

Final Submittal
BROWNS FERRY EXAM
50-259, 50-260, &
50-296/2004-301

April 23 - 30, 2004

1. Combined /SRO Written Exam with KAs,
Answers, References, and Analysis

Final Submittal

(Blue Paper)

1. Senior Operator Written Examination

Final Submittal

(Blue Paper)

1. Reactor Operator Written Examination

N/A

Final Written Exam

(Browns Ferry 2004-301)

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

Applicant Information

Name:	
Date:	Facility/Unit: Browns Ferry Nuclear Plant
Region: II	Reactor Type: GE
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the examination you must achieve a final grade of at least 80.00 percent overall, with a 70.00 percent or better on the SRO-only items if given in conjunction with the RO exam: SRO-only exams given alone require an 80.00 percent to pass. You have eight hours to complete the combined examination, and three hours if you are only taking the SRO portion.

Applicant Certification

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

Applicant's Signature

Results

RO / SRO-Only / Examination Values: ___ / ___ / ___ Points

Applicant's Scores: ___ / ___ / ___ Points

Applicant's Grades: ___ / ___ / ___ Percent

testing control rod 30-31, the operator notes that the CRD is reading 360°F.

Which ONE of the following describes the effect this could have on the scram time associated with control rod 30-31 and the required action to be taken by Tech Specs?

The scram time may be.....

- A. faster than normal; requires the control rod to be declared INOPERABLE.
- B. ✓ slower than normal; requires the control rod to be declared "slow" or an Engineering Evaluation performed.

2. 203000K5.01 001/T2G1//RHR SYSTEM/C/A 2.3/3.4/N/BF04301/R/TCK . .

Unit 3 is in Mode 4 preparing to startup when the Operator notices that the actuator position indication for the RHR Loop II Testable Check Valve is de-energized. Initial troubleshooting indicates that there is a short in the circuit.

Which ONE of the following describes the effect on the RHR System and plant startup?

RHR Loop II is

- A. degraded but OPERABLE, plant startup must be delayed until an evaluation is performed.
- B. fully OPERABLE, plant startup can continue,
- C. INOPERABLE, plant startup must be delayed until repairs are complete.
- D. INOPERABLE, plant startup can continue.

K/A 203000 K5.01 Knowledge of the operational implications of the following concepts as they apply to RHR/LPCI: INJECTION MODE: Testable check valve operation. (2.3/3.4)

References: Tech Spec 3.5.1, ECCS - Operating.
Technical Requirements Manual, 3.5.1 - RHR Cross-Connect.

- A. Incorrect since an evaluation does not need to be performed prior to plant startup.
- B. Correct answer.
- C and D. Incorrect since the RHR system is OPERABLE.

Which ONE of the following supplies power to the "1B" RHR Pump motor?

- A. 4 KV Unit Board "2A".
- B. 4 KV Unit Board "2B".
- C. 4 KV Shutdown Board "B".
- D. 4 KV Shutdown Board "C".

4. 206000K2.01 001/T2G1//HPCI/MEM 3.2/3.3/N/BF04301/R/TCK

a 480 Volt power supply?

- A. 3-FCV-093-0003, HPCI STEAM LINE OTBD ISOL VALVE
3-FCV-073-0064, HPCI TURB EXHAUST VACUUM RELIEF VALVE

KIA 206000 K2.01 Knowledge of electrical power supplies to the following: System valves. (3.2/3.3)

References: OPL171.042, Rev.16, pg 32 and 49 of 70
Learning Objective #7
3-01-73, Rev.29

- A. Incorrect since 3-FCV-093-0003 is powered from 250 VDC.
B. Correct answer.
C. Incorrect since 3-FCV-073-0003 is powered from 250 VDC.
D. Incorrect since 3-FCV-073-0016 is powered from 250 VDC.

5. 209001A2.06 001/T2G1//CORE SPRAY/C/A 3.2/3.2/N/BF04301/R/TCK

The 2A Core Spray pump has just been started for performance of the Quarterly Flow Rate surveillance. The operator notes the following conditions:

- MIN FLOW VALVE, 2-FCV-75-9, indicates closed.
- PEST VALVE, 2-FCV-75-22, indicates dual position.
- INBD INJECT VALVE, 2-FCV-75-25, indicates closed.
- System I Core Spray flow on 9-3 Pni indicates 275 gpm.

Which ONE of the following actions is in compliance with 2-01-75, Core Spray System, to prevent pump degradation?

- A. 2A Core Spray pump may be operated with no restrictions.
- B. Continue to operate the 2A Core Spray pump up to 5 minutes at which time the pump must be tripped.
- C. Continue to operate the 2A Core Spray pump up to 4 hours at which time the pump must be tripped.
- D. Increase flow to at least 500 gpm at which time the 2A Core Spray pump may be operated without time limitations.

K/A 209001 A2.06 Ability to (a) predict the impacts of the following on the LOW PRESSURE CORE SPRAY SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Inadequate system flow. (3.2/3.2)

References: OPh171.045, Rev.12, pg 15 of 46
Learning Objective #B2
2-01-75, Rev.74, pg 6 of 60

- A. Incorrect answer since flow is <300 gpm and the min flow valve is closed.
- B. Correct answer since flow is <300 gpm which requires the pump to be secured within 5 minutes.
- C. incorrect since flow is <300 gpm but 4 hours is the limit with flow between 300 gpm and 600 gpm.
- D. Incorrect since increasing flow to only 500 gpm does not allow the Core Spray pump to be ran without limitations. The limit is 600 gpm.

6. 211000G2.2.1 001/T2G1//STANDBY LIQUID CONTR/C/A 3.7/3.6/N/BF04301/R/TCK

Unit 3 is making preparations for startup after a forced outage with the unit in Mode 4. The RQ is performing prestartup checks for the Standby Liquid Control System in accordance with 3-01-63, Standby Liquid Control System step 4.1.6, which states "SLC Storage Tank concentration meets Technical Specification 3.1.7 requirements". The following conditions are noted by the RQ:

- Tank volume 3650 gallons
- Tank temperature 55°F
- Boron Concentration 10%
- Quantity of Boron-IO 190 pounds

Which ONE of the following describes the actions to be taken to meet the prestartup conditions for the SLC system?

(Reference provided)

- A. Place tank heaters in service and raise tank temperature to $> 65^{\circ}\text{F}$.
- B. Verify the conditions above have not changed within 8 hours and then the unit is allowed to transition to Mode 2.
- C. The unit is allowed to go to Mode 2 because the Tech Spec requirements for the SLC System are acceptable. No further actions are required.
- D. Increase tank volume to > 3700 gallons and then sample the tank to verify conditions above have not changed and then the unit is allowed to transition to Mode 2.

KIA 22 1000 G2.2.1 Ability to perform pre-startup procedures for the facility/including operating those controls associated with plant equipment that could affect reactivity. (3.7/3.6)

Provide TS 3.1.7 with Table.

References: 3-01-63, Standby Liquid Control System, Rev.16, pg 6 of 27
Tech Spec section 3.1.7
Tech Spec Table 3.1.7-1

A. Incorrect since Boron Concentration does not have to be lowered to $< 9.2\%$ prior to going into Mode 2. SR 3.1.7.3 allows the concentration to be $> 9.2\%$ if the Table is met.

B. Correct answer. See SR 3.1.7.3 OR statement.

C. Incorrect since there is a requirement to check the Table prior to entering Mode 2.

D. Incorrect since the tank volume only has to be greater than 3007 gallons, not 3700 gallons.

7. 212000A2.03001/T2G1//RPS/C/A 3.3/3.5/N/BF04301/R/TCK

Unit 2 is operating at 85% power. RPS "B" has been placed in the tripped condition due to the failure of 2-PIS-64-56D (High Drywell Pressure 52 Channel). During troubleshooting the IM's report that NONE of the High Drywell Pressure switches will initiate an RPS actuation.

Which ONE of the following most accurately describes the actions/limitations imposed by Tech Specs?

- A. Verify RPS "B" is in the tripped condition immediately and no further actions are required.
- B. Restore RPS trip capability within 1 hour, otherwise, be in Mode 3 within 12 hours.**
- C. Place RPS "A" in the tripped condition within 6 hours, otherwise, be in Mode 3 within 12 hours.
- D. Enter TS 3.0.3 and commence a shutdown within 1 hour and be in Mode 2 within 10 hours.

KIA 212000 A2.03 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: Surveillance testing. (3.3/3.5)

References: 2-01-99 Illustration 3 Rev.55
2-01-64 illustration 2 Rev.74
Tech Spec 3.3.1.1-1 Function 6

- A. Incorrect since RPS Function not met. Action C required to be entered
- B. Correct answer. Action C entered and then Action G as required by Table 3.3.1.1-1.
- C. Incorrect since RPS Function not met. Action B is already met.
- D. Incorrect since 3.0.3 is not entered since this condition is accounted for in the Required Actions.

8. 212000K4.03 001/T2G1//RPS/MEM 3.0/3.1/N/BF04301/R/TCK

Which ONE of the following correctly describes the Unit 1 Reactor Protection System power supply?

- A. RPS " A and RPS "B" receive alternate power from 480V RMOV Board 1B.
- B. RPS " A and RPS "B" can both be powered simultaneously from 480V Shutdown Board 1B.
- C. Both RPS Buses have a mechanical interlock to prevent simultaneously paralleling their normal power supply with their alternate power supply.
- D. RPS Bus alternate power is supplied through a transformer shared with the unit preferred system.

K/A 212000 K4.03 Knowledge of REACTOR PROTECTION **SYSTEM** design feature(s) and/or interlocks which provide for the following: The prevention of supplying power to a given RPS bus from multiple sources simultaneously. (3.0/3.1)

References: OPL171.028, Rev.13, pg 11 of 39
Learning Objective #B4.

- A. Incorrect since the alternate power supply is 480V Shutdown Board 1B.
- B. Incorrect since there ~~is~~ an interlock which prevents both RPS buses from being powered simultaneously from the alternate power source.
- C. Correct answer.
- D. Incorrect since the power is supplied just through a transformer. Unit 2 has the power supplied through a transformer shared with the unit preferred system.

9. 215002A2.05 001//T2G2/RBM/C/A 3.2/3.2/N/BF04301/S/TCK

The Shift Manager has authorized the performance of 2-SR-3.3.2.1.1, Rod Block Monitor (RBM) Functional Test. While performing steps 7.6.25.1 through 7.6.25.5 for " A RBM Upscale Trip, the UO receives:

- CONTROL ROD WITHDRAWAL BLOCK (2-XA-55-5A, Window 7)
- RBM HIGH/INOP (2-XA-55-5A, Window 24)

The UO notes that RBMA HIGH Indicating light on panel 2-9-5 is NOT illuminated and the Instrument Tech did NOT receive ROD BLOCK indication on 2-MQN-92-5A.

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

(Reference provided)

- A. Notify the Shift Manager immediately and he should declare " A RBM Inoperable.
- B. Note the discrepancy on Attachment 2 in the Post Test remarks. Ensure the deficiency is evaluated. No further action is required.
- C. Re-perform section 7.6.25.1 through 7.6.25.5 and if the same indications are received then stop the surveillance and inform the Shift Manager.
- D. Continue with the procedure and notify the Shift Manager after completing sections 7.7.25.1 through 7.7.25.5 for the "B" RBM.

K/A 215002A2.05 Ability to (a) predict the impacts of the following on the ROD BLOCK MONITOR SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Back panel meters and indicating lights. (3.2/3.2)

References: 2-SR-3.3.2.1.1, Rev.3 (Provide as a reference on exam)

- A. Correct answer. Acceptance Criteria not met. See section 6.1.
- B. Incorrect since further action to declare A RBM inoperable is required.
- C. Incorrect since you do not re-perform steps if something doesn't work right.
- D. Incorrect since you stop the procedure until discrepancy is resolved.

10. ~~21 5002~~2.03001/T2G2//NEUTRON MONITORING/MEM 2.8/2.9/B/BF04301/R/TCK

Which ONE of the following describes the power supply to the PRNM system?

RPS A supplies power to

- A. both RBM interface panels and to only half of the APRM chassis.
- B. one RBM interface panel and to only half **of** the LPRM chassis.
- C. both RBM interface panels and to all of the LPRM and APRM chassis.
- D. ~~one RBM interface panel and to all of the APRM chassis.~~

K/A 215002 K2.03 Knowledge of electrical power supplies to the following: APRM channels. (2.8/2.9)

References: OPLf71.148, Rev.7, pg 52
2-OI-92B/C, Rev.33
Enabling Objective #B15

A, B and C. Incorrect since RPS A supplies power to all chassis.

D. Correct answer.

11. 215003A2.02 001/T2G1/IRM/C/A 3.5/3.7/N/BF04301/S/TCK

Unit 3 is making preparations for a plant startup from Mode 4 . IRM G is currently INOPERABLE and IRM A has just failed upscale during testing prior to entering Mode 2.

Which ONE of the following describes the action required by Tech Specs and the impact on plant startup?

- A. Must place the "A" channel in trip within 12 hours. Startup cannot continue.
- B. No actions required by Tech Specs at this time. IRM A or IRM G must be OPERABLE prior to entering Mode 2.
- C. Must place the "A" channel in trip within 6 hours. Startup cannot continue.
- D. No actions required by Tech Specs at this time. If IRM G is Bypassed and "A" channel is placed in trip then Unit 3 can continue with the startup.

KIA 215003 A2.02 Ability to (a) predict the impacts of the following on the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: IRM inop condition. (3.5/3.7)

References: Tech Spec section 3.3.1.1, Action A
Tech Spec Table 3.3.1.1-1, Function 1
OPL171.020, Rev.7, Pg 23 of 55

- A. incorrect since no actions are required with the unit in Mode 4.
- B. Correct answer since only one IRM needs to be declared OPERABLE prior to entering Mode 2.
- C. Incorrect since no actions are required with the unit in Mode 4.
- D. Incorrect since unit startup cannot continue since a rod block will be inserted if first action is taken.

12. 215003A3.03 001/T2G1//RPS/C/A 3.7/3.6/M/BF04301/R/TCK

The reactor has just reached criticality during a reactor startup. A malfunction in the RMCS results in a control rod being continuously withdrawn from 00 to full out position.

With no operator action, which ONE of the following would be the FIRST signal to terminate this reactivity addition event?

- A. SRM Hi HI scram.
- B. IRM HI HI scram.
- C. REACTOR HI PRESSURE scram.
- D. APRM HI HI scram.

K/A 215003 A3.03 Ability to monitor automatic operations of the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM including: RPS status. (3.7/3.6)

References: QPL171.028, Rev.13, pg 19 to 22
Learning Objective #B6

- A. Incorrect since the SRM Hi Hi scram signal is bypassed with the shorting links installed.
- B. Correct answer.
- C. Incorrect since under these conditions the reactor is vented and the reactor High Pressure Scram is unattainable.
- D. Incorrect since the IRM Hi Hi signal will be initiated prior to the APRM Hi Hi signal.

.....13. 215004K1.01 001/T2G1//SRM/MEM 3.6/3.7/M/BF04301/R/TCK

Which ONE of the following correctly describes the response of the Reactor Protection System to neutron monitoring inputs with all of the shorting links removed?

- A. 1/2 scram on any APRM HI-Hi or inop.
- B. FULL scram on any IRM HI signal.
- C. FULL scram on any SRM HI-HI or inop.
- D. 1/2 scram on any SRM HI-HI or inop.

K/A 215004 K1.01 Knowledge of the physical connections and/or cause-effect relationships between SOURCE RANGE MONITOR (SRM) SYSTEM and the following: Reactor protection system. (3.6/3.7)

References: OPL171.028, Rev.13, pg 20 and 22 of 39
Enabling Objective #B7

- A. Incorrect since an APRM Hi Hi signal from any APWM will cause a full scram with all of the shorting links removed. This would be true if only the blue links were removed.
- B. Incorrect since an IRM Hi Hi signal from any IRM will cause a full scram with all of the shorting links removed. This would be true if only the blue links were removed.
- C. Correct answer.
- D. Incorrect since a full scram will occur from an SRM Hi Hi signal with all of the shorting links removed.

