

# LICENSEE POST-EXAM COMMENTS

BROWNS FERRY 2000-301  
50-259, 260, and 296/2000-301

JUNE 12 - 15, JUNE 27 - 29, AND  
JUNE 30, 2000

FACILITY LETTER CONTAINING  
POST-EXAM COMMENTS  
AND THE ENCLOSURES



Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609-2000

July 7, 2000

Mr. Luis A. Reyes  
Regional Administrator  
Region II  
U.S. Nuclear Regulatory Commission  
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Dear Sir:

In the Matter of	)	Docket Nos. 50-259
Tennessee Valley Authority	)	50-260
		50-296

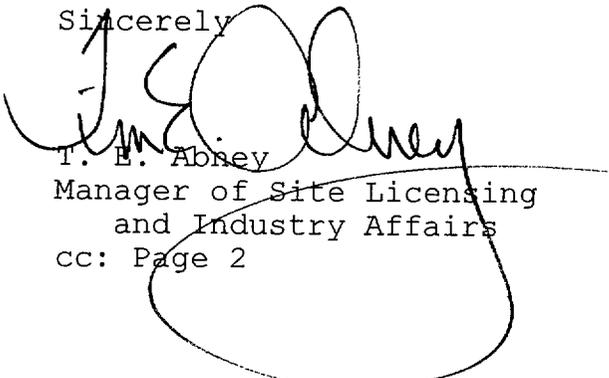
**BROWNS FERRY NUCLEAR PLANT (BFN) - NRC WRITTEN EXAMINATIONS AND COMMENTS ON EXAMINATION QUESTIONS**

Pursuant to the NRC Operator Licensing Examiner Standards (NUREG-1021), TVA is submitting the Reactor Operator and Senior Reactor Operator examinations for grading. TVA is also submitting comments on four examination questions for your evaluation. The examinations were administered to BFN personnel on June 30, 2000.

Enclosure 1 contains the original site specific written examinations. Enclosure 2 contains the individual examinations and answer sheets. Enclosure 3 contains the answer keys. Enclosure 4 contains post-examination comments to four questions in the NRC written examination.

If you have any questions, please telephone John M. Parshall at (256) 729-3455.

Sincerely

  
T. E. Abney  
Manager of Site Licensing  
and Industry Affairs

cc: Page 2

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Mr. Luis A. Reyes  
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July 7, 2000

(w/o Enclosures)

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**ENCLOSURE 1**

019

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

**Applicant Information**

Name:	Region: II
Date: 6/30/00	Facility/Unit: Browns Ferry Nuclear Plant
License Level: SRO	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. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected five hours after the examination starts.

**Applicant Certification**

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

\_\_\_\_\_  
Applicant's Signature

**Results**

Examination Value	_____	Points
Applicant's Score	_____	Points
Applicant's Grade	_____	Percent

Name: \_\_\_\_\_

1. Which one of the following is the purpose of the Maximum Extended Load Line Limit Analysis (MELLLA) region of the Power-to-Flow map?
- A. to prevent cavitation of the jet pumps and the recirculation pumps.
  - B. to allow a maximum flow of  $107.62 \times 10E6$  lbm/hr at 100% power and to lengthen the cycle when all rods are fully withdrawn.
  - C. to prevent a temporary rise in water level, a lowering of power, and a higher flow on the operating pump when recirculation pump stops or when there are rapid recirculation flow reductions.
  - D. to ensure that operation at the 100% Rod Line is easily achieved at full power and to take advantage of the neutron spectral shift which occurs at higher power/flow lines.

2. What is the effect of the failure to remove shorting links on SRM performance?
- A. Rod Block unless IRMs are on range 8 or higher.
  - B. SRM high high scram is bypassed.
  - C. Rod Block unless IRMs are on range 3 or lower.
  - D. Detector full in bypassed.

3. During refueling activities, which one of the following conditions can cause a Fault lockout Light Status indicator to be lit?
- A. The boundary zone has been by-passed.
  - B. The Bridge is over the core and a rod-out indication is detected.
  - C. The Bridge and/or Trolley has exceeded a Travel Limit.
  - D. There is demanded motion present when the refueling bridge motor is started.

4. Unit 2 drywell pressure exceeds 2.45 psig and a 480 volt load shed logic is initiated three minutes later. Which one of the following describes expected status of the Standby Gas Treatment system 30 seconds after the load shed?
- A. SGT trains A, B and C will be running.
  - B. Only SGT trains A and B will be running.
  - C. Only SGT train C will be running.
  - D. No SGT trains will be running.

5. During RHR system surveillance testing, the 480V molded case breaker for Valve 2-FCV-74-61 trips immediately after closing.

In addition to making an operability determination, which one of the following choices describes the proper response to this situation?

- A. One more attempt to close the breaker is permitted before notifying maintenance.
- B. One more attempt to close the breaker is permitted after inspection and adjustment (if necessary) of cell switches.
- C. Do not attempt to reclose the breaker until Electrical Maintenance is available at the breaker panel to observe.
- D. Do not attempt to reclose the breaker. Initiate a Work Request to have the breaker inspected.

6. Following a loss of all AC, which one of the following paths would restore one of the required qualified offsite circuits?

- A. From the 500kV switchyard, through USST 1A to 4.16kV Unit Board 2B, to 4.16kV Shutdown Bus 1, to 4.16kV Shutdown Boards C and D.
- B. From the 500kV switchyard, through USST 1B to 4.16kV Unit Board 1A, to 4.16kV Shutdown Bus 1, to 4.16kV Shutdown Boards A and B.
- C. From Athens 161kV transmission system, through CSST B to Unit Board 2B, to Start Bus 1A, to Shutdown Bus 2, to Shutdown Boards A and B.
- D. From Trinity 161kV transmission system, through CSST A to Unit Board 2A, to Start Bus 1A, to 4.16kV Shutdown Bus 2, to Shutdown Boards A and B.

7. Unit 2 is in refueling. You are the SRO on the refueling floor. Upon insertion of a new fuel assembly, there is an unexpected criticality. Your crew commences the immediate actions of 2-AOI-79-2, "INADVERTANT CRITICALITY DURING INCORE FUEL MOVEMENTS."

The crew verifies the fuel grapple is latched onto the fuel assembly handle and immediately removes the fuel assembly from the reactor core. However, you cannot determine if the reactor is subcritical again with the indications available.

Which one of the following describes the remaining immediate actions required by 2-AOI-79-2 for this situation?

- A. Place the fuel assembly in a spent fuel storage pool location with the least possible number of surrounding fuel assemblies, leaving the fuel grapple latched to the fuel assembly handle. Evacuate the refueling floor.
- B. Place the fuel assembly in a spent fuel storage pool location with the least possible number of surrounding fuel assemblies, and disengage the fuel grapple. Evacuate the refueling floor.
- C. Move the refueling bridge and fuel assembly away from the reactor core, preferably to the area of the cattle chute, and evacuate the refuel floor.
- D. If the Refueling Zone radiation monitors did not trip, instruct the control room operators to manually place the monitors in a tripped condition so that the Refueling Zone ventilation will isolate, SGT and CREV will actuate, and a Group 6 isolation will occur. Evacuate the refueling floor.

