continue on in the EOP's until you get to a Wait Until step, at which time you should go back and re-address the decision step prior to continuing on in the EOP's.

K/A: G2.4.6 Knowledge of symptom based EOP mitigation strategies.

References: LR-LP-20307-04, pg.5

A. Incorrect since the EOP should be re-entered due to a major equipment status change has occurred.

B. Incorrect since you only re-address the Decision Step if you re-enter the EOP.

C. Correct answer.

D. Incorrect since you do not go back to the Decision Step after you reach a Wait Until step.

Hatch Edit - Had possibly 2 correct answers "A" and "C" depending on whether or not the condition change was caused by a major equipment status change. To clarify, added "a major equipment status change occurs" and deleted that conditions change. Changed the correct answer to "C" after modifing the "A" answer to state that re-entry is only allowed on a new entry condition.

MCS Time: 1 Points: 1.00 Version: 0 1 2 3 4 5 6 7 8 9
Answer: C C C A C D B B A A Scramble Range: A - D