14. 215005A4.05 001/T2G1//LPRM/C/A 3.4/3.4/N/BF04301/R/TCK/RK

An LPRM, assigned to APRM 2, is bypassed with High Voltage On at Panel 9-14.

Which ONE of the following is the result of this operator action?

- A. The output of the LPRM to APRM 2 is inhibited, however, the output cannot be read at the NI Console.
- B. The output of the LPRM is active to APRM 2, however, the output can be read on the NI Console.
- C. The output of the LPRM to APRM 2 is inhibited, however, the output can be read at the NI Console.
- D. The output of the LPRM is active to APRM 2, however, the output cannot be read on the NI Console.

K/A 215005 A4.05 Ability to manually operate and/or monitor in the control room: Trip bypasses. (3.4/3.4)

References: 2-OI-92B
Learning Objective #6

- A. Incorrect since the output can be read from the NI console.
- B. Incorrect since the output of the LPRM is inactive.
- C. Correct answer.
- D. Incorrect since the output of the LPRM is inactive.

15. 215005K6 05 001/T2G1//IRM/C/A 2 9:3 1/N/BF04301/R/TCK

Unit 3 is conducting a startup with the following conditions present:

- | | |
|------------------------|-----------------|
| - MODE Switch position | Start/Hot Stby |
| - IRM readings | All on range 9 |
| - Reactor Pressure | 960 psig |
| - Reactor Water Level | +36" and steady |

A control rod drop accident occurs followed by a Rx Scram. The operator reports that ALL IRMs are reading Hi Hi but that the reactor failed to scram from this signal.

Which ONE of the following signals caused the Rx Scram?

- A. Reactor Water Level - Low.
- B. IRM - Inop.
- C. APRM Hi Hi (setdown).
- D. APRM Hi Hi.

K/A 215005K6.05 Knowledge of the effect that a loss or malfunction of the following will have on the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM: IRM. (2.9/3.1)

References: OQL171.028, Rev.13, Appendix 1

- A. Incorrect since reactor water level should not reach the scram setpoint with only one rod dropping.
- B. Incorrect since the IRMs already failed to initiate a scram and this is the same logic.
- C. Correct answer. With the Mode Switch in S/U this function is active.
- D. Incorrect since the APRM Hi Hi (setdown) occurs well below this setpoint.

16. 217000G2.4.30 001//T2G1/REPORTABILITY/C/A 2.2/3.6/N/BF04301/S/TCK

During the performance of Unit 2 WCIC Quarterly Flow Rate Test, the controller operated erratically which resulted in WCIC being declared INOPERABLE.

Which ONE of the following describes the Notification requirements for this condition?

- A. No Outside Agencies are required to be notified of this condition.
- B. The NRC must be notified within 1 hour of this condition.
- C. The NRC must be notified within 4 hours of this condition.
- D. The NRC and state agencies must be notified within 8 hours of this condition.

K/A 217000 G2.4.30 Knowledge of which events related to system operations/status should be reported to outside agencies. (2.2/3.6)

References: Licensee needs to provide documentation and verify correct answer.

A. Correct answer. Although RCIC is a single train system, it is not an ESF System and does not require outside agencies to be notified upon INOPERABILITY.

B. Incorrect since notification is not required. 1 hour is a valid time frame under other conditions.

C. Incorrect since notification is not required. 4 hours is a valid time frame under other conditions.

D. Incorrect since notification is not required. 8 hours is a valid time frame under other conditions.

17. 217000K2.03 001/T2G1//RCIC/MEM 2.7/2.8/N/BF04301/R/TCK

The normal power supply to the Unit 3 RCIC Flow Controller, FIC-71-36A, has become erratic and I&C has requested the controller to be transferred to the alternate power supply.

Which ONE of the following sources of power will now be available to the RCIC Flow Controller once the transfer is complete?

- A. DIV 1 ECCS Inverter.
- B. DIV 2 ECCS Inverter.
- C. Unit Preferred power system.
- D. Plant Preferred power system.

K/A 217000 K2.03 Knowledge of electrical power supplies to the following: RCIC flow controller. (2.7/2.8)

References: OPL171.049, Rev.18, pg 20 of 53
Enabling Objective #B7

- A. Incorrect since this is the normal power supply to the WCIC Flow Controller.
- B. Incorrect since this is the normal power supply to the HPCi Flow Controller.
- C. Correct answer.
- B. Incorrect since the alternate power supply to the RCIC Flow Controller is the Unit Preferred power supply.

18.218000A1.04.001/T2G1//ADS/MEM 4.1/4.2/B BF04301/R/TCK

A small break LOCA has occurred on Unit 2 with a failure of all high pressure injection. Conditions have deteriorated to the point of auto initiation of ADS.

Which ONE of the following describes when the ADS valves will close assuming all ADS valves remain in Auto?

- A. When all low pressure ECCS pumps are secured.
- B. When reactor water level rises above -122 inches.
- C. When reactor pressure drops below 150 psig.
- D. When reactor pressure lowers to 20 psig above suppression chamber pressure.

K/A 228000 A1.04 Ability to predict and/or monitor changes in parameters associated with operating the AUTOMATIC DEPRESSURIZATION SYSTEM controls including: Reactor pressure. (4.1/4.2)

References: QPL171.043, Rev.10, pg
OPL171.009, Rev.8, pg 17 of 57
Enabling Objective #B3 (OPb171.043)

- A. Incorrect since the pumps need to be running to initiate ADS, not to secure it
- B. Incorrect since the ADS valves have already been actuated and remain that way until the reactor is depressurized.
- C. Incorrect since this is the pressure at which the ADS valves are required to be operable and has no affect on ADS operation.
- B. Correct answer.

Which ONE of the following is the basis for initiation of drywell sprays before the bulk drywell temperature reaches the drywell design temperature limit?

- A. To prevent excessive thermal stresses on the containment structure.
- B. To ensure that equipment within the drywell will operate when required.
- C. To ensure that the capacity of the suppression chamber to drywell vacuum breakers are not exceeded.
- D. To limit the amount of containment spray that flashes to steam upon initial spray flow actuation which could cause a pressure increase above design limits.

KIA 223004 K1.03 Knowledge of the physical connections and/or cause-effect relationships between PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES and the following: Containment/drywell atmosphere control. (3.2/3.3)

References: EOIPM Section O-V-D, EOI-2, Primary Containment Control Bases, Pgs 6,8, and 18 of 245.

A. incorrect since the Containment Analyses accounts for all conditions of containment temperature up to the design basis temperature.

B. Correct answer.

C. Incorrect since drywell sprays can be isolated if the containment pressure reaches 0 psig. The only concern prior to initiating sprays is whether or not the vacuum breakers are covered with water.

D. Incorrect since initiation of drywell sprays causes an immediate drop in drywell temperature and pressure due to evaporative cooling.

20. 223002G2.1.8 001/T2G1//MSIV/C/A 3.8/3.6/N/BF04301/R/TCK

A loss of control air has occurred on Unit 2 which resulted in the Outboard MSIV's failing closed. The Shift Manager has determined that the Main Condenser is required for a heat sink. The PCIS Group 6 signal is reset.

Which ONE of the following actions is required to be performed to open the Outboard MSIV's?

- A. Verify the Inboard MSIV's are open and then perform Appendix 88, Reopening MSIV's Following Group 1 Isolation.
- B. Close the Inboard MSIV's and then Open the Outboard MSIV's from the Control Room. Perform Appendix 8B, Reopening MSIV's Following Group 1 Isolation.
- C. Perform 2-AOI-32-2, Loss of Control Air, Attachment 2 to align nitrogen to the Drywell Control Air Compressor Suction. Open one Outboard MSIV to equalize pressure in header and then open remaining Outboard MSIV's.
- D. Perform 2-AOI-32-2, Loss of Control Air, Attachment 2 to align nitrogen to the Drywell Control Air Compressor Suction. Then perform Appendix 8B, Reopening MSIV's Following Group 1 Isolation.

K/A 223002 G2.1.8 Ability to coordinate personnel activities outside the control room. (3.8/3.6)

References: 2-AOI-32-2, Attachment 2
2-01-1, Section 5.2.7

- A. Incorrect since Attachment 2 of 2-AOI-32-2 is required to be performed to open the MSIV's.
- B. incorrect since Attachment 2 of 2-AOI-32-2 is required to be performed to open the MSIV's.
- C. incorrect since pressure in the header is not equalized by just opening an MSIV.
- D. Correct answer.

21. 223002K3.03 001/T2G1/PCIS/MEM 3.6/3.8/N/BF04301/R/TCK

A design basis LOCA has occurred on Unit 3 concurrent with the Torus-to-Drywell vacuum breakers failing open. All low pressure systems functioned as designed with vessel level currently being maintained at +40 inches.

Which ONE of the following is the most likely cause of an increase in the Off-Site radioactive release rates?

- A. The Standby Gas Treatment system has failed due to contamination of the charcoal filters.
- B. A fuel failure has occurred due to voiding of the reactor vessel.
- C. Inadequate scrubbing of the steam atmosphere has occurred due to bypassing the downcomers.
- D. The Primary Containment has failed due to exceeding the design pressure limit.

K/A 223602 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. (3.6/3.8)

References: OPL171.016, Rev.12, pg 30 of 76

- A. Incorrect since the Standby Gas Treatment is designed to take a suction on an environment that may have steam in it.
- B. Incorrect since the reactor design accounts for this voiding and the reflood of low pressure systems in time to prevent core damage.
- C. Incorrect since this would not result in an increase in off-site release rates. This does happen if the containment remains in tact.
- D. Correct answer.

22. 226001A3.05 001/T2G2//RHR SYSTEM/C/A 4.0/4.0/N/BF04301/R/TCK

A small break LOCA has occurred on Unit 3. Drywell Pressure reached 8 psig at which time Torus and Drywell Sprays were initiated. The following conditions exist at this time:

- | | |
|--|-----------------|
| - Drywell Pressure | 1.6 psig |
| - Torus Pressure | 1.1 psig |
| - Reactor Water Level | +5 inches |
| - Reactor Pressure | 290 psig |
| - Drywell Temperature | 110°F |
| - LPCI Initiation Signal Select/Reset switch | Select position |
| - Keylock Bypass Switch, 3-XS-74-122 | Bypass position |

Which ONE of the following indicates the Division 1 RHR System status?

(Assume no operator action)

- A. Both RHR pumps are running with some flow to the vessel and some flow directed to Torus and Drywell Sprays.
- B. Both RHR pumps are running with some flow to the vessel and the rest directed through the minimum flow line.**
- C. A RHR pump is running with all of the flow directed through the minimum flow line.
- D. B RHR pump is running with some flow to the vessel and some flow directed to Torus and Drywell Sprays.

K/A 226001 A3.06 Ability to monitor automatic operations **of the RHR/LPCI:**
CONTAINMENT SPRAY SYSTEM MODE including: Containment temperature.
(3.5/3.5)

References: OPL171.044, Rev.10, pg. 29 and 42
3-OI-74, Rev.58, P&L 3.29.7

- A. Incorrect since the Spray Line isolation interlock **at** 1.96 psig **Drywell** Pressure cannot be bypassed.
- B. Correct answer.
- 6. Incorrect since both **RHR** pumps should be running **and** some of the flow should be going to the vessel.
- D. Incorrect since both **RHR** pumps **should** be running **and** the Spray Line isolation interlock **at** 1.96 psig Drywell Pressure cannot be bypassed.

23. 23000062.3.9 001/T2G2//CONTAINMENT/MEM 2.5/3.4/M/BF04301/R/TCK

Unit 2 is in MODE 2. A containment entry to add oil to the " A Recirc motor upper bearing has just been completed. The Drywell and the Torus are currently de-inerted.

Which ONE of the following describes **the** containment **inerting** flow path for this condition?

During containment inerting operation, the normal flow path would be the supply to:

- A. ✓ the suppression chamber and exhaust from the suppression chamber (through the Containment Purge Filter).
- B. only the drywell and exhaust from only the suppression chamber (through the Standby Gas Treatment System).
- C. both the drywell and suppression chamber and **exhaust from** both (through the containment Purge Filter).
- B. both the **drywell** and suppression chamber and exhaust from both (through the Standby Gas Treatment System).

K/A 230000 G2.3.9 Knowledge of the process for **performing** a containment purge. (2.5/3.4)

References: OPL171.032, Rev.10, Pg 10 of 32
2-01-76, Rev.58, Step 5.1.43 Note

- A. Correct answer. Can only purge the torus or the drywell in Mode 2.
- B. Incorrect since this ties the Drywell to the Torus.
- C. Incorrect since can only purge the **drywell** or torus in Mode 2.
- D. Incorrect since can only purge the **drywell** or torus in Mode 2.

24. 239001A4.01001/T2G2//MSIV/MEM 4.2/4.0/N/BE04301/R/TCK

Unit 2 Reactor Power has been reduced to 66% RTP in preparation for MSIV testing. A fuse has been removed to simulate the B OTBD MSIV closed.

Which ONE of the following describes the indications that will be observed when the MSIV LINE A OUTBOARD TEST, 2-HS-1-15B (2-FCV-1-15) push-button is depressed?

A half-scam will occur

- A. when " A OTBD MSIV indicates mid position (red light and green light **ON**) .
- B. when the open indication goes out.
- C. prior to any change in MSIV position indication.
- D. when the TEST push-button is depressed.

io

K/A 239001 A4.01 Ability to manually operate and/or monitor in the control room: MSIV's. (4.2/4.0)

References: 2-OI-1, Rev.36, Pg 4 of 42

- A. Incorrect since the scram setpoint is 90% open and the dosed indication light is set at 85% open.
- B. Incorrect since the scram setpoint is set at 90% open and does not rely on red light indication.
- C. Correct answer.
- D. Incorrect since the scram function is based on MSIV position indication of 90% open and not when the valve initially goes closed.

25. 239002A4.01001/T2G1//SAFETY RELIEFS/C/A 4.4/4.4/N/BF04301/R/TCK

A Reactor Scram has just occurred on Unit 2. While you were performing a board walkdown you note that Reactor Pressure has reached 1115 psig and there are some SRV's that have automatically opened.

Which **ONE** of the following is correct regarding the maximum number **of** SRV's that could be open given that **ALL** SRVs are within the **Tech Spec** allowable tolerances?

(Reference provided)

- A. 4
- B. 5
- C. 8
- D. 13

K/A 239002 A4.01 Ability to manually operate and/or monitor in the control room:
SRV's. (4.4/4.4)

References: OPL171.009, Rev.8, pg 20 of 57
Tech Spec 3.4.3, **Safety/Relief Valves (S/RVs)**

A. incorrect since all SRV's have a tolerance of + 3% so 4 could open at 1100# and 4 could open at 1110#. The other 5 shouldn't open until 1120#. Zero is plausible since the first setpoint is 1135#.

B. Incorrect since 8 SRV's could be open and still be within tech spec tolerance.

C. Incorrect since 8 SRV's could be open and still be within tech spec tolerance.

D. Correct answer as shown above.

26. 241000G2.2.11.001//T2G2/TEMPORARY ALTERATION/MEM 2.5/3.4/N/BF04301/S/TCK

A jumper has been installed and tagged on Unit 3 as directed by 3-SR-3.3.1.1.13(8), Turbine Stop Valve Limit Switch Calibration, step 7.1.9.10. The tag references this surveillance number. The jumper does not affect the OPERABILITY of the system components but it does affect an alarm indication. The system engineer has requested the jumper remain installed until the next performance of this surveillance.

Which ONE of the following is appropriate for controlling this jumper?