8. A fire has required evacuation of the Unit 2 control room. 2/3-SSI-001, "Safe Shutdown Instructions," has been implemented. The procedure directs a rapid depressurization of the RPV. Currently, only three MSRVs have been able to be opened. The following reactor pressures are recorded at the indicated times.

0000 750 psig  
0015 510 psig  
0030 390 psig  
0045 300 psig  
0100 210 psig

Which one of the following describes the correct operator actions?

- A. Reduce the cooldown rate to less than 90 degrees per hour by periodically and sequentially closing MSRVs.
- B. Increase cooldown rate if possible to 90 degrees per hour.
- C. A fourth MSRV needs to be opened in order to provide sufficient blowdown to depressurize the RPV to allow LPCI injection.
- D. No action is needed, adequate blowdown is available to depressurize the RPV to allow LPCI injection and no SSI cooldown limit requirements are being exceeded.

9. You are the Unit Supervisor on Unit 2. A chemistry technician taking routine samples reports that a sample from the roof vent monitored by RM-90-250 indicates there is a release of Xe133 from the roof of the reactor building. The sample had a total activity of 1.5E5 microcuries per cubic centimeter and no other gases or isotopes were detected.

Which one of the following states your required actions?

- A. Direct the chemistry technician to continue routine monitoring.
- B. Without delay, take appropriate actions to terminate the release.
- C. Monitor the release and prepare to notify the NRC pursuant to 10 CFR 50.73.
- D. Terminate the release within one hour and initiate a Special Report pursuant to the ODCM.

10. Fuel loading is in progress on Unit 2. A bundle is in transport from the SFSP to the core, when the fire alarm sounds. Which one of the following describes the correct actions to be taken?

- A. Stop all fuel movement until determination of the fire's impact on refueling operations can be made.
- B. Immediately lower the bundle to the closest location in the core and wait for determination of the fire's impact on refueling operations can be made.
- C. Refueling SRO will monitor the Fire/Medical radio frequency and discontinue fuel movement only if the fire could adversely affect refueling.
- D. Fire brigade team leader will determine if refueling operations could be adversely affected and direct the refueling SRO to discontinue fuel movement if necessary.

11. Which one of the following choices states the BASIS for Caution #1 in the EOIs?

- A. Caution #1 is an accommodation for inaccuracies in RPV water level indication when plant conditions are different from those for which the instruments are calibrated.
- B. Caution #1 defines conditions under which the value and trend of indicated level cannot be relied upon. Under extreme conditions, a high and increasing water level can be indicated when actual RPV level is decreasing.
- C. Caution #1 defines conditions beyond the Environmental Qualification of the RPV level instrumentation. Excessive temperatures in the electronics make the indicated level and trend unreliable.
- D. Caution #1 defines conditions under which drywell temperatures are high enough to interfere with the function of the condensing pots on the variable legs of the RPV level indicators.

12. Due to a LOCA and a subsequent loss of all RHR pumps, Standby Coolant is being used to spray the drywell per appendix 17B. Due to high pressure injection failures, reactor water level lowers to the point that the Unit Supervisor enters C-1, Alternate Level Control. No Injection Subsystems can be lined up for injection. What is the required action required of the RHR standby coolant system.

- A. Secure the standby coolant drywell spray and line up for injection immediately.
- B. Standby coolant drywell sprays can continue provided that other Alternate Injections subsystems are capable of restoring RPV water level to >-162 inches.
- C. Standby coolant drywell sprays can continue until RPV water level drops to -162 inches.
- D. Standby coolant drywell sprays can continue until Emergency Depressurization is required.

13. During a small line break in the drywell, a controlled cooldown is being conducted per the guidance of EOI-1 RC/P leg.

What effect will the cooldown have on delta P (sensed by the wide range level instrument) and what effect will this have on indicated reactor vessel wide range level?

This will result in:

- A. lower sensed delta P and indicated level lower than actual level.
- B. higher sensed delta P and indicated level lower than actual level.
- C. lower sensed delta P and indicated level higher than actual level.
- D. higher sensed delta P and indicated level higher than actual level.

14. A RWCU Backwash Receiver Tank (BWRT) drain line has cracked during transfer to Radwaste and is spilling into the Reactor Building. Radiation levels in the Reactor Building are as follows:

Reactor Building Elevation 593	1200 mR/hr
Reactor Building Elevation 565 West	800 mR/hr
Reactor Building Elevation 565 East	850 mR/hr
Reactor Building Elevation 565 Northeast	1100 mR/hr
All other Reactor Building areas	NOT ALARMED

Per the EOs, which one of the following is the required action that MUST be directed by the Unit Supervisor and/or Shift Manager?

- A. Continue reactor operation and direct attempts to stop the tank drain line leakage.
- B. Commence a normal reactor shutdown to Cold Shutdown.
- C. Scram the reactor and commence a normal cooldown.
- D. Scram the reactor and commence an emergency depressurization.

15. The following conditions have existed for 30 minutes:

- Plant Stack noble gas is  $3.88E+8$  uc/second.
- SI 4.8.B.1.a.1 release fraction is 2.7.
- Site boundary radiation reading is 28.7 mR/hr (gamma and beta).
- Site boundary I-131 is at  $4.1E-8$  uc/cc.

Which one of the following emergency classifications, if applicable, should be declared based on the above conditions? (Reference Material Provided)

- A. None.
- B. Unusual Event.
- C. Alert.
- D. Site Area Emergency.

16. Given the following conditions for Unit 2:

- All control rods have been inserted
- Drywell pressure is 2.1 psig
- Drywell temperature is 89 F
- Drywell hydrogen concentration is 3.1 percent
- RPV pressure is 1025 psig
- RPV water level is +16.2 inches
- Reactor Building ventilation exhaust radiation levels are 10 mR/hr
- Secondary containment temperatures are below maximum values
- Secondary containment sump water level is 56 inches
- Secondary containment area rad monitors are below maximum values
- Suppression pool temperature is 89 F
- Suppression pool level is - 4.3 inches

Based only on the above conditions, which one of the following describes the EOI flow paths you are REQUIRED to enter?

- A. RC/P, RC/L and RC/Q.
- B. PC/H, SP/L, SC/L, SC/T, DW/T, PC/P, SC/R and SP/T.
- C. SC/L, SC/T, and SC/R.
- D. DW/T, PC/P, SP/T, PC/H, AND SP/L.

17. 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?

- 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 operable.

18. Given the following information about the total number of shifts worked during the first quarter of 2000:

SRO A worked: One 12 hour shift as Shift Manager, two 12 hour shifts as Unit 1 / 2 supervisor, and two 12 hour shifts as Unit 3 Unit Supervisor. While assigned as Shift Manager, SRO A spent approximately 4 hours attending Plan-of-the-Day meetings and routine interface with the Operations Work Control Group.