- A. The Unit Supervisor verifies all Tech Spec requirements are met and logs that the jumper will remain installed until a work order is created to control the jumper.
- B. Leave the tag on the jumper and N/A the step for removal of the jumper. Note at the end of the procedure that the jumper is still installed. The next performance of the procedure will control the jumper.
- C. Complete the paperwork for a Temporary Alteration prior to removing the jumper as directed by the procedure. Note at the end of the surveillance that the jumper remained installed and identify the Temporary Alteration number.
- D. The jumper must be removed in accordance with the surveillance procedure. A Temporary Alteration is not appropriate for this condition. Complete paperwork for a design change that allows this jumper to be installed.

K/A 241000 G2.2.11 Knowledge of the process for controlling temporary changes.
(2.5/3.4)

References: OPL171.079, Rev.12, Pg 7 and 8 of 21

- A. Incorrect since you cannot leave a jumper installed and control it with a log entry. Creating a Work Order cannot control a jumper either.
- B. incorrect since if the procedure is closed out then nothing is controlling the jumper. Referencing a controlling procedure is not good enough.
- C. Correct answer. Since the procedure is closed out then the Temp Alt program must control the jumper.
- D. Incorrect since this does not need a design change and the jumper does not have to be removed by the procedure if the Temp Alt program is controlling it.

27. 241000K4.1001/T2G2//MAIN TURBINE/MEM 2 5/2.5/B/BF04301/R/TCK

The main turbine is being placed in shell warming per OI-47.

Which ONE of the following describes a consequence of opening the #2 stop valve internal pilot valve too far during this evolution?

- A. Turbine Trip on Differential Expansion.
- B. Turbine trip on High Exhaust Hood Temperature,
- C. Reactor scram due to Turbine Stop Valve Closure.
- D. Reactor Scram due to Turbine Control Valve Closure.

K/A 241000 K4.10 Knowledge of REACTOR/TURBINE PRESSURE REGULATING SYSTEM design feature(s) and/or interlocks which provide for the following: Turbine shell warming: EHC-Only. (2.5/2.5)

References: 2-OI-47, Rev.117, Pg 10, 11 and 23 of 162

- A. Incorrect since **this** takes operator action to mitigate.
- B. Incorrect since this function **has** been disabled. **It** now **takes** operator action.
- C. Correct answer. This happens if Turbine first stage pressure reaches 147 psig.
- D. Incorrect since the Control Valves are already closed.

28. 256000A1.08 001/T2G2//CHEMISTRY/C/A 2.7/2.9/N/BF04301/R/TCK

The Unit 3 Operator notes the following indications while monitoring plant parameters:

- | | |
|--|------------|
| - Main Steam Line radiation | increasing |
| - Condensate Demineralizer Dp | increasing |
| - Condensate Conductivity after Demins | increasing |
| - Offgas Pretreatment radiation | increasing |

Which **ONE** of the following is the most likely cause of these indications?

- A. Condensate Demin resin breakthrough.
- B. Increasing dissolved solids.**
- C. Decreasing condensate conductivity.
- D. Increasing condensate oxygen concentrations.

K/A 256000 A1.08 Ability to predict and/or monitor changes in parameters associated with operating the REACTOR CONDENSATE SYSTEM controls including: System water quality. (2.7/2.9)

References: OPb171.01 ■ Rev.9, pg 23, and 27-29 of 27
2-OI-2, Rev.66, pg 21 of 59
2-AOI-2-1, Rev.17, pg 1 of 5

- A. Incorrect since this would cause Condensate Demin Dp to decrease. All other indications would increase.
- B. Correct answer.
- C. Incorrect since increasing the conductivity would produce the same indications as increasing the dissolved solids.
- D. Incorrect since increasing the amount of oxygen in the condensate system does not affect condensate demin Dp.

29. 259001K5.02 001/T2G2//FEEDWATER/MEM 2.5/2.5/B/BF04301/R/TCK

Which **ONE** of the following is the main reason for ensuring that a piping system, such as Feedwater, is completely filled and vented **PRIOR** to initiating system flow?

- A. To minimize the system head losses and a potential for runout conditions.
- B. To ensure all noncondensable gases are removed from the piping system to **reduce** corrosion.
- C. To preclude a reduction in the overall heat transfer **coefficient**.
- D. To minimize the potential for water hammer.

K/A 259006 K5.02 Knowledge of the operational implications of the following concepts as they apply to REACTOR FEEDWATER SYSTEM: Water hammer. (2.5/2.5)

References: Operating experience

- A. Incorrect since runout conditions are caused by too much flow. This is minimized by starting a centrifugal pump with the discharge valve closed.
- B. Incorrect since **noncondensibles** are undesirable under any circumstances.
- C. Incorrect since the areas where the piping is vented are not in heat exchangers but at high point vents.
- D. Correct answer.

30. 259002K4 11 001/T2G1//FEEDWATER LEVEL/C/A 3.3/3.3/N/BF04301/R/TCK

Unit 3 Reactor Vessel Narrow Range instrument, LT-3-53, has a small leak on the reference leg tap. The Feedwater level Control System (FWLCS) is in 3-element control. The Narrow Range instruments indicate as follows:

- | | |
|------------|-----------|
| - LP-3-53 | 44 inches |
| - LT-3-60 | 33 inches |
| - LT-3-206 | 31 inches |
| - LT-3-253 | 33 inches |

Which ONE of the following indicates the Reactor Vessel Level that the FWLCS will try to maintain? (Round to nearest whole number)

- A. 32 inches.
- B. 33 inches.
- C. 35 inches.
- D. 37 inches.

K/A 259002 K4.1 ■ Knowledge of REACTOR WATER LEVEL CONTROL SYSTEM design feature(s) and/or interlocks which provide for the following: DP control. (3.3/3.3)

References: OPL171.012, Rev.10, pg 19-21
Learning Objective #B5

A. Correct answer. The high level indicated by LT-3-53 is discarded since it is >8 inches above the average. The other 3 signals are averaged for the appropriate control level.

B. Incorrect since this is the level that would be maintained if the two highest middle levels were selected. Since LT-3-53 reads >8 above the average then it is discarded and the average of the 3 remaining levels is used.

C. Incorrect since this is the average of all levels if the highest level is not discarded.

D. Incorrect since this is the average of the 3 highest readings.

31.261000A3 02 001/T2G1//SBGT/C/A 3 2/3 1/B/BF04301/R/TCK

SGT trains A, B, & C are sunning due to a bow Rx Water Level signal that is still present on Unit 2. Subsequently, the 480v load shed logic is initiated.

Which ONE of the following describes SGT train response?

SGT trains A & B trip and

- A. will restart in 40 secs. SGT train C trips and cannot be restarted.
- B. cannot be restarted. SGT train C trips and cannot be restarted.
- C. will restart in 40 secs. SGT train C continues to run.
- D. cannot be restarted. SGT train C continues to run.

K/A 263000 A3.02 Ability to monitor automatic operations of the STANDBY GAS TREATMENT SYSTEM including: Fan start. (3.2/3.1)

References: OPL171.018, Rev.8, pg 22 of 30
Learning Objectives #B4 and B9

- A. Incorrect since Train C is unaffected by the load shed.
- B. Incorrect since Grain A and B will restart in 40 seconds and Train C is unaffected by the load shed.
- C. Correct answer.
- D. Incorrect since Train A and B will restart in 40 seconds.

32. 261000K1 11 001/T2G1//SBGT/C/A 3.2/3.3/N/BF04301/R/TCK

The following conditions exist on Unit 3:

- | | |
|---|--|
| - Torus Pressure | 2.38 psig |
| - Reactor Water Level | +3 inches |
| - Reactor Zone Ventilation High Radiation | 90-142A detector @ 73 mR/hr and
90-143B detector is downscale |
| - Refueling Zone High Radiation | 90-140A detector @ 69 mR/hr and
90-141B detector is downscale |
| - SGT System Control Switch Position | All 3 in Auto |
| - Steam leak in the Drywell | |

Which ONE of the following describes the proper SGT system alignment for these conditions?

The SGT systems are

- A. in Standby.
- B. running due to High Containment Pressure
- C. running due to Refueling Zone High Radiation.
- D. running due to Reactor Zone Ventilation High Radiation.

K/A 261000 K1.11 Knowledge of the physical connections and/or cause-effect relationships between STANDBY GAS TREATMENT SYSTEM and the following: Primary containment pressure. (3.213.3)

References: OPL171.018, Rev.8, pg 21 of 30
Learning Objective #B9

- A. incorrect since all 3 trains should be running due to High Drywell Pressure. With Torus Pressure at 2.38 psig then Drywell Pressure should be at least 2.98 psig.
- B. Correct answer. With Torus pressure at 2.38 psig then Drywell pressure should be at least 2.98 psig.
- C. Incorrect since it takes 2 monitors reading high or one downscale in each division.
- D. incorrect since it takes 2 monitors reading high or one downscale in each division.

33. 26200162.3 3 001//T2G1/RADWASTE/MEM 1 8/2.9/N/BF04301/S/TCK

Which ONE of the following REQUIRES Shift Manager approval?

- A. Decanting the Condensate Phase Separators directly to the Hotwell.
- B. Discharge of water to the Condensate Storage Tanks.
- C. Transferring water from the Chemical Waste Tank to the Floor Drain Collector Tank.
- D. Crosstie operations between the Floor Drain and Waste filters.

K/A 262001 G2.3.3 Knowledge of SRO responsibilities for auxiliary systems that are outside the control room (e.g./waste disposal and handling systems). (B/2.9)

References: OPL171.084, Rev.5, pg 32,33,34,43.

- A. Correct answer. This option requires Shift Manager approval.
- B. Incorrect since this option only requires Chemistry Approval.
- C. Incorrect since this is a normal Radwaste evolution.
- D. Incorrect since this option could be approved by the Unit Supervisor.

Which ONE of the following is the expected electrical system response?

The generator breaker opens

A. and 4KV Unit Boards 2A, 2B, and 2C transfer to start buses.

B. with no further bus transfers.

C. and 4KV Common Boards 2A & 2B transfer to Start Bus 1A & 1B respectively.

D. and 2C 4KV Unit Board transfers to start bus, 4KV Unit Boards 2A & 2B do not transfer.

A. Incorrect since the unit boards do **not** transfer to the start buses. With **offsite power** available the Main Transformer still supplies all power to the **unit**.

B. Correct answer.

C. Incorrect since the common boards do not transfer to the start buses. With offsite power **available** the Main Transformer still supplies all power to the unit.

D. **Incorrect** since the 2C Unit Board does not transfer. With offsite power available the Main Transformer still supplies all power to the unit.

35. 262002A1.02 001/T2G1/UPS/MEM 2.5/2.9/N/BE04301/R/TCK

Unit 2 has just experienced an underfrequency condition on the output of the MMG set that lasted for 3 seconds.

Which ONE of the following is the appropriate indications for this condition?

- A. The AC supply breaker trips, the DC motor picks up the load and the MMG set continues to supply the loads.
- B. The AC and DC supply breakers trip, the loads are automatically transferred to Unit 3 MMG output, and the MMG set stops.
- C. The DC supply breaker trips, excitation is lost to the MMG set and the MMG set continues to run.
- D. The MMG set continues to supply loads since the 5 second time delay for the underfrequency condition was not actuated.

K/A 262002 A I.02 Ability to predict and/or monitor changes in parameters associated with operating the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) controls including: Motor generator outputs. (2.5/2.9)

References: QPL171.102, Rev.4, Pg 10, 12, 13 and 14 of 28

- A. Incorrect since the DC breaker trips and does not pick up the load.
- B. Incorrect since the AC breaker does not trip, the DC breaker does. The MMG set continues to run.
- C. Correct answer.
- D. Incorrect since the 5 second time delay is not applicable to underfrequency but it is applicable to 120 VAC transformers.

36.263000K1.02.001/T2G1//DC SYSTEM/C/A.3.2/3.3/B/BF04301/R/TCK

A fault has occurred on the "A" Diesel Generator Room 125 V DC Distribution Panel causing a loss of the battery charger and battery supply.

Which ONE of the following describes the effect this has on the "A" Diesel Generator?

- A. No effect since the "A" diesel generator control power auto swaps to "Unit Preferred".
- B. "A" Diesel Generator will start and come up to rated speed and voltage but the output breaker can not close because it has lost control power.
- C. "A" Diesel Generator control power is lost; a manual transfer to "Unit Preferred" is required.
- D. "A" Diesel Generator control power and field Wash source can not be restored until the fault is cleared.

K/A 263000 K1.02 Knowledge of the physical connections and/or cause-effect relationships between D.C.ELECTRICAL DISTRIBUTION and the following: Battery charger and battery. (3.2/3.3)

References: OPL171.037, Rev.8, pg 14 and 15 of 47.
Enabling Objective #11

- A. Incorrect since there is no auto transfer feature for the "A" DG 125 VDC distribution panel.
- B. Incorrect since the diesel will not be able to come up to rated voltage since the field flashing is not available.
- C. Incorrect since there is no manual transfer capability for the "A" DG 125 VDC distribution panel.
- D. Correct answer.

37. 263000K3.02 001/T2G1//RHRSW SYSTEMMEM3.5/3.8/N/BF04301/R/TCK

Which ONE of the following components may receive an automatic **start** signal if the **250VDC** control power to the "C" **4KV** Shutdown Board is transferred to the alternate source while the C Diesel Generator is running?

- A. "B" W-R Pump.
- B. "B" CS Pump
- C. "B1" RHRSW Pump.
- D. "B3" RHRSW Pump.

K/A 263800 K3.02 Knowledge of the effect that a loss or malfunction of the D.C. ELECTRICAL DISTRIBUTION will have on the following: Components using D.C. control power (i.e. breakers). (3.5/3.8)

References: 0-OI-57D, Rev.71, Pf 9 of 114
OPL171.037, Rev.8, pg 26 of 47
OPL171.038, Rev.14, pg 48 of 88
OPL171.046, Rev.9, pg 13 of 22

- A. Incorrect since the RHR Pump is not susceptible to this phenomena but it is powered from "C" **4KV** Shutdown Board.
- B. Incorrect since the CS Pump is not susceptible to this phenomena but it is powered from "C" **4KV** Shutdown Board.
- C. Incorrect since the "B1" RHRSW Pump is powered from the **3C** Diesel Generator via **3EC** Shutdown Board. Plausible since all other components are related to "B".
- D. Correct answer.

38. 264000A2.09 001//T2G1/D/G/MEM 3.0/3.1/N/BF04301/S/TCK

The Unit 3 Operator is in the process of unloading the 3A EDG and placing it in the standby condition. In accordance with 3-01-82, Standby Diesel Generator System, step 8.1.16.2, the output breaker is tripped when the DIG reaches 100KW and 100 KVAR.

Which ONE of the following CAUTIONS is associated with completing this step without tripping the BIG?

- A. Failure to SLOWLY approach the 100KW/100KVAR limit may result in a reverse power trip of the DIG.
- B. operation of Diesel Generators at low RPM may result in a trip due to a low oil pressure trip.
- C. Continuous operation of Diesel Generators at loads below 550KW may result in a Diesel Generator Timed Overcurrent trip.
- D. Continuous operation of Diesel Generators at loads below 550KW may result in a Diesel Generator Differential Overcurrent trip.

K/A 264000 A2.09 Ability to (a) predict the impacts of the following on the EMERGENCY GENERATORS (DIESEL/JET); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Maintaining minimum load on emergency generator (to prevent reverse power). (3.0/3.1)

References: OPL171.038, Rev.14, pg 29,30
3-01-82, Rev.73, step 8.1.16 (Caution)
3-08-82, Rev.73, step 3.18 (Trip Signals)

A. Correct answer.

5. Incorrect since the RPM of a loaded DG never changes from approximately 900 RPM.

C. Incorrect since operating the DIG at loads <550 KW may only result in soot buildup in the exhaust piping.

D. Incorrect since operating the D/G at loads <550 KW may only result in soot buildup in the exhaust piping.

39. 264000K3 02 001/T2G1//D/G/C/A 3 9/4 0/B/BF04301/R/TCK

Unit 2 has experienced a loss of offsite power from 100% power. All diesels started and tied to their 4KV Shutdown Boards except D (output breaker did not close). A small leak has developed in containment with the following conditions present:

- Drywell Pressure 4.5 psig
- Reactor Pressure 800 psig
- Reactor Water level 60 inches
- Loop 1 RHR is in suppression pool cooling

Which ONE of the following describes how "A" DG and "2A" RHR pump would respond if water level decreased to -122" on LI-3-58 A&B?

- A. D/G breaker remains closed and RHR 2A remains running.
- B. Output breaker remains closed, RHR Pump 2A trips and starts back @ T = 7.
- C. Output breaker would trip, RHR Pump 2A would trip and then restart @ T = 0 after the output breaker recloses.
- D. Output breaker would trip, RHR Pump 2A would trip and then restart @ T = 7 after the output breaker recloses.

K/A 264000 K3.02 Knowledge of the effect that a loss or malfunction of the EMERGENCY GENERATORS (DIESEL/JET) will have on the following: A.C. electrical distribution. (3.9/4.0)

References: OPL171.038, Rev.14, pg 47 and 48 of 80
Learning Objective #B6

- A. Incorrect since Load Shed occurs when Rx Vessel level decreases to -122".
- B. Incorrect since output breaker re-opens upon a load shed signal when Rx Vessel level reaches -122".
- C. Correct answer.
- D. Incorrect since the 2A RWR Pump will start at T=0 after the DIG output breaker re-closes.

40. 286000K1.07 001/T2G2//FIRE PROTECTION/MEM 2.8/2.9/N/BF04301/R/TCK

Unit 1 has experienced a **loss** of Plant Preferred concurrent with indications of a fire in the Unit 1 *DIG* Building.

Which ONE of the following describes the operation of the CO₂ System under these conditions'?

- A. Both CO₂ Master Routing valves have opened to charge the distribution header and Unit 1 *DIG* Building individual hazard control valve must be manually opened.
- B. One CO₂ Master Routing valve has opened which does not charge the distribution header but the Unit 1 *DIG* Building individual hazard control valve has automatically opened.
- C. Both CO₂ Master Routing valves have opened to charge the distribution header and Unit 1 *DIG* Building individual hazard control valve has automatically opened.
- D. One CO₂ Master Routing valve **has** opened which does not charge the distribution header and the Unit 1 *D/G* Building individual hazard control valve must be manually opened.

K/A 286000 K1.07 Knowledge of the physical connections and/or cause-effect relationships between FIRE PROTECTION SYSTEM and the following: A.C. power supplies. (2.8/2.9)

References: OPL171.049, Rev.12, pg 30 and 31

- A. Correct answer.
- B. Incorrect since both CO₂ Master Routing valves are de-energized which open them and the Unit1 *D/G* individual valve must be manually opened.
- C. incorrect since Unit 1 *D/G* individual valve must be manually opened.
- D. Incorrect since both CO₂ Master Routing valves open upon **Loss** of Plant Preferred.

41. 286000K3.01 001/T2G2//FIRE/C/A 3.2/3.4/B/BF04301/R/TCK

A fire rated door listed in Table 9.3.11.E of the BFNP FIRE PROTECTION PLAN is about to become impaired by propping the door open. There is no fire detection equipment available to protect either side of the inoperable door. The door is located in a contamination zone.

Which ONE of the following is the MINIMUM action that must be taken to compensate for this impaired fire barrier?

(Reference provided)

- A. Establish a roving hourly fire watch to monitor the area until the door is restored to an operable status.
- B. If hot work is to be performed in either of the adjacent rooms, establish a continuous fire watch on either side of the open door.
- C. Establish a continuous/dedicated fire watch to monitor the impaired fire door area until the door is restored to an operable status.
- D. To reduce radiation exposures ALARA, establish a continuous/area fire watch to monitor the area at least once every 15 minutes until the door is restored to an operable status.

K/A 286000 K3.01 Knowledge of the effect that a loss or malfunction of the FIRE PROTECTION SYSTEM will have on the following: The ability to detect fires. (3.2/3.4)

References: BFNP Fire Protection Report, Vol. 1 (Rev 09), Page 9.0-14, and Vol. 2 (Rev 0002), Page 9 of 20.

- A. This would be correct if fire detection and suppression were operable to protect one side of the door.
- B. This would be correct if fire detection and suppression were operable to protect both sides of the door.
- C. (Correct)
- D. The PLAN does not permit this option if the fire watch has to deal with a C-zone.

42. 288000K6.01 001/T2G2//VENTILATION/MEM 2 7/2 7/B/BF04301/R/TCK

Which ONE of the following Combinations of electrical board losses would result in both CREV units being inoperable? (Assume normal alignment and no board transfers)

- A. 480V Shutdown Board 1B; 4kV Shutdown Board 3EC
- B. 480V Shutdown Board 1A; 480V Shutdown Board 28
- C. 480V Shutdown Board 3B; 4kV Shutdown Board A
- D. 4kV Shutdown Board B; 4kV Shutdown Board 3EA

K/A 288000 K6.01 Knowledge of the effect that a loss or malfunction of the following will have on the PLANT VENTILATION SYSTEMS: A.C. electrical. (2.7/2.7)

References: OPL171.067, Rev.11, Pg 28 of 60
Learning Objective #B2

A, B, and D. Incorrect since these do not meet the combination of power supplies for the CREV trains.

C. Correct since the power supplies are 480 VAC RMOV Board 3B for fan B and 480 VAC RMOV Board 1A for fan A which is supplied by 4KV Shutdown Board A.

43. 295001AA2.01001//T1G1/PWR/FLOW MAP/C/A 3.5/3.8 M/BF04301/S/TCK

Unit 3 is in the process of starting up. A 90% rod line has been established at 80% RTP. Recirc Flow is currently being raised. A maintenance worker bumps a relay which causes a trip of the 3B VFD. The operator notes the following conditions after the pump trip:

- MWE = 500
- MWT = 1645
- Core Flow = 34%
- OPRM's are INOPERABLE

Using Illustration 1 from 3-OI-68, determine which ONE of the following describes the appropriate action to take?

(Reference provided)

- A. Region 2 has been entered, restart the 3B Recirc pump after verifying the Recirc pump restart limitations.
- B. Region 1 has been entered, scram the reactor immediately.
- C. Region 2 has been entered, insert control rods to less than 66.7% rod line.
- D. Region 1 has been entered, insert control rods to less than a 95.2% rod line.

K/A 295501 AA2.01 Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION:

Power/flow map. (3.5/3.8)

Procedure 3-SR-3.3.1.1.I, Rev.0002 pg 7 of 15

3-SR-3.3.1.1.1, Rev.0002 pg 8 of 15

3-SR-3.3.1.1.I, Rev.0002 Attachment 2

3-01-68, Rev.40 pg 6 of 96

A. Incorrect due to CAUTION in 3-SR-3.3.1.1.I stating it is inappropriate to start a Recirc pump to exit Region 2 or 3.

B. Incorrect because Region 1 is not entered. If Power/Flow map is used incorrectly and student reads flow at 85% power then Region 1 would be entered. Also, map indicates that Reactor should be scrammed if enter Region 1.

C. Correct answer. Per 3-SR-3.3.1.1.I step 7.10.1 can use the option of inserting rods to less than the 66.7% rod line.

D. Incorrect because Region 1 is not entered. If Power/Flow map is used incorrectly and student reads flow at 80% power then Region 1 would be entered. Also, if OPRM's are Operable then could insert rods to less than 95.2% rod line.

44. 295001AA2.02 001/T1G1//RECIRC SYSTEM/C/A 3.1/3.2/N/BF04301/R/TCK

A startup of Unit 2 is in progress with no equipment out of service and Reactor power is currently 40%. The speed of both Recirc Pumps has just been raised to 30%.

A trip of Recirc Pump "2A" occurs and the operators respond to the transient per the guidance in 2-AOI-68-18, "Recirc Pump Trip/Core Flow Decrease" to stabilize the plant.

Which ONE of the following describes the effect this has on Neutron Monitoring instrumentation?

- A. Flow compare alarm initiated by RBM, flow indicators indicate half the value indicated on the recorders.
- B. "A" Recirc Loop flow indicators go to approximately zero, only APRM 1 and 3 flow biased rod block and scram setpoints are lowered.
- C. "A" Recirc Loop flow indicators go to approximately zero, all ARPM flow biased rod block and scram setpoints are lowered.
- D. APRM Flow Bias Off Normal alarm, all ARPM flow biased rod block and scram setpoints are lowered.

K/A 295001 AA2.02 Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Neutron monitoring. (3.1/3.2)

References: OPL171.148, Rev.?, pg 28-30 of 94
Enabling Objective #B10

- A. Incorrect since the flow comparator alarm does not actuate and the Row indicators should read the same value as the recorders.
- B. Incorrect since all of the APRM's are affected.
- C. Correct answer.
- D. Incorrect since the flow comparator alarm does not actuate and the Row recorders should read the same as the indicators.

45. 295002AA2.02 001//FIG2/MAIN TURBINE/C/A 3.2/3.3/N/BF04301/S/TCK

The Unit 2 Operator reports that Reactor Power is decreasing slowly. The Unit had been operating at 50% RTP for the past couple of days. Upon investigation the following parameters are observed:

- | | |
|--------------------|-------------------|
| - Generator Output | Decreasing slowly |
| - Reactor Pressure | Steady |
| - Recirc Flow | Steady |
| - Offgas Flow | Decreasing slowly |

Which ONE of the following conditions is the most likely cause of this situation?

- A. Hotwell level high.
- B. Loss of Feedwater Heating.
- C. Control Valve failed closed.
- D. RFP minimum flow valve failed open.

K/A 295002 AA2.02 Ability to determine and/or interpret the following as they apply to **LOSS OF MAIN CONDENSER VACUUM: Reactor power. (3.2/3.3)**

References: 2-ARP-9-6A, Rev.16, Tile 6

- A. Correct answer. Hotwell level going high causes a loss of condenser vacuum.
- B. Incorrect since this would cause reactor power to increase due to colder water.
- C. Incorrect since at 50% power the other control valves should be able to handle the load and reactor power would remain stable.
- D. Incorrect since the min flow valve coming open would tend to affect reactor level and generator output should remain the same.

46. 295003AA2.02 001/TIG1//ELECTRICAL SYSTEM/C/A 4.2/4.3/N/BF04301/R/TCK

Unit 3 is at 38% RTP during a startup. Unit preferred is lost. **The MMG** set and 9-9 cabinets **failed** to transfer to alternate.

Which ONE of the following will occur due to this situation?

- A. **Loss of** all automatic level control and level rises in response to xenon building in, eventually tripping the reactor on high level.
- B. Pressure being controlled by the main turbine control **system**. **If** the turbine trips, reactor pressure will require control by **SRVs**.
- C. Reactor level control remains *in* automatic, however, automatic level setpoint cannot be changed from the control room.
- D. Master **FWLC system** controller is **lost**. The control of RFPT *is* by governor only.

K/A 295003 AA2.02 Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: Reactor power/pressure/and level. (4.2/4.3)

References: 3-AOI-57-5A, Rev.26, Pg 3 and 4 of 36

- A. incorrect since automatic level control **is** not lost.
- B. Incorrect since bypass valves can still control pressure.
- C. Correct answer.
- D. Incorrect since the governor is **available** along with automatic control.

47. 295004AK3.02 001/T1G1//DC SYSTEM/MEM 3 1/3.5/N/BF04301/R/TCK

Unit 2 has experienced a loss of the Unit Preferred. Region 2 of the **Power/Flow** map has been entered. The Unit Supervisor has determined that control rods are required to be inserted immediately.

Which ONE of the following describes the method and the reason for inserting control rods?

- A. Insert a manual scram due to the loss of **RPIS** indication.
- 5. insert control rods in sequence using "Emerg In" due to entry into Region 2 of the **Power/Flow** map.
- C. Insert a manual scram due to the closure of 2-FCV-85-11(A/B), CRD Flow Control Valve.
- D. Insert control rods **IAW** the Emergency Shove Sheet due to the loss of **RPIS** indication.

K/A 295004 AK3.02 Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE **LOSS** OF D.C. POWER: Reactor SCRAM. (3.1/3.5)

References: 2-AOI-57-4, Rev.34, pg 4 of 21

- A. Correct answer.
- B. Incorrect since the control rods cannot be selected or **moved** manually.
- C. Incorrect since manual scram is **not** directed for the closure of the CRD Flow Control Valve.
- D. Incorrect since **the** control rods cannot be selected **or** moved manually.

48. 295004G2.4.11 001//TIG1ELECTRICAL SYSTEM/MEM 3.4/3.6/N/BF04301/S/TCK

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

- PNL 9-9 DC DISTR BRK TRIP OUT
- Battery Bd 3 BKR TRIP OUT

The RO reports that all previous illuminated annunciators have cleared. Also, the affected annunciator panels will not test.

Which ONE of the following describes the actions that should be ordered by the Unit Supervisor?

- A. Take actions to transfer affected equipment to backup or standby systems.
- B. Dispatch personnel to locally monitor any affected equipment and stop all surveillance activities being performed on affected systems.
- C. Commence a Unit Shutdown within 1 Hour due to entering TS LCO 3.0.3.
- D. Take manual control of any systems associated with the above annunciators. Request extra operators as necessary to monitor each affected panel.

K/A 295004G2.4.11 Knowledge of abnormal condition procedures. (3.4/3.6)

References: 2-AOI-57-9 symptoms pg1 and 3

- A. Incorrect since it is undesirable to manipulate any systems until the annunciator power is returned to normal.
- B. Correct answer.
- C. Incorrect since a 3.0.3 entry is not required.
- D. Incorrect since taking manual control of systems is not required but monitoring those systems is required.

49. 295005AA2.04 001//T1G1/RPS/C/A 3.7/3.8/B/BF04301/S/TCK

Unit 2 is operating at 35% RTP. Turbine Bypass valves are being opened for a special test. The following conditions currently exist:

- Bypass valves #1 and #2 are full open.
- Bypass valve #3 is 50% open.
- Total main steam flow is 35%.
- No other testing is in progress.

Which ONE of the following describes the response of the reactor if a Main Turbine trip occurs at this time?

- A. Reactor scrams on high reactor pressure.
- B. Reactor continues to operate at 35% power.
- C. Reactor continues to operate and power decreases to 28%.
- D. Reactor immediately scrams on Turbine Stop Valve 10% closure.

K/A 295005 AA2.04 Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP: Reactor pressure. (3.7/3.8)

References: OPL171.028, Rev. 13, Pg. 31

FSAR Section 11.5.3

Changed Rx power from 38% to 32%. Removed statement for turbine load at 23%.

- A. Correct since bypass valves can only handle 25% load.
- B. Incorrect since reactor pressure would increase due to bypass valves full open can only handle 25% load.
- C. Incorrect since power does not run back. This is also distracting because this is the load at which the bypass valves can handle.
- D. Incorrect since this scram signal is bypassed at <30% power based on first stage pressure. With 3 bypass valves open this drops turbine load to 28% and these signals are bypassed.

50. 295005AK2.04 001/T1G1//MAIN GENERATOR/MEM 3.3/3.3/N/BF04301/R/TCK

Which ONE of the following lists the automatic Turbine Trip signals that are designed to protect the Main Generator?

- A. electrical overspeed, reverse power, loss of condenser vacuum.
- B. remote electrical trip, backup electrical overspeed, transformer faults (86 device).
- C. reverse power, transformer faults (86 device), stator cooling low flow.
- D. stator cooling high temperature, high vibration, electrical overspeed.

K/A 295005 AK2.04 Knowledge of the interrelations between MAIN TURBINE GENERATOR TRIP and the following: Main generator protection. (3.3/3.3)

References: OPL171.135, Rev.5, Pg. 15 of 44
OPL171.010, REV.11, Pg. 55-57 of 90

- A. Incorrect since **electrical** overspeed and **loss** of main **condenser** vacuum are designed to protect the turbine.
- B. Incorrect since backup electrical overspeed is designed to protect the turbine.
- C. Correct answer.
- D. Incorrect since high vibration and electrical overspeed are designed to protect the turbine.