RO B worked: Three 8 hour shifts as Unit 2 Board UO, three 8 hour shifts as Unit 2 Desk UO, and one 8 hour shift as the Operations Representative in the Operations Work Control Group (Tagout Reviewer).

With regard to 10 CFR 55.53, "Conditions of Licenses," which one of the following describes the license status of the above operators?

- A. Neither SRO A nor RO B have maintained an active license.
- B. SRO A has maintained an active license, RO B has not maintained an active license.
- C. RO B has maintained an active license, SRO A has not maintained an active license.
- D. Both SRO A and RO B have maintained an active license.

19. During refueling operations a Portable floating work platform is being used and has been secured so that it is not free floating in the spent fuel pool (e.g. secured with tube lock or similar Attachment to pool wall, etc.).

According to 0-GOI-100-3C, " FUEL MOVEMENT OPERATIONS DURING REFUELING," Work must stop and all personnel exit the portable floating work platform if which one of the following occurs?

- A. Any testing of the neutron monitoring system.
- B. Any time a control rod is not fully inserted in a control cell containing more than one fuel assemblies and the vessel head is removed.
- C. Any time Fuel Handling Supervisor must leave the refuel floor without being properly relieved.
- D. Any failure of the refueling floor CAM unit, that causes all three channels to be inoperable.

20. During abnormal or emergency conditions a UO shall not place an ECCS system in MANUAL unless directed by the Control Room Unit Supervisor/Shift Manager in compliance with EOs or which of the following?

- A. System misoperation in AUTOMATIC is confirmed by two independent indications.
- B. Adequate core cooling is confirmed by at least one indication that meets REG Guide 1.97 requirements AND indications are approaching and cannot be prevented from exceeding an automatic action setpoint.
- C. System misoperation in AUTOMATIC is confirmed by one indication AND adequate core cooling is confirmed by at least one indication that meets REG Guide 1.97 requirements.
- D. Adequate core inventory is confirmed by at least two independent indications AND indications are approaching and cannot be prevented from exceeding an automatic action setpoint.

21. Liquid Radwaste Effluent Monitor RM-90-130 has been operating erratically. A release is scheduled for 10:00.

The following is the sequence of events:

- 09:58 Two independent samples of the tank being discharged were analyzed in accordance with the sampling and analysis program specified in the ODCM
- 10:00 Two qualified persons independently verified the release rate calculations and independently verified the valve line up prior to the release.
- 10:02 Commenced batch radwaste release
- 10:04 RM-90-130 fails

Which one of the following describes the MINIMUM actions required, if any?

- A. Continue with the release. No additional actions are required for this situation.
- B. Continue with the release. Within 1 hour, require an additional sample to confirm the original sample results. If the sample results confirm the previous results, complete the release. Require a qualified person to independently verify the release rate calculations.
- C. Suspend the release. Require an additional sample to confirm the original sample results. If the sample results confirm the previous results, then resume the release.
- D. Suspend the release. Require two additional independent samples of the tank being discharged. Require two qualified persons to independently verify the release rate calculations. If the sample results confirm the previous results and the release rate is confirmed, then resume the release.

22. Unit 3 is operating at 100% power.

Which one of the following is the reason for entering EOI-1 at Step RC1 if drywell temperature cannot be maintained below 200F per EOI-2?

- A. To prevent exceeding the design temperature of the drywell structure.
- B. To prevent exceeding the maximum normal operating temperature of the drywell with the reactor at power.
- C. To ensure drywell temperature remains below the design temperature of the environmentally qualified drywell components.
- D. To ensure the reactor is shutdown by control rod insertion should emergency depressurization be required.

23. While performing Steam Cooling, which one of the following describes the level at which Emergency Depressurization must be initiated and the reason for emergency depressurizing?

- A. -190 inches to ensure adequate core cooling by core submergence.
- B. -200 inches to ensure adequate core cooling by core submergence.
- C. -190 inches to ensure the covered portion of the core will generate sufficient steam to prevent any fuel clad damage in the uncovered portion of the core.
- D. -200 inches to ensure the covered portion of the core will generate sufficient steam to prevent any fuel clad damage in the uncovered portion of the core.

24. A chemistry sample has been directed due to steadily rising SJAE rad monitor readings. The following sequence of events occur at the times noted:

0855 Chemistry reports coolant activity of 4.3  $\mu\text{ci/ml}$  based on sample  
0900 SM enters a 12 to Hot Shutdown LCO based on coolant activity  
0905 SM declares an Unusual Event based on abnormal core conditions  
0910 A plant shutdown is started to comply with Technical Specifications.

The NRC must be notified of events in progress no later than:

- A. 0955
- B. 1000
- C. 1005
- D. 1010

25. Which one of the following has the authority for offsite recovery efforts during an emergency?

- A. Site Emergency Director (SED)
- B. Central Emergency Control Center (CECC) Director
- C. State of Alabama
- D. Nuclear Regulatory Commission

26. Unit 2 is operating with only the 2B Recirc Pump (Single Loop Operation) at 60% power. The following alarms and conditions currently exist:

- Jet Pump Flow No. 11 Thru 20 (2-FI-68-46) 13 Mlbm/hr
- Jet Pump Flow No. 1 Thru 10 (2-FI-68-48) 57 Mlbm/hr
- TOTAL CORE FLOW Recorder (2-XR-68-50) 43.4 Mlbm/hr
- APRM FLOW 43.5%
- Mode Switch in RUN

DETERMINE how the Core Flow Indication and PRNM Systems are affected by these conditions.

- A. The OPRM trip function is BYPASSED and the Total Core Flow Indication is correct.
- B. The OPRM trip function is ENABLED and the Total Core Flow Indication is correct.
- C. The OPRM trip function is BYPASSED and the Total Core Flow Indication may be inaccurate.
- D. The OPRM trip function is ENABLED and the Total Core Flow Indication may be inaccurate.

27. Control Rod 38-23 has been selected for a single notch withdrawal from position 02 to position 04. The following response from the CRD system was observed:

- Insert light illuminates and goes out.
- Withdrawal light illuminates and goes out.
- Settle light illuminates and goes out.

The operator also observes and reports that the selected rod is now at position 06 and is continuing to drift out. A rod drift alarm is also present.

Which one of the following has caused this condition?

- A. The automatic sequence timer has failed.
- B. Stuck open collet fingers.
- C. Low CRDM cooling water pressure/flow.
- D. Leaking scram outlet valve.

28. With the Rod Worth Minimizer keylock switch in NORMAL, which one of the following describes the effect of a loss of all control rod position signals from the RPIS?
- A. Withdraw, insert, and select rod blocks will occur if power is less than the Low Power Alarm point.
  - B. Only withdraw and select rod blocks will occur if power is less than the Low Power setpoint.
  - C. Withdraw, insert, and select rod blocks will occur at any power level.
  - D. RWM-PROG lights on INOP-RESET pushbutton. This will occur at any power level.