51. 295006AK1.01 001/T1G1//COOLDOWN/C/A 3.7/3.9/N/BF04301/R/TCK

Unit 2 was performing a rapid shutdown from 100% RTP due to a condenser vacuum leak. The SRO ordered a manual ~~Rx~~ Scram when vacuum decreased to 23" vacuum. The following conditions exist:

- Reactor Pressure 980 psig increasing slowly
- Reactor Water Level +10" increasing slowly
- Drywell Pressure 2.6 psig
- Condenser Vacuum 6" vacuum decreasing slowly
- Reactor Temperature 545°F increasing slowly
- Main Steam Relief Valves Cycled as necessary to maintain 800-1000 psig

The SRO orders a cooldown to be commenced per 2-GOI-100-12A, Unit Shutdown from Power Operation to **Cold** Shutdown.

Which ONE of the following systems and optimum cooldown rates should be used to obtain cold shutdown conditions per 2-GOI-100-12A?

- A. Condenser Bypass Valves at 25°F every 15 minutes.
- B. HPCI system in INJECTION/RECIRCULATION mode at 20°F every 15 minutes.
- C. Core Spray in the REACTOR VESSEL MAKEUP mode at 25°F every 15 minutes.
- D. Main Steam Relief Valves at 20°F every 15 minutes.

K/A 295006 AK1.01 Knowledge of the operational implications of the following concepts as they apply to SCRAM: Decay heat generation and removal. (3.7/3.9)

References: 2-GOI-100-12A, Rev.71, pg 35 of 70

A. Incorrect since condenser bypass valves are not available under current plant conditions and ~~cooldown~~ rate exceeds the optimum rate of 20°F every 15 minutes.

B. Incorrect since HPCI cannot be operated to attain cold shutdown conditions. It isolates at 105 psig.

C. Incorrect since Core Spray cannot be operated in the injection mode under current plant conditions and cooldown rate exceeds the optimum rate of 20°F every 15 minutes.

D. Correct answer. Optimum cooldown rate is 20°F every 15 minutes to prevent exceeding the admin limit of 90°F per hour.

52. 295006AK3.01 001/T1G1//VESSEL LEVEL/MEM 3.8/3.9/N/BF04301/R/TCK

Unit 2 is operating at 75% RTP when a spurious scram signal is received. Reactor vessel level drops to -10 inches and is subsequently restored to +15 inches by the feedwater system. The RWCU system isolated as expected.

Which ONE of the following explains why reactor vessel level initially dropped?

- A. Collapse in voids due to the scram.
- B. Lowering of vessel level setpoint due to the scram which reduced feedwater flow.
- C. Lowering of reactor pressure due to turbine staying on line until it trips on reverse power.
- D. Reduced reactor water temperature due to steam still being drawn off the reactor by the pressure control system and house loads.

References: Plant experience

- A. Correct answer.
- B. Incorrect since vessel level goes far below the new setpoint and the collapse in voids is immediate.
- C. Incorrect since lowering pressure would tend to increase level.
- D. Incorrect since the collapse in voids happens quicker than the lowering of reactor water temperature.

53. 295009AA1.03001/T1G2//RCIC/C/A 3.4/3.5/N/BF04301/R/TCK

A loss of offsite power has occurred on Unit 2 with all associated Diesel Generators in operation. The following conditions exist at this time:

- Vessel Level	-30 inches
- Drywell Pressure	12 psig
- Torus Pressure	11 psig
- Reactor Pressure	450 psig
- Torus Level	15 feet

Which ONE of the following is available to inject water to the vessel?

- A. RCIC
- B. "A" Core Spray Pump
- C. "A" RHR Pump
- D. "A" Main Feedwater Pump

K/A 295007 AA1.03 Ability to operate and/or monitor the following as they apply to HIGH REACTOR PRESSURE: RCIC. (3.4/3.5)

References: OPL191.040 Rev.17, System Description

- A. Correct answer. Does not require power and is above low pressure isolation.
- B. Incorrect since reactor pressure is above the discharge pressure of the pump.
- C. Incorrect since reactor pressure is above the discharge pressure of the pump.
- D. Incorrect since power is not available.

54. 295008AK2.08 001/T1G2//MAIN TURBINE/MEM 3.4/3.5/M/BF04301/R/TCK

Unit 2 is at 20% RTP during a Reactor Startup. The Unit Operator controlling vessel level manually raises the running RFP speed too far and Reactor Water level increases to +56 inches on the normal range instruments before being restored to normal.

Which **ONE** of the following lists the automatic actions that should have occurred?

- A. RCIC and HPCI trip only.
- B. Main Turbine and RFPT trip only.
- C. RCIC, HPCI, Main Turbine and WFPT trip only.
- D. RCIC, HPCI, Main Turbine and RFPT trip and a Reactor Scram.

K/A 295008 AK2.08 Knowledge of the interrelations between **HIGH REACTOR WATER LEVEL** and the following: Main turbine. (3.4/3.5)

References: OPL171.010, Rev.1 ■ pg 55 of 90
Learning Objective #B7
OPL171.012, Rev.10, pg 71 of 68
OPb191.042, Rev.16, pg 44 of 70

- A. Incorrect since reactor water level at 55" **also** trips the turbine and the RFP's.
- B. Incorrect since reactor water level at 55" also trips HPCI and RCIC.
- C. Correct answer.
- D. Incorrect since reactor high water level is not a Reactor Scram signal. The Scram comes from the Turbine Trip signal but is bypassed at **this** low of a level.

5% 295008G2.1.7 001/T1G2/MSIV/C/A 3.7/4.4/B/BF04301/S/TCK

Unit 2 scrambled from high Drywell pressure with the following conditions present:

Reactor pressure	920 psig
Reactor water level	+ 53 inches and increasing
Drywell pressure	3.8 psig
Feedwater pumps	running
HPCI injecting	5000 gpm
RCIC in standby	

Which ONE of the following describes the action to be taken and the reason for the action?

- A. Trip and lock out HPCI only to prevent moisture carryover into the steam lines.
- B. Take manual control of HPCI and reduce flow to prevent reaching feedwater high level trip setpoint.
- C. Take manual control of HPCI and Feedwater pumps to prevent overflowing the main steam lines while pressurized.
- D. Trip and lock out HPCI and trip Feedwater pumps to prevent violating MCPR and LHGR during a feedwater controller minimum demand failure.

K/A 295008 G2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics/reactor behavior/and instrument interpretation. (3.714.4)

References: OPL171.003 Rev.15 pg 26 and 27
Enabling Objective OPL171.003 B#7

- A. Correct answer. HPCI above hi level trip.
- B. Incorrect since you don't take manual control of HPCI when above hi level trip setpoint.
- C. Incorrect since you don't take manual control of HPCI when above hi level trip setpoint.
- D. Incorrect since the reason for tripping the equipment is to prevent exceeding MCPR and LHGR limits during a feedwater controller failure to maximum demand.

56. 295009AK1.03 001/T1G2//RECIRC SYSTEM/MEM 2.7/2.7/N/BF04301/R/TCK

Which ONE of the following interlocks exist to protect the Jet Pumps from a loss of Net Positive Suction Head?

- A. Recirc Pump speed limited to 20% until total Feedwater Flow exceeds 29%.
- B. 75% Limiter actuates an automatic runback if any individual RFP flow is <19% and vessel low level alarm actuates.
- C. Automatic Recirc Pump runback to 28% if total Feedwater Flow drops below 19%.
- D. End of Cycle Recirc Pump Trip is actuated upon a Turbine Trip or Load Reject.

K/A 295009 AK1.03 Knowledge of the operational implications of the following concepts as they apply to LOW REACTOR WATER LEVEL: Jet pump net positive suction head. (2.7/2.7)

References: OPL171.007, Rev.20, Pg 48 and 49 of 117

- A. Incorrect since Recirc Speed is not limited to 20%. It is limited to 28% which would make this answer also correct.
- B. Incorrect since this protective action is provided to reduce reactor power within the capacity of the remaining RFP.
- C. Correct answer.
- D. Incorrect since this protective action is needed at the end of life to quickly lower reactor power upon a load reject or turbine trip.

57. 295014AA2.03 001/T1G2//REACTIVITY/C/A 4.0/4.3/N/BF04301/R/TCK

Unit 2 was maintaining 80% RTP when the Operator notes the following conditions:

- constant positive reactor period
- main steam line flow decreases on 'E' main steam line
- reactor water level increases
- APRM's begin to increase
- Torus temperature increasing

Which ONE of the following is the most likely cause of the above conditions?

- A. 'B' turbine Control Valve failing to the 'full open' position.
- B. inadvertent operation of Safety/Relief valve PCV 1-18.
- C. 'E' Recirc pump speed increasing.
- D. Inadvertent HPCI operation.

K/A 295014 AA2.03 Ability to determine and/or interpret the following as they apply to INADVERTENT REACTIVITY ADDITION: Cause of reactivity addition. (4.0/4.3)

References: 2-AOI-1-1, Relief Valve Stuck Open, Rev.22, pg 1 of 8
FSAR section 4.4.

- A. Incorrect since this would not cause Torus temp to increase.
- B. Incorrect since this would not cause reactor power to increase.
- C. Incorrect since this would not cause torus temp to increase.
- D. Correct answer since cold water is causing Rx power to increase. Also, Main steam line flow for E line would decrease since HPCI taps off prior to flow element.

58. 295015AA2.01.001//T1G2/EOI CONTROL/MEM.4.2/4.3/N/BF04301/S/TCK.

Unit 3 has received a Reactor Scram signal and EOI-1 has been entered. The SRO is executing the RC/Q leg and needs to determine if the Reactor will remain subcritical under all conditions without boron.

Which ONE of the following conditions will satisfy the requirement of remaining subcritical under all conditions without boron?

- A. All control rods inserted to position 00 with the exception of one control rod at position 06 and one control rod at position 08.
- B. IRM's are on Range 3 with a negative 80 second period.
- C. All control rods inserted to or beyond position 02.
- D. Shift Manager has determined that the reactor will remain subcritical under the current conditions.

K/A 295015AA2.01 Ability to determine and/or interpret the following as they apply to INCOMPLETE SCRAM: Reactor power. (4.2/4.3)

References: EOI-1, RPV Control, Note 1

- A. Incorrect since 2 rods are not inserted to at least position 02 or beyond. Only one control rod is allowed to be stuck out.
- B. Incorrect since this doesn't mean that all rods inserted to or beyond position 02.
- C. Correct answer.
- D. Incorrect since Reactor Engineering must make this determination.

59. 295016AK3.01 001/T1G1//CR ABANDONMENT/MEM 4.1/4.2/N/BF04301/R/TCK

The Shift Manager has determined that the Unit 3 Control Room must be abandoned. A Reactor Scram has been inserted in accordance with 3-AOI-100-2, Control Room Abandonment, Immediate Action step 4.1.2.

Which ONE of the following is the reason for inserting a manual scram prior to evacuating the control room?

- A. Actions are taken to minimize inventory loss from the reactor until control outside the control room can be established to bring the plant to a cold shutdown condition.
- B. This ensures the control of reactor power, pressure and level is established from outside the control room within 20 minutes.
- C. This prevents fission product barrier damage by establishing the ability to control critical parameters from outside the control room.
- D. It places the unit in a lower mode quicker than waiting until an operator is stationed at the backup controls.

KIA 295016 AK3.01 Knowledge of the reasons for the following responses as they apply to CONTROL ROOM ABANDONMENT: Reactor SCRAM. (4.1/4.2)

References: EPIP-I, Rev.30, Pg 160 and 162 of 207
3-AOI-100-2a, Rev.15, Pg 4 of 80

- A. Correct answer. This includes the bottling up of the reactor until a cooldown can be started.
- B. incorrect since scrambling the reactor does not ensure the 20 minutes is met. The procedure is written (3-AOI-100-2a) to ensure the 20 minute time limit is met.
- C. Incorrect since the reactor scram prior to leaving the control room does not prevent this. Maintaining the critical parameters within their critical band does this function.
- D. Incorrect since the reactor scram is not based on getting to a lower mode quicker.

60. 295017AK1.02 001/T1G2//EPIP/MEM 3.8/4.3/N/BF04301/R/TCK

An off-site release is in progress on Unit 3 and the CECC is not staffed.

Which ONE of the following is the LOWEST Emergency Classification which requires the SED to make Protective Action Recommendations for the general public?

- A. Unusual Event
- B. Alert
- C. Site Area Emergency
- D. General Emergency

K/A 295047 AK1.02 Knowledge of the operational implications of the following concepts as they apply to **HIGH OFF-SITE RELEASE RATE**: Protection of the general public. (3.8/4.3)

References: EPIP-5, Rev.29, Pg. 6 of 12

A, B, and C are incorrect since PARS are not required to be made by the SED until a General Emergency is declared.

D. Correct answer.

61. 295018AA2.04 001//T1G1/CCW/C/A 2.9/2.9/N/BF04301/S/TCK

Unit 2 is operating at 80% RTP. The following alarms are received shortly after taking the shift:

- DRYWELL EQPT DR SUMP TEMP **HIGH**
- RWCU NON-REGENERATIVE HX DISCH TEMP HIGH
- DRYWELL PRESSURE ABNORMAL

Which ONE of the following conditions is the most likely cause of these alarms?

- A. Trip of an RWCU pump.
- B. Trip of an RBCCW pump with a failure of 2-FCV-7048 to close.
- C. RBCCW Heat Exchanger TCV fails open.
- D. Loss of Drywell Coolers.

K/A 295018 AA2.04 Ability to determine **and/or** interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER: System flow. (2.9/2.9)

References: 2-AOI-70-1, Rev.21, Pg. 1 and 2 of 8

- A. Incorrect since a trip of the RWCU pump should not cause the Drywell Eqpt sump temp to increase or the Drywell Temp to increase. Immediate action of AOI is to trip the RWCU pumps.
- B. Correct answer. Loss of RBCCW flow will cause all these parameters to increase.
- C. Incorrect since the TCV failing open should cause all these temps to decrease.
- D. Incorrect since the loss of Drywell Coolers will not increase RWCU NRHX outlet temps but it may cause the increase in the other parameters.

62. 295018G2.4.10 001/T1G1//CCW/C/A 3.0/3.1/N/BF04301/R/TCK

Unit 2 has just experienced a loss of 4160 VAC Unit Board 2A.

Which ONE of the following is the primary cause for receiving alarm "CNDR A NS WATER BOX LEVEL LOW, 2-ARP-9-20A, on panel 9-20?

- A. Sensor malfunction.
- B. Vacuum Priming System malfunction.
- C. "2A" CCW Pump tripped.
- D. Loss of Condenser Vacuum.

K/A 295018 G2.4.10 Knowledge of annunciator response procedures. (3.0/3.1)

References: 2-ARP-9-20A alarm #8
OPb171.050, Rev.12, pg 15 of 70

- A. Incorrect since a more likely cause with the conditions given is that the "A" CCW pump has lost power.
- B. Incorrect since a more likely cause with the conditions given is that the "A" CCW pump has lost power.
- C. Correct answer. "A" CCW pump is powered from 4160 VAC Unit Board A
- D. Incorrect since loss of condenser vacuum does not affect water box level. Water box level could have an affect on condenser vacuum.

63. 295019AA1.04 001/T1G1//INSTRUMENT AIR/MEM.3.3/3.2/B/BF04301/R/TCK

Unit 2 Control Air pressure has been decreasing slowly for the past hour.

Which ONE of the following describes the operation of Service Air Cross-tie to Control Air Valve, 0-FCV-33-1?

Opens at

- A. 45 psig and remains open.
- B. 65 psig and closes at 10 psig.
- C. 75 psig and remains open.
- D. 85 psig and closes at 30 psig.

K/A 295019 AA1.04 Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR: Service air isolation valves. (3.3/3.2)

References: 2-AOI-32-2, ATTACHMENT 1, SECTION 7.1, Rev.23

- A. Incorrect since this is the pressure at which the MSIV's will get a closed signal if control air pressure is lost instantaneously.
- B. Incorrect since this is the pressure at which the Unit 2 to Unit 3 Control Air Crosstie, 2-pcv-032-3901, will close.
- C. Incorrect since this is the pressure at which the CAD tank A nitrogen will supply 2-FSV-64-20 and 21.
- D. Correct answer. The added pressure for closing is there since most valves fail as is on a loss of pressure but this one will re-position if the pressure gets too low.

64. 295020G2.4.11 001//T1G2/CONTAINMENT/MEM 3.2/3.6/N/BF04301/S/TCK

Unit 2 is at full power with both RWCU pumps tagged out of service. An MSIV poppet becomes disconnected and closes causing a Group 1 isolation and a trip of both Recirc Pumps.

Which ONE of the following is the correct operator response to these conditions including the reason for the action(s)?

- A. Verify **WWCU** isolation valves open, perform Recirc Pump restart limitations SR, and restart a Recirc Pump to avoid stratification of reactor vessel.
- B. Initiate **RCIC** for level control, control pressure with **SRVs 800-1000#**, and re-open **MSIVs** to establish main condenser as a heat sink to ensure containment integrity is not compromised.
- C. Initiate HPCI in **INJECTION/RECIRC** mode for pressure and level control to avoid cladding damage due to overheating.
- D. Reset reactor scram, initiate cooldown as soon as possible to prevent violation of PT curve for bottom head temperature.

K/A 295020 **G2.4.11** Knowledge of abnormal condition procedures. (3.2/3.6)

References: 2-AOI-100-1, Rev.76

- A. Incorrect since **RWCU** system has no flow. SR cannot be performed.
- B. Incorrect since **MSIVs** not open does not threaten containment.
- C. Incorrect since cannot perform pressure and level control **at** the same time.
- D. Correct answer.

65. 295021AA1.04 001/T1G1//SHUTDOWN COOLING/C/A 3.7/3.7/N/BE04301/R/TCK

Unit 3 is in Mode 4 and has been shutdown for 48 hours with Shutdown Cooling in service using RHR System I. Both Recirc pumps are off.

Which ONE of the following is NOT a viable method that can be used for alternate decay heat removal if Shutdown Cooling is lost?

- A. Place Auxiliary Decay Heat Removal (ADHR) in service with all available heat exchangers in service.
- B. Place Unit 2 RHR loop in service, CROSS-TIED with Unit 3, for Shutdown Cooling. Shift Manager approval is required.
- C. Raise RPV level to +80 inches and maintain a band of +70 to +90 inches. Increase monitoring frequency of reactor coolant temperature.
- D. Increase RWCU flow rate to maximum AND maximize RWCU blowdown.

K/A 295021 AA1.04 Ability to operate and/or monitor the following as they apply to LOSS OF SHUTDOWN COOLING: Alternate heat removal methods. (3.7/3.7)

References: 3-AOI-74-1, Rev.10, pg 5,7, and 8.
Tech Spec Bases 3.4.8 ACTIONS A.1

A. Correct answer. Unit required to be in Mode 5 with gates removed.

B, C and D. Incorrect since this is a method per 3-AOI-74-1.

66. 295022AK3.02.001/T1G2//CRD/MEM 2.9/3.1/N/BF04301/R/TCK

Unit 2 is operating at 50% RTP with the "2A" CRD pump out-of-service. A fault occurs in the motor of the "1B" CRD pump which causes it to trip.

Which ONE of the following is the reason CWD graphitar seals may be damaged?

- A. Loss of Drive water pressure.
- B. Loss of Cooling water Row.
- C. Inability to open the scram outlet valve during a scram.
- D. The index tube expands and causes excessive friction on the seals.

K/A 295022 AK3.02 Knowledge of the reasons for the following responses as they apply to LOSS OF CRD PUMPS: CRDM high temperature. (2.9/3.1)

References: OPL171.006, Rev.7, Pg 38 and 44 of 72

- A. Incorrect since Drive water pressure does nothing for the seals.
- 5. Correct answer since this causes seals to increase in temperature and this is why there is a 350°F temperature limit.
- C. incorrect since the scram outlet valve is air operated.
- D. Incorrect since the index tube does not interact with the graphitar seals.

67. 295023AK1.03 001/TIG1//REFUEL ACTIVITIES/C/A 3.7/4.0/B/BF04301/R/TCK

Fuel loading is in progress. As a fuel assembly is lowered into the core the CR operator observes SRM counts rising and verifies SRM period lights illuminated. The CR operator immediately notifies the Refuel Floor personnel of the indications.

Which ONE of the following actions should be performed immediately?

- A. Stop the fuel movement and evacuate the Refuel Floor.
- B. Notify the SM & RX engineer for directions concerning an inadvertent criticality.
- C. Remove the fuel assembly from the core & if criticality is still confirmed, then move fuel assembly away from core to the cattle chute and evacuate the Refuel Floor.
- D. Remove the fuel assembly from the core & if criticality is still confirmed, then move the assembly to the SFSP least populated rack location with grapple latched and evacuate the Refuel Floor.

K/A 295823 AK1.03 Knowledge of the operational implications of the following concepts as they apply to REFUELING ACCIDENTS: Inadvertent criticality. (3.7/4.0)

References: 2/3-AOI-79-2, sections 4.1.3 and 4.1.4, Rev.11.

- A. Incorrect since this is the action if withdrawing a control rod.
- B. Incorrect since this is a subsequent action and not an immediate action.
- C. Correct answer per 4.1.3.3.
- D. Incorrect since this is the action to take if reactor can be determined to be subcritical.

68. 29502462 4 1001/T1G1//EOI CONTROL/C/A 4.3/4.6/B/BF04301/R/TCK

Unit 3 reactor has scrammed and EOI-1 has been entered due to low water level caused by a malfunction of the FWLCS. One control rod indicates position 14. Subsequently, a leak develops in the Drywell causing pressure to increase to 2.6 psig.

Which ONE of the following describes the appropriate actions to take ?

Enter EOI-2 and:

- A. Continue in EOI-1
Execute c-5
- B. Re-enter EOI-1
Execute 3-AOI-100-1
- C. Continue in EOI-1
Execute RC/Q
- D. Re-enter EOI-1
Execute C-5

K/A 295024 G2.4.1 Knowledge of EOP entry conditions and immediate action steps.
(4.3/4.6)

References: EOI-1, Rev.5

- A. Incorrect since a new entry condition has been exceeded which requires re-entry into EOI-1. Also, C5 is inappropriate at this time since only 1 control rod is out.
- B. Correct answer. Per the RC/Q leg the reactor is subcritical and no boron has been added so the override is in effect.
- C. Incorrect since a new entry condition has been exceeded which requires re-entry into EOI-1.
- D. Incorrect since C5 is inappropriate at this time due to only 4 control rod is out.

69. 295025G2.3.10 001//T1G1/RAD CONTROLS/C/A 2.9/3.3/N/BF04301/S/TCK

Unit 3 has scrambled due to a Group 1 isolation. The " A Main Steam line has failed to isolate and radiation levels in secondary containment are increasing. The following conditions exist:

- | | |
|---------------|---------------------|
| - HPCI Room | MAX normal exceeded |
| - RB EL 565 W | MAX normal exceeded |
| - RB EL 621 | MAX safe exceeded |

Which ONE of the following actions are required per EOI-3, Secondary Containment Control?

- A. Enter EOI-1, RPV Control and rapidly depressurize with the SRVs.
- B. Enter EOI-1, RPV Control and rapidly depressurize the RPV with the Main Turbine Bypass Valves.
- C. Enter C-2, Emergency RPV Depressurization and open all ADS valves.
- D. Enter EOI-3, Secondary Containment Control and transition to GOI-100-12A, Cold Shutdown.

K/A 295825 G2.3.10 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure. (2.9/3.3)

References: EOI-1, Rev.5
EOI-3, Rev.8
C-2, Rev.4

- A. Incorrect since cannot use SRVs to rapidly depressurize.
- B. Correct answer per the override in EOI-1
- C. Incorrect since Emergency Depressurization is not required until 2 Max safe conditions exist.
- D. Incorrect since this transition is made only if emergency depressurization will not reduce discharge into the secondary containment. This is not the case.

70. 295025G2.3.11 001/TIG1//REACTOR PRESSURE/MEM 2.7/3.2/N/BF04301/R/TCK/RK

Which **ONE** of the following is the reason Tech Specs require all 3 trains of SBT to be operable?

- A. All three trains are required to ensure negative pressure in the reactor building post **LQCA**.
- B. Two trains are required to ensure negative pressure in the reactor building and one train is required to vent the drywell to ensure offsite releases are controlled post LQCA.
- C. Two trains are required post LOCA to ensure offsite rad releases are maintained within 10CFR100 limits even considering a single failure of the third train.**
- D. One train is required for each unit in operation to ensure offsite and onsite releases are controlled post LOCA. This will ensure control room habitability and protection of the public.

K/A 295025 G2.3.11 Ability to control radiation releases. (2.7/3.2)

References: EOI-1, RPV Control
EOI-2, Primary Containment Control

- A. Incorrect since 2 trains are required.
- B. Incorrect since 2 trains are required for offsite release and not negative pressure.
- C. Correct answer.
- D. Incorrect since 2 trains are required and secondary containment is not unit specific.

71. 295026EK2.05 001/T1G1//SUPPRESSION CHAMBER/MEM 3.0/3.3/N/BF04301/R/ICK

A leaking SRV has caused Suppression Pool temperature to increase from 85°F to 100°F. All Tech Spec required actions are being taken.

Which ONE of the following describes the indications that would be observed by the operator for this change in temperature?

- A. Drywell pressure would increase.
- B. Suppression chamber level would decrease.
- C. Drywell temperature would increase.
- D. Suppression chamber temperature would decrease.

K/A 295026 EK2.05 Knowledge of the interrelations between SUPPRESSION POOL HIGH WATER TEMPERATURE and the following: Containment pressure. (3.0/3.3)

References: Thermal Hydraulics

- A. Correct answer due to the expansion of the Torus water. Pressure would increase and back up water into the downcomers.
- B. Incorrect since level would increase due to the higher temperature of the water.
- C. Incorrect since the SRV goes under the torus water level. This would not affect Drywell temperature.
- D. Incorrect since Suppression Chamber temperature would increase due to the leaking SRV.

72. 295028EA1.04001/T1G1//PRIMARY CONTAINMENT/C/A 3 9/4 0/N/BF04301/R/TCK _____

A Small Break LOCA has occurred on Unit 2 with the following conditions present in the Drywell and Torus:

- | | |
|-----------------------|-----------------------------|
| - Drywell Pressure | 5 psig and stable |
| - Drywell Temperature | 275°F and increasing slowly |
| - Torus Level | 16 ft and stable |
| - Recirc Pumps | Off |
| - Drywell Blowers | Off |

If Drywell Sprays were initiated under these conditions, which ONE of the following consequences would most likely be the result?

(Reference provided)

- A. Water from the Torus would be drawn into the Drywell through the DW-to-Torus vacuum breakers.
 - B. Breach of Containment on negative pressure due to exceeding the capacity of the DW-to-Torus vacuum breakers.**
 - C. Damage would occur to the DW Blowers, therefore, they should not be started under any circumstances.
 - D. LOCA size would increase due to the thermal shock of the relatively cool water being sprayed into containment.
-

K/A 295028 EAI.04 Ability to operate and/or monitor the following as they apply to HIGH DRYWELL TEMPERATURE: **Drywell** pressure. (3.9/4.0)

(Provide copy of Curve 5, DW Spray Initiation Limit)

References: EOP Basis Document

A. Incorrect since the water level is below 18 feet.

B. Correct answer.

C. Incorrect since DW coolers may be initiated under other conditions such as containment temperature still high but sprays not necessary.

D. Incorrect since the water going out the leak will prevent the colder water from the sprays getting to the piping.

73. 295028EA2.02 001//T1G1/CONTAINMENT/C/A 3.4/3.7/N/BF04301/S/TCK

A steam Break has occurred inside the Unit 3 Containment. The following conditions exist at this time:

- Drywell temperature 350°F
- Drywell pressure 28 psig
- Reactor pressure 950 psig steady
- Torus temperature 160°F
- Torus level 29 ft
- MSIVs open

Which ONE of the following actions is required with regards to reactor pressure at this time?

- A. Commence a cooldown using the Bypass Valves at <100°F/Hr.
- B. Immediately lower reactor pressure using Bypass Valves to 700 psig to stay within the Heat Capacity Temp Limit.
- C. Emergency Depressurize the reactor per C-2, Emergency RPV Depressurization.
- D. Maintain reactor pressure in a band of 808-1000 psig.

K/A 295028 EA2.02 Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE: Reactor pressure. (3.8/3.9)

References: EOI-2, Primary Containment Control
EOI-1, RPV Control
C-2, Emergency RPV Depressurization

- A. Incorrect since Drywell Temperature cannot be maintained below 160°F. With Torus level above 18 ft this requires Emergency Depressurization.
- B. Incorrect since the Heat Capacity Temp Limit is not being challenged at this time.
- C. Correct answer.
- D. Incorrect since conditions exist which require Emergency Depressurization. This pressure band is normally given per EOI-1 which is in effect long enough to get to Emergency Depressurization through the override.

74. 295030EA2.01 001/TIG1//TORUS/C/A 4.1/4.2/N/BE04301/R/TCK

Unit 3 is commencing a Startup from an outage with Reactor Power at 3% RTP. The Drywell and Suppression Chamber are de-inerted at this time.

Which ONE of the following requires the earliest entry into Tech Spec Actions for Suppression Chamber Water Level?

(Reference provided)

- A. -5.5 inches
- B. -6.5 inches
- C. -7.5 inches
- D. -8.5 inches

K/A 295030 EA2.01 Ability to determine and/or interpret the following as they apply to LOW SUPPRESSION POOL WATER LEVEL: Suppression pool level. (4.1/4.2)

References: Tech Spec section 3.6.2.2

- A. Incorrect since this level is bounded by the initial conditions of Dp not established and level band of > -7.25 inches.
- B. Incorrect since this is still not an entry into Tech Spec Actions since the band is > -9.25 inches.
- C. Correct answer since it is outside the level band of > -7.25 inches.
- D. Incorrect since the previous answer is the earliest entry into Tech Specs.

75. 295031EK2.01 001/T1G1//INSTRUMENTATION/C/A 4.4/4.4/N/BF04301/R/TCK

A leak has developed on the variable leg side of the narrow range reactor vessel level instruments.

Which **ONE** of the following describes the effect this will have on the indicated level and why?

Indicated level will be _____ than actual level due to a _____ **Dp** signal from the transmitter.

- A. ✓ lower; higher
- B. higher; lower
- C. lower; lower
- D. higher; higher

K/A 295832 EK2.01 Knowledge of the interrelations between REACTOR LOW WATER LEVEL and the following: Reactor water level indication. (4.4/4.4)

References: OPL171.003, Rev.15, Pg 18 of 61
Enabling Objective #B1

- A. Correct answer.
- B. Incorrect since the **Dp** get higher and **this** causes the instrument to read lower.
- C. Incorrect since the instrument reads lower at a higher **Dp**.
- D. Incorrect since the instrument reads lower at a higher **Dp**

76. 295031G2.2.23001//T1G1/LEVEL INSTRUMENTATIO/C/A 2.6/3.8/N/BF04301/S/TCK

Unit 2 is at 100% power. The following sequence of events occurred involving the instrumentation associated with RPS Function #4, "Reactor Vessel Water Level-bow, Level 3": (Note: RPS Trip capability not affected.)