29. With both reactor recirculation pump speeds matched and the reactor at 100% power, which one of the following is an indication of a reactor recirculation jet pump failure?

In the loop with the failed jet pump, if indicated recirculation loop flow:

- A. decreases, indicated core pressure will increase.
- B. increases, indicated main generator output will decrease.
- C. decreases, indicated total core flow will increase.
- D. increases, indicated core thermal power will increase.

30. By disconnecting the recirc pump motor from the generator rather than tripping the MG set supply breakers, which of the following occurs?

- A. The recirc pump will coast down more quickly. Lower core flow causes more voiding. This lowers the slowing down length of fast neutrons which raises the thermal neutron flux. Higher thermal neutron flux results in more power.
- B. The recirc pump will coast down more slowly. Higher core flow causes less voiding. This raises the slowing down length of fast neutrons which lowers the thermal neutron flux. Lower thermal neutron flux results in less fission and less power.
- C. The recirc pump will coast down more slowly. Higher core flow causes less voiding. This lowers the slowing down length of fast neutrons which raises the thermal neutron flux. Higher thermal neutron flux results in more power.
- D. The recirc pump will coast down more quickly. Lower core flow causes more voiding. This raises the slowing down length of fast neutrons which lowers the thermal neutron flux. Lower thermal neutron flux results in less fission and less power.

31. During the performance of RHR System MOV operability testing, the RHR pump torus suction valves were closed. Immediately thereafter, a LPCI initiation signal is received.

Assuming the LPCI initiation signal remains present, which one of the following statements is correct?

- A. The suction valves will open automatically, and then the respective RHR pumps will auto start.
- B. The suction valves will open automatically and then the respective RHR pump must be started manually.
- C. The suction valves will not open automatically. They must be fully reopened manually, and then the respective RHR pumps will auto start.
- D. The suction valves will not open automatically. The valves must be fully reopened manually, and then the pumps must be manually started.

32. On Unit 3, the Reactor Water Cleanup (RWCU) System is operating with RWCU Pump A running and the Filter/Demineralizer B in service with 130 gpm flow.

Which one of the following choices describes the expected automatic response of the RWCU system if Filter/Demineralizer B is inadvertently valved out of service?

- A. Filter/Demineralizer B holding pump will start. RWCU Pump A trips when system flow decreases to less than 56 gpm for 35 seconds.
- B. Filter/Demineralizer B BYPASS valve will automatically open to maintain at least 90 gpm and RWCU Pump A will continue to operate.
- C. Filter/Demineralizer A automatically returns to service when Filter/Demineralizer B dp exceeds 20 psid.
- D. The system automatically isolates and Pump A trips when system flow decreases to less than 40 gpm for 7 seconds.

33. The Unit 2 reactor is in cold shutdown with RHR Loop B in the Shutdown Cooling (SDC) mode when reactor water level rapidly decreases to -130.0 inches. Which one of the following correctly describes the operation of the RHR System?

- A. The LPCI Inboard Injection valves automatically open and the operator must wait 5 minutes before throttling flow.
- B. The LPCI Inboard Injection valves automatically close and the operator must wait 5 minutes before manually opening the valve.
- C. The operator must depress the SDC isolation reset pushbuttons on panel 9-3 before the LPCI Inboard Injection valves automatically open.
- D. The operator must manually open the LPCI Inboard Injection valves after resetting the PCIS isolation using the reset switches on panel 9-4.

34. The following conditions exist during a loss of all A/C power (Onsite and Offsite):

- The high pressure coolant injection (HPCI) system was started in response to a valid actuation signal.
- A valid HPCI isolation signal is subsequently generated.

Which one of the following is the expected result?

- A. The HPCI pump will continue to operate with the mini-flow valve open.
- B. The steam supply inboard isolation Valve 73-2 will close, and the turbine will trip.
- C. The steam supply outboard isolation Valve 73-3 will close, and the turbine will trip.
- D. A full HPCI system isolation will occur, and the turbine will trip.

35. During a Unit 2 LOCA, the following plant conditions exist:

- Reactor water level is dropping at a rate of 20 inches per minute.
- RPV level is currently at -132 inches.
- RPV pressure is 468 psig.
- Drywell pressure is 2.5 psig.

Which one of the following describes the expected status of the Core Spray System?

- A. The Core Spray System has not initiated.
- B. The Core Spray pumps have started, but the injection valves are CLOSED.
- C. The Core Spray pumps have started, and the injection valves are OPEN, but pump flow is dead headed against the closed check valve.
- D. Core Spray pumps have started and are injecting into the RPV.

36. Unit 3 is operating at power with Diesel Generator 3A under clearance. A transient occurs resulting in a reactor scram signal and an ATWS. The SLC control switch is taken to the START PUMP B position. Plant conditions are as follows:

Reactor power	10%
480v S/D bd 3A	De-energized (A/C only)
SLC switch	NOR-AFT-START

How will the SLC system respond?

- A. SLC squib valve A fires, no SLC pump starts.
- B. SLC squib valve B fires, no SLC pump starts.
- C. SLC squib valves A and B fire, one SLC pump starts.
- D. SLC squib valve B fires, both SLC pump starts.

37. During main turbine stop valve testing, the No. 2 Stop Valve would not close. The Unit Supervisor directs placing the Stop Valve No. 2 input to the Reactor Protection System (RPS) in a tripped condition.

Which one of the following describes the impact of this action on the RPS?

No. 2 Stop Valve provides input to:

- A. only RPS Channel A, and placing the inputs in a tripped condition will cause a half scram.
- B. only RPS Channel B, but placing the inputs in a tripped condition will NOT cause a half scram.
- C. both RPS Channels A and B, and placing the inputs in a tripped condition will cause a full scram.
- D. both RPS Channels A and B, but placing the inputs in a tripped condition will NOT cause a half scram.

38. While walking down the control room panels on a tour, the Unit 2 Unit Supervisor notices the F5 fuse indicator for the TIP channel B Valve Control Monitor is de-energized.

Which one of the following statements correctly describes the information provided by this condition?

- A. The TIP shear valve will not fire.
- B. The TIP ball valve will not open when the TIP is out of the shield.
- C. The TIP channel will not respond to a automatic scan.
- D. The TIP channel will not respond to a containment isolation signal.

39. A traversing in-core probe (TIP) trace is being performed on Unit 2. With the probe in core, a spurious Group 8 isolation occurs.

Which one of the following describes how the TIP system responds to the isolation signal?

- A. No response; the TIP system only responds to a Group 2 isolation signal.
- B. The TIP drive withdraws at fast speed and the ball valve closes once the probe has withdrawn to the shield chamber.
- C. The TIP drive withdraws at slow speed until the core bottom is cleared, then shifts to fast speed, withdraws from the core and the ball valve closes when the probe has withdrawn to the indexer.
- D. The TIP drive withdraws at fast speed and if the probe is not in the shield within 30 seconds, the shear valve fires to cut the cable and seal the tube.

40. A unit 3 IRM channel is set to range 5 and reading 60. Which one of the following is correct if the IRM range selector switch is turned to range 6?

- A. A different preamplifier circuit is put into service and the reading should be about 6.
- B. A different preamplifier circuit is put into service and the reading should be about 19.
- C. The same preamplifier circuit remains in service and the reading should be about 6.
- D. The same preamplifier circuit remains in service and the reading should be about 19.

41. A reactor startup is in progress on Unit 3 with reactor power at 20%. APRM 1 is bypassed due to failing high. Then, IRM A fails high.

Which one of the following describes the response of the RPS to the IRM upscale trip?

- A. No RPS trip action
- B. A rod block
- C. A half scram
- D. A full scram

42. Unit 2 is operating at 100% power, when a loss of RPS B power occurs.

Which one of the following describes the type of fault detected for BOTH the RBM and APRM channels?

- A. A critical fault is generated in both the RBM channels, and in all of the APRM channels.
- B. A non-critical fault is generated in both the RBM channels, and in all of the APRM channels.
- C. A critical fault is generated in RBM Channel B, and in APRM Channels 2 and 4.
- D. A critical fault is generated in RBM Channel B, and non-critical faults are generated in all of the APRM channels.

43. Which one of the following describes a characteristic of a fill oil leak from a Rosemount transmitter?

- A. The instrument readings repeatedly drift in both directions over a period of time.
- B. The instrument exhibits an inability to follow plant transients over a period of time.
- C. The instrument responds normally until the isolating diaphragm contacts the convolution plate, when it fails to function properly.
- D. The instrument responds more slowly until the isolating diaphragm contacts the convolution plate, when it fails to function properly.

44. The following Unit 2 plant conditions are given:

Reactor power is 65%  
Suppression Pool temperature is 78 degrees  
Suppression Pool temperature is increasing by 2 degrees every 12 minutes  
Suppression Pool cooling is in service providing maximum cooling  
The time is 12:00 noon.

2-SR-3.5.3.3, RCIC SYSTEM RATED FLOW AT NORMAL OPERATING PRESSURE is in progress.

Which one of the following is the latest time the test may be conducted before Technical Specifications limits would be exceeded?

- A. 1:42 pm
- B. 2:42 pm
- C. 3:12 pm
- D. 5:24 pm

45. Which one of the following would occur if power is lost to 250VDC RMOV Board 3B?

- A. The ADS logic will not operate after automatic transfer to the alternate power supply.
- B. The ADS logic will not operate, however, TWO of the six ADS valves can be operated manually.
- C. The ADS logic will not operate, however, FOUR of the six ADS valves can be operated manually
- D. The ADS logic will not operate, however, the SIX ADS valves can be operated manually.

46. Which one of the following gives the two PCIS groups NOT affected by RPV water level?

- A. Groups 1 and 4
- B. Groups 4 and 5
- C. Groups 5 and 6
- D. Groups 6 and 8

47. Given the following conditions:

RPV level                -190 inches  
RPV Pressure            920 psig  
Drywell pressure        2.95 psig  
A valid LPCI initiation signal is present

Which one of the following are required to be completed in conjunction with **ONLY** placing the RHR Containment Spray select switch XS-74-1-121/129 in Select to open the Containment Spray valves?

- A. Raise RPV level to -180 inches only.
- B. Reduce drywell pressure to 1.6 psig only.
- C. Raise RPV level >-120" AND reset the LPCI initiation signal.
- D. Raise RPV level to >-120 inch reactor level AND reduce drywell pressure to 1.6 psig.

48. A trip of the 480 V Shutdown Board 1A will have which of the following effects on the spent fuel pool system?

- A. Trips Fuel Pool Circulating Pump 1A.
- B. Trips Fuel Pool Circulating Pump 1B.
- C. Isolates the fuel pool water flow to the fuel pool heat exchanger.
- D. Isolates the RBCCW to the fuel pool heat exchangers.

49. Both MSR/V vacuum breakers (the 10 inch and the 2 1/2 inch) on each relief line have failed closed. Some water from the suppression pool was siphoned into the relief line upon completion of blowdown when the steam in the relief line condensed.

What are the potential consequences of future MSR/V operation?

- A. Insufficient flow through the relief line.
- B. Uneven heating of the suppression pool.
- C. Direct pressurization of the drywell air space.
- D. Overpressurize the relief line.

50. The following plant conditions exist:

- The reactor is operating at 100% power and 1000 psig.
- A turbine control valve malfunction resulted in reactor safety relief valve (SRV) 1-4 lifting and failing to reseat.

Which one of the following SRV tailpipe temperatures would you expect to see on the SRV that failed to close? (References attached)

- A. 212 degrees Fahrenheit
- B. 290 degrees Fahrenheit
- C. 345 degrees Fahrenheit
- D. 545 degrees Fahrenheit

51. The following conditions exist on Unit 2:

Turbine Steam Throttle Press: 990 psig  
Pressure setpoint: 970 psig  
Load Limit: 100%  
Load Setpoint: 100%

Which one of the following describes the EHC Pressure Regulating System response, and the effect on RPV pressure, if the turbine steam throttle pressure transmitter input to Pressure Regulator A failed upscale to 1100 psig?

- A. Pressure Regulator B takes over; RPV pressure increases.
- B. Pressure Regulator B takes over; RPV pressure decreases.
- C. Pressure Regulator A remains in control; RPV pressure increases.
- D. Pressure Regulator A remains in control; RPV pressure decreases.

52. Which one of the following states the reason why the condensate pump header pressure should be between 100 and 150 psig during a reactor startup?

- A. To minimize thrust on the condensate pump motor bearings.
- B. To ensure adequate condensate flow for the steam jet air ejectors.
- C. To ensure adequate flow through the condensate demineralizers.
- D. To maximize condensate pump efficiency.

53. Which one of the following is an acceptable method for reducing thermal duty on RPV feedwater nozzles during low power and/or hot standby operation?

- A. Minimize reactor power.
- B. Increase reactor pressure.
- C. Maximize RWCU flow.
- D. Reduce CRD flow.

54. A full scram from 100% power occurred on Unit 2 as a result of a fault in the main turbine EHC system. After the SCRAM, the following conditions exist: (Assume no operator actions have occurred)

All three Reactor Feed Pumps (RFPs) are in AUTO  
Master Level Controller is in AUTO  
Reactor water level is at 10 inches and rising  
Scram Response logic is not inhibited

Which one of the following describes the Reactor Feed System response to this situation?