- 0800 Trip System A instrument declared INOP
- 1600 Trip System B instrument declared INOP
- 2480 Trip System A instrument declared OPERABLE
- 0300 Trip System B instrument declared OPERABLE

Which ONE of the following describes the most limiting REQUIRED ACTION and associated COMPLETION TIME that was applicable during the above sequence of events?

(Reference provided)

- A. Place one channel in trip within 12 hours.
- B. Place channel in one trip system in trip within 6 hours.
- C. Be in **MODE 2** within 6 hours.
- D.** Be in **MODE 3** within 12 hours,

K/A 295031 **G2.2.23** Ability to track limiting conditions for operations. (2.6/3.8)

Provide references for TS 3.3.1.1 and Table 3.3.1.1-1

References: Tech Spec section 3.3, RPS Instrumentation
Tech Spec table 3.3.1.1-1, RPS Instrumentation

- A. Incorrect since the Trip System A instrument was **INOP >12** hours condition **G** applies which requires the unit to be in **MODE 3** within 12 hours.
- B. Incorrect since the Trip System A instrument was **INOP >12** hours condition **G** applies which requires the unit to be in **MODE 3** within 12 hours. This requirement **was** applicable for 5 hours.
- C. Incorrect since Condition **F** does not apply under these conditions.
- D. Correct answer. Trip System **A** instrument has been **INOP** for greater than 12 hours. Condition **G** now applies which requires the unit to be **in** **MODE 3** within **22** hours.

7Z_29503362 3.1 001/T1G2//RAD CONTROLS/MEM2.6/3.0/N/BF04301/R/TCK

A radwaste discharge has created a hot spot which produces 1.2 Rem/Hr at 30 centimeters. Rad Protection needs your help to determine the proper controls for the area.

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

- A. Post as a Radiation Area and label the hot spot.
- B. Post as a High Radiation Area with a barrier preventing entry to the area.
- C. Post as a Locked High Radiation Area and continuously guard or lock the entrance.
- D. **Post** as a Very High Radiation Area and lock the entrance. **RADCON** Manages must approve the **RWP** for entry.

K/A 295033 G2.3.1 Knowledge of 10 CFR:20 and related facility radiation control requirements. (2.6/3.0)

References: RCI-17, Rev.40, Pg 2,3 and 6 of 44

- A. Bncorrect since the hot spot exceeds the limits for Locked High Radiation Areas.
- B. Incorrect since the barrier must be continuously guarded or locked. This condition is for hot spots <1.0 Rem/Hr at 30 centimeters.
- C. Correct answer.
- D. incorrect since this is **for** a Very High Radiation Area and this does not meet those limits of >500 Rads/Hr.

78. 295037EK1.02001/T1G1//EOI CONTROL/C/A.4.1/4.3/B/BF04301/R/TCK.

An ATWS has occurred on Unit 2. The following plant conditions exist:

- | | |
|-----------------------------------|-------------------------|
| - SLC tank level | 55% |
| - Reactor power | 4% |
| - Reactor water level | -40 inches |
| - HP injection systems available | RCIC, boron and CRD |
| - Suppression Pool temperature | 112°F |
| - Reactor pressure | 888 and slowly lowering |
| - 1 SRV open for pressure control | |

If reactor power starts to slowly rise, which ONE of the following actions is required to be performed ?

- A. Continue to monitor power level until SLC tank is at 43%. If power is still increasing then lower level to -185 inches.
- B. Evaluate the reactor power rise. If power continues to rise, then lower level to at least -162 inches.
- C. Evaluate the reactor power rise. If power is above 5%, then lower RPV level to at least -50 inches.
- D. Determine if Reactor power can be lowered below 5%. If not, then Emergency Depressurization is required.

K/A 295037 EK1.02 Knowledge of the operational implications of the following concepts as they apply to SCRAM CONDITION PRESENT AN5 REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: Reactor water level effects on reactor power. (4.1/4.3)

References: C-5 Rev.6

A. Incorrect since lowering level does not depend on amount of SLC injection. Also, level is lowered to -50 inches per step C5-11.

B. Incorrect since power rising above 5% with RWL at -40 inches requires level to be dropped to -50 inches per step C5-11. The -162 inches is referenced in step C5-6.

C. Correct answer per step C5-14.

D. Incorrect since Emergency Depressurization is required only if level cannot be restored and maintained above -185 inches.

79. 295037G2.2.22 001/T1G1/SAFETY LIMITS/C/A 3.4/4.1/N/BF04301/S/TCK

Unit 2 experienced a catastrophic seal failure on the 28 Recirc Pump. The following conditions exist at this time:

- Reactor Power 28% and steady
- Reactor Pressure 990 psig (cycling from 800 to 1315 psig)
- Drywell Pressure 44 psig and steady
- Total Core Flow 8%
- Recirc Pumps Off
- MCPR value 1.01
- Mode Switch Position Shutdown
- Reactor Water Level -152 inches (intentionally lowered)
- Control Rods are being inserted manually.

Which ONE of the following Tech Spec Safety Limits has been exceeded?

- A. MCPR.
- B. Reactor Water level,
- C. Reactor Steam Dome Pressure.
- D. Reactor Thermal Power.

K/A 295037 G2.2.22 Knowledge of limiting conditions for operations and safety limits.
(3.4/4.1)

References: Tech Spec section 1.1, Table 1-1, Modes
Tech Spec section 3.4.10, Reactor Steam Dome Pressure
Tech Spec section 2.1, Safety Limits
Tech Spec section 3.1.4, Control Rod Scram Times

- A. Incorrect since core flow is <10%..
- B. Incorrect since water level remains above TAF.
- C. Incorrect since pressure does not exceed 1325 psig.
- D. Correct answer.

80. 295038EK1.02001/T1G1//RAD RELEASE/MEM 4.2/4.4/B/BF04301/R/TCK

Following core damage, an unisolable steam leak in the Turbine Building requires declaration of a General Emergency due to the loss of three fission product barriers. The crew is executing EOI-4, Radiation Release Control. Field surveys and Off-Site dose projections are being performed.

Which ONE of the following describes when Emergency Depressurization is required to be initiated?

- A. Immediately, since a General Emergency was declared.
- B. If two or more areas in the Turbine Building exceed their maximum safe operating temperature limits.
- C. If two or more areas in the Turbine Building exceed their maximum safe operating radiation limits.
- D. If the Off-Site release rate approaches or exceeds the Emergency Action Level for a General Emergency.

K/A 295038 EK1.02 Knowledge of the operational implications of the following concepts as they apply to HIGH OFF-SITE RELEASE RATE: Protection of the general public. (4.2/4.4)

References: EOI-4, Radiation Release Control

A,B,C - Incorrect since they do not meet the requirements per EOI-4. If an unisolable leak was in the Reactor Building and two max safes were reached then this would have required an Emergency Depressurization.

D. Correct answer.

82. 400000K4.01001/T2G1//RAW COOLING WATER/C/A 3.4/3.9/N/BF04301/R/TCK

Unit 3 is experiencing Raw Cooling Water (RCW) header pressure fluctuations from 45 psig to 60 psig which have caused the automatic operation of the 3E RCW Pump. Listed below is the start and stop times of the 3E RCW pump.

- initial start 08:30 am
- stop time 09:15 am
- subsequent start 09:45 am
- stop time 10:00 am

Which ONE of the following is the earliest time that the 3E RCW pump would start if another automatic start signal is received?

- A. Immediately.
- B. 10:30 am.
- C. 11:00 am.
- D. 11:30 am

K/A 400000 K4.01 Knowledge of CCWS design feature(s) and/or interlocks which provide for the following: Automatic **start of** standby pump. (3.4/3.9)

References: OPL171.048, Rev.7, pg 15 -17 of 25
Enabling Objective #5

- A. Incorrect since the first run time was >30 minutes and **the** second run time was <30 minutes then the pump is prevented from starting for 1 hour from the **time** the second run was stopped.
- B. Incorrect since the first run time **was** >30 minutes and the second run time was <30 minutes then the pump is prevented from starting for 1 hour from the time the second run was stopped.
- C. Correct answer.
- D. Incorrect since the first run time was >30 minutes and the second run time was <30 minutes then the pump **is** prevented from starting for 1 hour from the time **the second** run **was** stopped.

83. 600000AK2.04001/T1G1//FIRE/C/A 2.5/2.6/B/BF04301/R/TCK

Due to a fire in the turbine building, all electrically driven fire pumps automatically started. While the fire pumps were running, a loss of 161KV and 500KV offsite power occurred. The EDGs then started and powered their respective shutdown boards.

Which ONE of the following describes how the fire pumps become available to fight the fire?

- A. No operator action is required; the pumps will automatically restart after the busses are re-energized by the EDGs.
- B. Ensure the diesel driven fire pump is running; the motor driven fire pumps must remain load shed from the EDGs.
- C. Place the NORMALEMERGENCY switch for the associated fire pumps to EMERGENCY and back to NORMAL; pumps will start automatically.
- D. Place the NORMAL/EMERGENCY switch for the associated fire pumps to EMERGENCY and back to NORMAL; manually start the pumps at the associated pump breakers.

K/A 600000 AK2.04 Knowledge of the interrelations between PLANT FIRE ON SITE and the following: Breakers/relays/and disconnects. (2.5/2.6)

REF: OPL171.074, Rev. 6, Page 11
0-AOI-57-1A, Rev. 0041, Page 6

- A. Incorrect since the logic has to be reset for the fire pumps to automatically restart.
- B. Incorrect since the fire pumps are directed to be loaded onto the DG if a fire conditions exists.
- C. Correct answer.
- D. Incorrect since the fire pumps will automatically restart after the logic is reset.

84. G2.1.12 002/T3/C/A 2.9/4.0/N/BF04301/S/TCK

Unit 3 is shutting down for a scheduled refueling outage. The HPCI system Steam line Outboard Isolation valve, 3-FCV-073-0003, needs an LLRT performed to determine if work is required to be added to the outage. The Work Control Center notifies you (the Unit Supervisor) that personnel are standing by to perform the LLRT. Current plant conditions are as follows:

- Mode Switch position	Shutdown
- Reactor Temperature	400°F
- Reactor Pressure	235 psig
- Cooldown Rate	50°F/Hr

Which ONE of the following actions should the Unit Supervisor take to support the Work Control Center?

- A. Isolate HPCI in preparation for the LLRT. Notify Work Control Center that the LLRT may commence immediately.
- B. Isolate HPCI and enter LCO 3.5.1. Notify Work Control Center that the LLRT may commence immediately.
- C. Notify the Work Control Center that the LLRT can start in 1 hour. Have the LLRT team standby.
- D. Notify the Work Control Center that the LLRT cannot start for at least 4 hours. Have the LLRT team standby.

K/A 62.1.12 Ability to apply technical Specifications for a system. (2.9/4.0)

References: Tech Spec 3.5.1, Pg 3.5-1
Tech Spec Bases 3.6.1.3, Pg B 3.6-18, B 3.6-21
Tech Spec Bases LCQ 3.0.2, Pg B 3.0-2, B 3.0-3

A. Incorrect since HPCI should **not** be isolated while it is in a Mode where HPCI is required **to** be OPERABLE. Cannot isolate for Operational Convenience per LCO 3.0.2.

5. Incorrect since HPCI should not be isolated while it is in a Mode where **HPCI is** required to be OPERABLE. Cannot isolate for Operational Convenience per LCO 3.0.2.

C. Correct answer. HPCI is not required **to** be OPERABLE with reactor pressure below 150 psig. With a cooldown rate of 50°F/Hr then in 1 hour reactor pressure will **be** below 150 **psig**.

D. Incorrect since you don't have **to** wait **4** hours. LCO 3.6.1.3 **is** still met with the HPCI isolation valves closed and deactivated.

85. G2.1.16.001/T3//COMMUNICATIONS/MEM 2.9/2.8/B/BF04301/R/TCK

An Alert has been declared. The Shift Manager has directed you, as the Unit 1 Operator, to activate the Automatic Paging System (APS). You determined that the AQS system did not respond.

Which ONE of the following is the correct method for notifying the Emergency Responders?

- A. Assemble a team to notify everyone on the duty list by telephone.
- B. Call the ODS and have APS activated from Chattanooga.**
- C. Call the EP staff to activate APS from the Local Recovery Center.
- D. Have the EP staff or the ODS notify Emergency Responders by telephone.

K/A G2.1.16 Ability to operate plant phone/paging system and two-way radio. (2.9/2.8)

References: Bank question. Needs to be verified by utility.

B. Correct answer.

A,C and D. Incorrect since procedure directs answer B.

86. G2.1.22 001/T3//MODE OF OPERATION/C/A 2.8/3.3/M/BF04301/R/TCK

Which ONE of the following sets of plant conditions satisfies the definition for being in MODE 3 per Tech Specs?

- A. A normal shutdown has just been completed. Moderator temperature is 480 °F. The MSIVs are closed. The mode switch is in "Shutdown".
- B. Preparations are in progress for a reactor startup. All control rods are fully inserted with the mode switch in "Shutdown". Moderator temperature is 180 °F.
- C. The reactor is shutdown. Moderator temperature is 135 °F. The Mode Switch is in Start/Hot Stby position during Mode Switch testing.
- D. The reactor is subcritical on Range 4 of the IRMs and lowering. Moderator temperature is 200 °F. The MSIVs are dosed for repairs to a steam line drain valve. The mode switch is in "Start/Hot Stby".

K/A G2.1.22 Ability to determine Mode of Operation. (2.8/3.3)

References: Tech Spec Table 1.1-1

- A. Correct answer since temperature is >212°F.
- B. Incorrect since these conditions are applicable to Mode 4.
- C. Incorrect since these conditions are applicable to Mode 5.
- D. Incorrect since these conditions are applicable to Mode 2.

87. G2.1.28 001/T3//TIP SYSTEM/MEM 3.2/3.3/B/BF04301/R/TCK

Which **ONE** of the following describes the purpose and function of the TIP Shear Valves?

- A. Provides an automatic emergency means to seal the TIP guide tube should the guide tube leak with the TIP probe extended and unable to be retracted. The shear valve cuts the cable and closes off the guide tube.
- B.** Provides a manual emergency means to seal the TIP guide tube should the guide tube leak with the TIP probe extended and unable to be retracted. The shear valve cuts the cable and closes off the guide tube.
- C. Provides the normal means to seal the TIP guide tube should the guide tube leak with the TIP probe extended and unable to be retracted. The shear valve is held closed by a fail-safe spring.
- D. Provides a manual emergency means to seal the TIP indexer should the indexer leak nitrogen. The shear valve closes off the index mechanism for the leaking Tip guide tube.

K/A G2.1.18 Knowledge or the purpose and function of major system components and controls. (3.2/3.3)

References: OPL171.023 Rev.4 pg 10 and 11
Enabling Objective OPL171.023 B2

- A. Incorrect since the shear valve does not operate automatically.
- B. Correct answer.**
- C. Incorrect since the shear valve is not a normal means to isolate the guide tube.
- D. Incorrect since the shear valve does not isolate the index mechanism.

88.G2.1.4001//T3/UNIT STAFFING/C/A 2.3/3.4/N/BF04301/S/TCK

The Brown's Ferry Units are in the following conditions:

- Unit 4 Core verification in progress after initial fuel load
- Unit 2 15% power performing a reactor startup
- Unit 3 Mode switch in Shutdown with temp at 312°F following a scram

Which ONE of the following meets the Tech Spec minimum requirement for non-licensed operators on shift?

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

K/A G2.1.4 Knowledge of shift staffing requirements. (2.3/3.4)

References: Tech Spec 5.2.2, Unit Staff

- A. Incorrect since all 3 units have fuel in the vessel which requires one NLO and since one control room has a unit in mode 1 then another NLO is required.
- B. incorrect since all 3 units have fuel in the vessel which requires one NLO and since one control room has a unit in mode 1 then another NLO is required.
- C. Incorrect since all 3 units have fuel in the vessel which requires one NLQ and since one control room has a unit in mode 1 then another NLO is required.
- D. Correct answer

89. G2.2.11 001/T3//TEMPORARY ALTERATION/C/A 2.5/3.4/B/BF04301/R/TCK

Which ONE of the following situations would require that a Temporary Alteration Control Form (TACF) be initiated per SPP 9.5?