- A. RFPs A and B are available for AUTO or MANUAL mode of operation and may be taken to 5600 rpm.
- B. RFPs A and B are set at 600 rpm, and cannot be raised to >600 rpm until the Scram Response logic is reset.
- C. RFPs A and B are available for MANUAL mode only and will be limited to 3900 rpm until the Scram Response logic is reset.
- D. RFPs A and B are available for AUTO or MANUAL mode of operation but are limited to 3900 rpm until the Scram Response logic is reset.

55. Unit 2 and 3 are operating normally and are tied to the grid. Which one of the following would occur if a DG control switch was taken to start and the output breaker was closed? ( Assume the diesel generator speed setpoint is higher than grid frequency and no other operator actions were performed)

- A. The speed regulator will keep lowering the fuel supply to the diesel in order to try and lower grid/DG output voltage to the governor's setpoint. The DG will trip on under voltage.
- B. The zero droop governor will keep advancing the fuel supply to the diesel in order to try and raise grid/DG output frequency to the governor's setpoint. This will cause the DG to overspeed.
- C. The zero droop governor will keep advancing the fuel supply to the diesel in order to try and raise grid/DG output frequency to the governor's setpoint. This will cause the diesel to overload.
- D. The speed regulator will keep lowering the fuel supply to the diesel in order to try and lower grid/DG output frequency to the governor's setpoint. This will cause the DG to trip on reverse current.

56. On Unit 2, the operator is attempting a manual fast transfer of the 4kV Shutdown Board C normal power supply to the first alternate power supply. The following conditions are in effect:

- The Emergency Control Transfer Switch (ECTS) is in NORMAL.
- The Shutdown Board C AUTO TO MANUAL TRIP pushbutton was depressed, and the amber light extinguished.
- The alternate breaker synchronizing selector switch is in the OFF position.
- The operator is holding the alternate power supply breaker control switch in the CLOSED position.

Which one of the following describes the plant equipment response when the operator next trips the normal supply breaker?

- A. A fast transfer to the alternate supply occurs.
- B. A slow transfer to the alternate supply occurs.
- C. The alternate breaker trips and Shutdown Board C is locked out.
- D. The alternate breaker trips and Emergency Diesel Generator C starts and ties to Shutdown Board C.

57. Diesel Generator 3A is synchronized to 4KV Shut Down Board 3A. The instrumentation readings for the diesel generator are as follows:

voltage: 4160 VAC  
frequency = 59.8  
current = 340 amps  
vars = 1600 Kvars  
watts = 2585 KW

What actions are required if the diesel is expected to be operated for an extended period?

- A. The operator must take the voltage regulator control switch to raise to avoid excessive stator currents.
- B. The operator must take the voltage regulator control switch to lower to avoid excessive stator currents.
- C. The operator must take the governor control switch to raise to avoid excessive field current.
- D. The operator must take the governor control switch to lower to avoid excessive field current.

58. Which one of the following describes the response of the Main Steam Line Radiation Monitoring System when a level of 3 times normal full power background radiation is reached?

- A. The system will trip the mechanical condenser vacuum pump and close the condenser vacuum pump discharge valves.
- B. The system will trip the mechanical condenser vacuum pump, close the condenser vacuum pump suction valves, scram the reactor, and initiate a PCIS Group 1 isolation.
- C. The system will trip the mechanical condenser vacuum pump and close the condenser vacuum pump suction valves.
- D. The system will trip the mechanical condenser vacuum pump, close the condenser vacuum pump discharge valves, scram the reactor, and initiate a PCIS Group 1 isolation.

59. The 3B Raw Service Water (RSW) pump has automatically started to increase level in the RSW storage tanks. Subsequently, Fire Pump A receives an automatic start signal.

Which one of the following describes the response of the RSW storage tank isolation valves and the RSW pump to this situation?

- A. The 3B RSW pump immediately trips. The RSW storage tank isolation valves CLOSE but will automatically REOPEN when the fire pump stops. The 1A RSW pump will automatically start if the tank level demand signal is still present.
- B. The 3B RSW pump immediately trips. The RSW storage tank isolation valves CLOSE. When the fire pump stops, one of the isolation valves automatically REOPENS; however, the backup isolation valve must be manually REOPENED. The 1A RSW pump can then automatically start if the tank level demand signal is still present.
- C. The 3B RSW pump continues running in support of the fire pump. The RSW storage tank isolation valves CLOSE, and will automatically REOPEN when the fire pump stops. When the tank is filled, the 3B RSW pump stops.
- D. The 3B RSW pump continues running in support of the fire pump. The RSW storage tank isolation valves CLOSE. When the fire pump stops, the 3B RSW pump stops. Both tank isolation valves remain CLOSED until manually reopened, and normal tank level control will then resume.

60. A small break LOCA on Unit 2 results in the following plant conditions:

- Reactor water level 12 inches above instrument zero.
- Drywell pressure 2.0 psig.
- Ventilation radiation:
  - Reactor building 68 mR/hr.
  - Refueling Zone 35 mR/hr.
  - Air inlets to Control Room 200 cpm above background.

Which one of the following statements describes the expected status of the control room ventilation system under the above conditions?

- A. The normal ventilation system is operating. The control room emergency ventilation (CREV) system is supplying filtered air from the control bay.
- B. The normal ventilation system is supplying air to the control room from the control bay supply fans.
- C. The CREV system is operating, supplying filtered outside air. The normal ventilation system is isolated.
- D. The CREV system is operating, supplying filtered outside air. The normal ventilation system is NOT isolated.

61. The following plant conditions exist:

- Reactor mode switch:     STARTUP/HOT STANDBY
- Main turbine:             Shell warming
- Feedwater lineup:        RFP A maintaining level in single element

Which one of the following statements describes the expected sequence of actions as a condensate system leak causes condenser vacuum to decrease from 24 inches Hg Vacuum to atmospheric pressure?

- A. The Main turbine trips, then later, the RFP turbine trips and the main turbine bypass valves close at the same time.
- B. The RFP turbine trips, then later, the turbine bypass valves close, followed by a reactor scram on low condenser vacuum.
- C. The RFP turbine trips and the main turbine bypass valves close at the same time, then later, the main turbine trips
- D. Main turbine trips and the reactor scrams in response to the turbine trip, then later, the RFP turbine trips and main turbine bypass valves close at the same time.

62. An accident has occurred concurrent with a partial loss of AC power on Unit 2 resulting in the following indications:

Drywell pressure	2.1 psig
RPV	-135 inches
Reactor pressure	490 psig

The diesel operator incorrectly diagnoses a loss of lube oil and initiates an emergency stop at panel 9-23. Which one of the following is required to reset the Diesel Generator Auto Start Lockout?

- A. Both generator lockout relays (86 relays) AND the protective relay logic (74) must be manually reset.
- B. The core spray initiation signal seal-ins on Panel 9-3 must be reset.
- C. Both the core spray initiation signal seal-ins on Panel 9-3 must be reset and the DG control switch must be taken to RESET.
- D. The DG control switch must be taken to RESET.

63. The following plant conditions exist:

- The plant is operating at 100% power.
- A loss of RPS 'B' power occurs.