- A. Leads for a common alarm are being lifted to support maintenance under a clearance.
- B. A **keylocked** test switch for a system will be placed in **an** abnormal position **to** allow troubleshooting.
- C. A small leak on the **WHW** suction piping from the Torus that has been patched per an approved work implementing document.
- D. **Some** of the valves in a system must be placed in positions that are not in accordance with **the** valve checklist.

K/A G2.2.11 Knowledge of the process for controlling temporary changes. (2.5/3.4)

References: SPP 9.5, Temporary Alterations, Rev.6

- A. Incorrect since this **is** covered under a clearance **for** maintenance.
- B. Incorrect since this is covered under troubleshooting.
- C. Correct answer.
- D. Incorrect since the system is not being changed.

90. G2.2.12 001/T3//ADMINISTRATION/MEM 3.0/3.4/B/BF04301/R/TCK

Which ONE of the following is responsible for the overall control and coordination of the Operations Surveillance Testing program?

- A. Operations Manager
- B. Plant Manager
- C. Operations Superintendent
- D. Unit Manager

K/A G2.2.12 Knowledge of surveillance procedures. (3.0/3.4)

References: OPDP-1, Rev.3, Section 3.1
Updated titles to the new procedure.

- A. Correct answer.
- B. Incorrect since the Operations Manager is responsible for the Operations procedures.
- C. Incorrect since he is not responsible for the "overall" program.
- D. Incorrect since he is not responsible for **the** "overall" program.

91. G2.2.14 001//T3/CONDUCT OF OPS/MEM 2.1/3.0/B/BF04301/S/TCK

Unit 3 is in a Refueling Outage with a 24 month Group 2 PCIS surveillance in progress. The Test Director assigned to coordinate the surveillance is in the control room monitoring the test when the SGT system receives an actual Auto Start signal. The Test Director stops the surveillance until the conditions that caused SGT to auto start are corrected.

Which ONE of the following describes the actions the Best Director must perform to complete the surveillance?

- A. Discard the surveillance test that was interrupted and repeat the surveillance from the beginning.
- B. Re-verify the Initial conditions with Operations and ensure equipment performance will not be jeopardized by completing the remainder of the procedure.
- C. Verify with Operations that they are able to support the remainder of the surveillance test and continue the surveillance by re-performing the last step that was completed and continuing until the test is complete.
- D. The Test Director and Operations can review the procedure to verify all of the Acceptance Criteria is met. If the Acceptance Criteria is met then the surveillance can be signed off as complete.

K/A G2.2.14 Knowledge of the process for making configuration changes. (2.1/3.0)

Reference: SPP-8.1 Rev.2 Pg 9 and 12
OPL171.078 Rev.11 Pg 14
Enabling Objective OPL171.078 #B11

- A. Incorrect since the previous procedure is not discarded.
- B. Correct answer.
- C. Incorrect since the Test Director and Operations must re-verify the initial conditions prior to restarting the test and there is no direction to repeat a step.
- D. Incorrect since the surveillance cannot be signed off as complete until all steps are completed or N/A'd.

92.G2.2.3 001/T3//UNIT DIFFERENCES/MEM 3.1/3.3/N/BF04301/R/TCK

Which ONE of the following describes the Reactor Protection System Instrumentation functions applicable to Unit 1 only?

- A. ✓ Main Condenser Vacuum - Low
Low Scram Pilot Air Header Pressure
- B. Main Condenser Vacuum - Low
Scram Discharge Volume Water Level - High (Float Switch)
- C. Low Scram Pilot Air Header Pressure
Scram Discharge Volume Water level - High (Float Switch)
- D. Turbine Control Valve Fast Closure, Trip Oil Pressure - Low
Low Scram Pilot Air Header Pressure

K/A G2.2.3 Knowledge of the design/procedural/and operational differences between units. (3.1/3.3)

References: FSAR section 7.2.3.6 item 10.

A. Correct answer.

B, C and D. incorrect since these functions are applicable to Unit 1 along with the other 2 units.

93. G2.2.30 001/T3//FUEL POOL/MEM 3.5/3.3/B/BF04301/R/TCK

While off-loading fuel bundles from the reactor, alarm 3-XA-78-51, FUEL POOL SYSTEM ABNORMAL, is received in the control room with a report that fuel pool level is decreasing uncontrollably.

Which QNE of the following describes a method available **from** the control room **to** add water to the fuel pool in accordance with the above alarm procedure?

- A. Start a condensate pump and inject to the reactor vessel to maintain fuel pool level.
- B. Open emergency makeup supply valve from EECW to the fuel pool to maintain level.
- C. Align fuel pool cooling and cleanup heat exchanger RBCCW supply to the fuel pool to maintain level.
- D. Gravity drain the CST, to the main condenser hotwell, then inject to the reactor vessel with condensate booster pumps.

K/A G2.2.30 Knowledge of RO duties in the control room during fuel handling such as alarms from fuel handling area/communication with fuel storage facility/systems operated from the control room in support of fueling operations/and supporting instrumentation. (3.513.3)

References: 3-ARP-9-4C, alarm 3-XA-78-51 Rev.20
3-AOI-78-1, Rev.10, pg 3 of 41

- A. Correct answer.
- B. Incorrect since this function requires local actions outside the control room.
- C. Incorrect since this requires local actions outside the control room.
- D. Incorrect since this requires local actions outside the control room.

94. G2.3.11 001/T3//RAD RELEASE/MEM 2.7/3.2/N/BF04301/R/TCK

Unit 2 is operating at 100% RTP when the following alarms are received:

- OG ~~POST~~TRTMT RADIATION HIGH (2-XA-55-42, Window 33).
- OG POSTTRTMT RADIATION HIGH-HIGH (2-XA-55-4C, Window 34).
- OG POSTTRTMT RAD MONITOR HI-HI-HI/INOP (2-XA-55-4C, Window 35).

The Operator immediately reduced core flow to 55% and inserted a manual Reactor Scram. After 10 minutes, Offgas Post Treatment indicator 2-RR-90-265 is still reading greater than 5×10^6 cps.

Which ONE of the following actions should be taken for these conditions?

- A. Immediately commence a cooldown to cold shutdown, not to exceed a cooldown rate of 100°F/Hr.
- B. Place standby SJAE into operation per 2-01-66, Off-Gas System, step 8.4.
- C. Close all the MSIV's and Main Steam Line drains, 2-FCV-1-55 and 2-FCV-1-56.
- D. Commence purging the Off-Gas System per 2-01-66, Off-Gas System, step 8.2.

K/A G2.3.11 Ability to control radiation releases. (2.7/3.2)

References: 2-AOI-66-2, Rev.16, pg 2 and 3 of 4

- A. Incorrect since the unit does not have to be cooled down for this procedure. It is an option that the Shift Manager could take but it would not be related to this condition specifically.
- B. Incorrect since placing on another SJAE is not appropriate. Could be considered reasonable to Rusk more steam through the piping.
- C. Correct answer.
- D. Incorrect since the AIO does not reference purging the Off-Gas system but it does have direction to start more dilution fans.

95. G2.3.9001//T3/CONTAINMENT/C/A 2.5/3.4/B/BF04301/R/TCK

Unit 2 startup is in progress with the following conditions existing:

- Reactor Power 10% RTP
- Reactor Pressure 920 psig
- Mode Switch Position START/HOT STBY
- Containment is being inerted.
- Purge filter fan is in service.

Which ONE of the following describes the results of placing the Reactor Mode Switch to the RUN position?

- A. Initiates a Group 6 PCIS isolation unless Bypass switches are placed in BYPASS on panel 9-3.
- B. Automatically closes all valves required for inerting with the purge filter fan unless Bypass switches are placed in BYPASS on panel 9-3.
- C. Automatically closes all valves required for inerting with the purge filter fan unless the Drywell/Torus Bypass switch on panel 9-3 is taken to Torus position and any SGT fan is running.
- D. Automatically closes the drywell and suppression chamber exhaust isolation valves unless the Drywell/Suppression Chamber Train A/B Vent keylock switches are positioned to DRYWELL.

K/A G2.3.9 Knowledge of the process for performing a containment purge. (2.5/3.4)

References: OPL171.032 Rev.10 pg 14 and 15

- A. Incorrect since placing the Mode Switch in RUN will not initiate a Group 6 isolation.
- B. Correct answer.
- C. Incorrect since the Drywell/Torus bypass switch on the 9-3 panel is the incorrect switch.
- D. Incorrect since placing the Drywell/Suppression Chamber Train A/B Vent keylock switches to the DRYWELL position does not prevent valve movement.

96. G2.4.1 001//T3/EOI CONTROL/C/A 3.0/3.7/B/BF04301/S/TCK

Unit 2 has experienced a **Rx** scram due to a loss of Feedwater. bevel has decreased to -10 inches and is being restored by RCIC manual initiation. Due to a partial loss of drywell cooling, the Drywell Temperature reached 172°F before being reported to the SRO.

Which **ONE** of the following is the correct action?

- A. Enter **EOI-1** and inhibit ADS; Enter **EOI-2** and initiate Drywell Sprays.
- B. Enter **C-1**, Alternate bevel Control and inhibit ADS.
- C. Enter **EOI-1** and control level +2 to +50 inches; Enter **EOI-2** and initiate all available drywell cooling.
- D. Enter **EOI-2** and initiate Suppression Chamber Sprays.

K/A G2.4.1 Knowledge of EOP entry conditions and immediate action steps. (4.3/4.6)

References: **EOI-1**, RPV Control, Rev.10
EOI-2, Primary Containment Control, Rev.8
C-1, Alternate bevel Control, Rev.7

- A. Incorrect since you don't get far enough into **EOI-1** to inhibit ADS and **Drywell** Temperature is not high enough to initiate Drywell Sprays.
- B. Incorrect since **Bevel** is being restored so it doesn't get low enough to enter **C-1**.
- C. Correct answer.
- D. Bncorrect since you do not initiate Suppression Chamber Sprays for high drywell temperature.

97. G2.4.16 001/T3//EOP/C/A 3.0/4.0/N/BF04301/S/TCK

A small feedwater leak has occurred on Unit 3 concurrent with a loss of off-site power. The reactor scrammed OR RPV low level with the following conditions present 15 minutes after the event:

- RPV Level -30 inches lowering slowly
- RPV pressure 1050 psig
- Drywell Pressure 3.1 psig steady
- Drywell Temperature 185°F
- All D/Gs started and loaded as designed
- All rods fully inserted

Which ONE of the following EOI's is the highest priority with the appropriate contingency procedure?

- A. EOI-1, RPV Control with SBLC from the boron bank per Appx 7B.
- B. EOI-2, Primary Containment Control with Suppression Chamber sprays per Appx 17C.
- C. EOI-1, RPV Control with RCIC from CST if possible per Appx 5C.
- D. EOI-2, Primary Containment Control with Drywell sprays per Appx 17B.

K/A G2.4.16 Knowledge of EOP implementation hierarchy and coordination with other support procedures. (3.0/4.0)

References: EOI-1, RPV Control
EOI-2, Primary Containment Control

A. incorrect since RCIC has not reached its initiation signal yet then it must be started before moving onto the next step.

B. Incorrect since the RPV level control takes precedence since no injection sources into the vessel yet. HPCI failed to start and a loss of all AC has stopped all other injection sources at this time. Conditions are met so that Suppression Chamber sprays can be started at this time.

C. Correct answer. RCIC must be started prior to answering the question whether level can be maintained above +2 inches. It doesn't have an initiation signal yet.

D. Incorrect since EOI-1 takes precedence. Conditions aren't met to start Drywell sprays.

98. G2.4.22001/T3/EOI CONTROL/MEM 3.0/4.0/B/BF04301/S/TCK

EOI-1, RPV Control, RC/Q leg directs the operators to reduce Recirc Pump speeds to minimum prior to tripping them if Rx Power is above 5%.

Which ONE of the following is the bases for this action?

- A. To minimize power oscillations that may result from tripping Recirc Pumps at higher speeds.
- B. To prevent tripping the turbine on high water level and exceeding the capacity of the bypass valves.
- C. To allow time for ARI to actuate thus allowing the Recirc Pumps to stay in operation for coolant circulation.
- B. To prevent RPV level from reaching + 2 inches as a result of tripping Recirc Pumps at higher speeds and initiating PCIS.

K/A G2.4.22 Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations. (3.014.0)

References: QPLI71.102, Rev.6, Pg 61 and 62 of 67

- A. Incorrect since a rapid power reduction is required at this time.
- B. Correct answer.
- C. Incorrect since every means possible is used to reduce reactor power regardless of how long it takes ARI to actuate.
- B. Incorrect since tripping the recirc pumps causes swell, not shrink.

99. G2.4.44 001/T3/PARS/C/A 2.1/4.0/N/BF04301/S/TCK

Unit 2 has declared a General Emergency. An off-site airborne release is in progress with the following information from the Off-site Dose Assessment Team at the 5 mile point:

- reading of $4.9E-6$ micro Ci/cc of Iodine 131
- reading of 0.5 Rem/hr External Dose
- projected to reach 0.8 REM PEDE

Which ONE of the following Protective Active Recommendations is appropriate for these conditions?

(Reference provided)

- A. Evacuate 2 mile radius AND Shelter 5 miles downwind.
- B. Evacuate 2 mile radius AND Shelter remainder of 10 mile EPZ.
- C. Evacuate 2 mile radius and 5 miles downwind AND Shelter remainder of 10 mile EPZ.
- D. Evacuate 2 mile radius and 10 miles downwind AND Shelter remainder of 10 mile EPZ.

K/A G2.4.44 Knowledge of emergency plan protective action recommendations.
(2.1/4.0)

References: EPIP-5, Rev.29

- A. Incorrect since doesn't address evacuation of downwind sectors and sheltering should be 10 miles away.
- B. incorrect since doesn't address evacuation downwind.
- C. Incorrect since release the limits per Attachment C have exceeded the 5 mile PAG limits of Gable 1. This is the action to take if the limits have not been exceeded.
- D. Correct answer since the reading of $4.9E-6$ micro Ci/cc of Iodine 131 exceeds the limit in table 1 of reading of $3.9E-6$ micro Ci/cc of Iodine 131.

100. G2.4.49 001/T3//CR ABANDONMENT/MEM 4.0/4 BF04301/R/TCK

Unit 1 is defueled and Unit 2 is operating at 75% RTP. There is dense smoke in the control room which requires abandonment of the entire area. The following is a list of immediate actions to be performed on Unit 2:

- 1) Trip Reactor Feedwater Pumps.
- 2) Reduce core **Row** to between **50-60%**.
- 3) Depress Reactor Scram A and **B** pushbuttons.
- 4) Trip Reactor Recirc Pumps.
- 5) Obtain hand-held radios from the **Control** Room.
- 6) Place Reactor MODE Switch **in** SHUTDOWN.
- 7) Check all eight Scram Reset lights extinguished.
- 8) Verify Main Turbine tripped.
- 9) Check control **rods** fully inserted.
- 10) Proceed to Backup Control Panel 2-25-32.

Which **ONE** of the following is the correct order to perform these actions?

(Note: All of the actions may not be listed)

- A. 2,6,4,7,9
- B. 3,8,4,5,10
- C. 2,3,9,4,8
- D. 3,6,7,1,4

K/A G2.4.49 Ability to perform without reference to procedures those actions that require immediate operation of system components and controls. (4.0/4.0)

References: 2-AOI-100-2, Rev.48, pg 4 and 5 of 83

- A. Incorrect since the Recirc Pumps should be tripped after the control rods are verified inserted.
- B. Incorrect since the **Recirc** Pumps should be tripped before the Turbine **is** tripped.
- C. Correct answer.
- D. Incorrect since the Recirc Pumps should be tripped before the Feedwater pumps.