Which one of the following isolation valve groups will close?

- A. Group 1 Isolation Valves, Inboard Only
- B. Group 2 Isolation Valves, Outboard only
- C. Group 2 Isolation Valves, Inboard and Outboard
- D. Group 3 Isolation Valves, Inboard and Outboard

64. A reactor startup is in progress and reactor power is on IRM Range 7, when the operator observes the following instrument failures:

- SRM Channels A and C fail downscale.
- IRM Channels A, C, and E fail downscale.

Which one of the following power supplies would have to be lost to cause such failures?

- A. 24 VDC Power Distribution Panel
- B. 48 VDC Power Distribution Panel
- C. 125 VDC Power Distribution Panel
- D. 120 VAC Instrument and Control Power Distribution Panel

65. Given the following plant conditions:

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

Which one of the following describes the response of the reactor if a main turbine trip occurs?

- A. Reactor immediately scrams on turbine stop valve 10% closure.
- B. Reactor scrams on high reactor pressure.
- C. Reactor continues to operate at 38% power.
- D. Reactor continues to operate and power decreases to 30%.

66. Unit 3 is operating at 100% power.

Which one of the following combinations of events will **ONLY** initiate a **half scram** signal?

- A. Both MSIVs in steam lines "B" and "C" drift to less than 90% open.
- B. Both MSIVs in steam lines "A" and "D" drift to less than 90% open.
- C. PRMN voter #1 to test X relay
- D. APRMs 3 and 4 trip on hi-hi flux.

67. Unit 2 is operating at 100 % power. Reactor pressure is being controlled by Pressure Regulator A.

If Pressure Regulator A fails down scale, which one of the following lists of symptoms is likely to occur? (Assume all systems respond as designed and no operator action.)

- A. Reactor pressure will increase, reactor thermal power will increase, and generator output will increase.
- B. Reactor pressure will increase, reactor thermal power will increase, but generator output will decrease.
- C. Reactor pressure will decrease, reactor thermal power will decrease, and generator output will decrease.
- D. Reactor pressure will decrease, reactor thermal power will decrease, but generator output will increase.

68. The following plant conditions exist:

- The reactor has scrammed from 100% power.
- HPCI and RCIC initiated due to a drop in reactor vessel level.

Which one of the following would result in a RCIC turbine trip and the Trip Throttle Valve, FCV 71-9, remaining open? (Assume no operator action.)

- A. Electrical overspeed.
- B. High Turbine exhaust pressure.
- C. Manual Trip.
- D. High Reactor Vessel Water Level.

69. Following a reactor feed pump trip from 100% thermal power, which one of the following reactor recirculation runback circuits seals in and must be manually reset?

- A. 75% runback.
- B. Core flow runback.
- C. Mid power runback.
- D. Upper power runback.

70. During a LOCA on Unit 3, it is determined that the drywell is in the action required region of the drywell spray initiation limit curve.

Which one of the following describes the proper use of drywell sprays in this condition?

Drywell sprays must:

- A. be secured, if currently in use, to prevent exceeding the drywell/suppression chamber differential pressure limits.
- B. remain in service, if currently in use, until drywell/suppression chamber differential pressure reaches -0.5 psid.
- C. NOT be placed in service, if NOT currently in use, to prevent dropping below the drywell high pressure scram setpoint. If in use, drywell sprays may remain in use.
- D. NOT be placed in service, if NOT currently in use, to prevent exceeding drywell/suppression chamber differential pressure limits. If in use, drywell sprays may remain in use.

71. Following a LOCA, the unit operator (board) notices that drywell pressure peaked at 52 psig and drywell temperature peaked at 290 degrees.

Which one of the following describes the conclusions that can be made from this information?

- A. Both drywell design pressure and temperature were exceeded.
- B. Only drywell design pressure was exceeded.
- C. Only drywell design temperature was exceeded.
- D. Neither the drywell design pressure nor temperature were exceeded.

72. Following a LOCA the following Containment characteristics exist.

Steam is condensing in the drywell and drywell pressure is steadily lowering and is approaching the external design pressure. Which one of the following has caused these conditions?

- A. CS System Suction valve from CST failed open with the suction MOV from Torus open.
- B. CS System Suction valve from CST failed open with the CS test valve open.
- C. The torus-drywell vacuum breakers have failed open.
- D. The torus-drywell vacuum breakers have failed closed.

73. The following conditions exist:

- Reactor power is 90%.
- A control rod initially at position 24 begins to drift out.

Per 2-AOI-85-6, which one of the following is the required IMMEDIATE action?

- A. Select and insert the control rod to position 24.
- B. Insert and maintain the control rod at position 00.
- C. Reduce core flow to prevent a power increase.
- D. Manually scram the reactor.

74. Unit 2 is operating at 100% power. The Unit Operator notes that three turbine stop valves have drifted to 80% open. No rod movement has occurred. You observe that the individual blue lights for each control rod on the full core display are illuminated. Also, the eight scram solenoid group indicating lights are extinguished.

Which one of the following describes the status of the RPS?

- A. Both scram pilot valves have failed to open on all HCUs.
- B. Only one RPS bus has deenergized.
- C. Scram inlet and outlet valves have failed to open on all HCUs.
- D. A hydraulic lock has occurred on the scram discharge volume.

75. Unit 3 is operating at full power with 3A and 3B RBCCW pumps running. 3B RBCCW pump trips due to an operator error. Discharge header pressure drops to 60 psig before the pump is restarted.

Which one of the following describes the response of FCV-70-48 (non-essential equipment loop Isolation valve) to the above condition?

- A. FCV-70-48 will close and isolate the non-essential equipment loop. Operator action will be required to reopen the valve, which can ONLY be operated from the MCR.
- B. FCV-70-48 will close and isolate the non-essential equipment loop. Operator action will be required to reopen the valve, which can ONLY be operated locally.
- C. FCV-70-48 will close and isolate the non-essential equipment loop. Operator action will be required to reopen the valve from the MCR or locally.
- D. FCV-70-48 will not close and the non-essential equipment loop will not isolate.

76. Which one of the following correctly describes the power supplies to the motors for Control Air Compressors "A" through "D"?

- A. "A" and "B" are fed from 480V Common Board #1, and "C" and "D" from 480V Shutdown Boards 1B and 2B respectively.
- B. "A" and "D" are fed from 480V Common Board #1, and "B" and "C" from 480V Shutdown Boards 1B and 2B respectively.
- C. "A" is fed from 480V Shutdown Board 2A, "B" from 480V Common Board #3, "C" from 480V Shutdown Board 1A, and "D" from 480V Shutdown Board 2B.
- D. "A" is fed from 480V Shutdown Board 1A, "D" from 480V Shutdown Board 2A, and "B" and "C" from 480V Common Board #1.

77. During calibration of Unit 2 temperature switches on the RWCU System, 2-TIS-69-11A (NonRegenerative Heat Exchanger outlet temperature switch) was inadvertently actuated.

Which one of the following will be the response of the RWCU System?

- A. The system will isolate; the RWCU pumps will remain running for 30 seconds and then trip on low flow.
- B. The system will isolate; the RWCU pumps will receive a trip signal on NRHX outlet temperature >140 degrees.
- C. The system will isolate; the pumps will trip upon isolation valve closure.
- D. The system will isolate; the pumps will trip on low flow (following a 7 second time delay).

78. Unit 2 is in Cold Shutdown for a short mid-cycle outage, when a complete loss of Shutdown Cooling occurs. Plant conditions are as follows:

- Reactor Recirculation pumps are out of service
- Reactor recirculation suction temperature is 140 degrees and slowly decreasing
- Shutdown cooling flow cannot be re-established in a timely manner

The Shift Manager has directed that RPV level be adjusted.

Which one of the following is the appropriate action and the basis for this action?

- A. Verify level is 60 inches to aid in heat removal by injecting cold water.
- B. Verify level is 80 inches, to provide natural circulation cooling for the reactor.
- C. Verify level is 60 inches, to increase core submergence thereby preventing or minimizing localized fuel channel boiling.
- D. Verify level is 80 inches, to reduce stratification so that more representative temperatures can be obtained to assess bulk reactor coolant temperature.

79. Operators are moving fuel assemblies within the RPV. Water level is 23½ feet above the top of the RPV flange.

Which one of the following describes the basis for a minimum RPV water level requirement during fuel handling operations according to ITS 3.9.6?

- A. Sufficient water is necessary to retain iodine fission product activity in the water in the event of a fuel handling accident.
- B. An adequate water shield thickness is necessary to protect refueling personnel from excessive radiation exposure as they perform the refueling process.
- C. To keep the vessel cavity walls and other contaminated surfaces wet and under water as much as possible during the refueling process to minimize airborne contamination.
- D. To provide radiation protection to refueling personnel in the event of an inadvertent criticality event while moving fuel assemblies and control rods.

80. Which one of the following describes the basis for the Drywell Spray Initiation Limit Curve?

- A. To prevent unstable steam condensation in the MSR/V tailpipes from exerting excessive cyclic hydraulic loads on suppression pool structure.
- B. To ensure that the torus to drywell delta P limit is maintained.
- C. To prevent chugging in the drywell to torus downcomers from exerting excessive cyclic hydraulic loads on the suppression pool structure.
- D. To ensure adequate noncondensibles remain in the drywell to prevent the torus to drywell vacuum breakers from opening during drywell steam condensation.

81. During a plant transient on Unit 2, a Group I isolation is caused by high temperature. Five control rods fail to insert. Suppression pool level is 12 feet and suppression pool temperature is 94 degrees.

Which one of the following identifies the systems available to help maintain pressure below 1073 psig?

- A. HPCI and RCIC.
- B. RCIC and RWCU.
- C. RWCU and MSL drains.
- D. MSL drains and HPCI.

82. Unit 3 is in an ATWS condition and EOI-2 (Primary Containment Control) has been entered.

Which one of the following describes the reason for injecting SLC prior to suppression pool temperature exceeding 110 degrees?

- A. To ensure that "power chugging" does not occur within the reactor vessel during subsequent use of the MSRVs.
- B. To ensure that hot shutdown boron weight is adequate to maintain the reactor subcritical under all hot shutdown conditions.
- C. To ensure the reactor is subcritical prior to leaving the safe area of the heat capacity temperature limit curve.
- D. To ensure the reactor is subcritical prior to leaving the safe area of the pressure suppression pressure curve.

83. Unit 2 has just experienced a small LOCA. Drywell pressure is 3 psig and increasing. Reactor pressure is 800 psig and steady. The increasing drywell temperature causes the most reliability concerns for which one of the following level instruments?

- A. Emergency Range indicators.
- B. Normal Range indicators.
- C. Post Accident indicators.
- D. Shutdown Flood-up indicator.

84. During an accident on Unit 2, suppression pool water level reaches 18 feet and continues to increase. Reactor pressure is 300 psig and decreasing.

Which one of the following containment components will NOT properly function at this point?

- A. Normal control room suppression pool level instrumentation.
- B. Suppression Chamber-to-Drywell vacuum breakers.
- C. Suppression chamber spray nozzles.
- D. MSRV tail pipes and/or supports.

85. Which one of the following is the MINIMUM suppression pool level at which the drywell-to-torus downcomers will be covered?

- A. 9.75 feet.
- B. 10.75 feet.
- C. 11.75 feet.
- D. 12.75 feet.

86. During an ATWS, conditions develop which require Emergency Depressurization.

Which one of the following describes the minimum number of Main Safety Relief Valves (MSRVs) required for Emergency Depressurization, and the basis for this number?

- A. 6 ADS MSRVs, to reliably depressurize the reactor vessel as rapidly as possible, and to uniformly distribute the heat load to the suppression pool.
- B. 6 MSRVs, which, if opened, will remove all decay heat from the core at a pressure sufficiently low that ECCS with the lowest head will be capable of making up for MSRV steam flow.
- C. 4 ADS MSRVs, the least number of the most reliable MSRVs that correspond to a minimum alternate RPV flooding pressure sufficiently low that ECCS with the lowest head will be capable of making up MSRV steam flow.
- D. 4 MSRVs, which, if opened, will remove all decay heat from the core at a pressure sufficiently low that ECCS with the lowest head will be capable of making up MSRV steam flow.

87. EOI-3, Secondary Containment control is being executed due to an unisolable RCIC steam line break in the reactor building. EOI-3 requires that EOI-1, RPV Control be entered and executed concurrently before which one of the following occur.

- A. Any area temperature reached the maximum normal operating temperature.
- B. Reactor zone ventilation exhaust reached 72 m<sup>3</sup>/hr.
- C. Any area radiation level reached the maximum safe operating level.
- D. At least two area temperature reached the maximum normal operating temperature.

88. The plant is operating at full power. The Reactor Building assistant unit operator reports there is about 6 inches of water accumulating on the floor in the RHR Room, SE area, and it appears to be from floor drains backing up.

Which one of the following is the first action the control room operators should taken in accordance with the EOLs?

- A. Operate all available sump pumps to maintain the sump water level to less than 66 inches.
- B. Enter EOI-1 and scram the reactor before RHR Room water level reaches 20 inches.
- C. Isolate all systems discharging into the RHR Room, except those required for safe shutdown of the reactor.
- D. Initiate a controlled shutdown of the reactor per 2-GOI-10012A.

89. The following conditions exist:

An ATWS has occurred.  
Reactor water level is being lowered in accordance with C-5, Level/Power Control.  
SLC has been initiated.

Which one of the following conditions would require RPV level to be restored to normal?

- A. SLC Tank level drops to 41%.
- B. SLC Tank level drops to 48%.
- C. Reactor power drops below 5%.
- D. All MSRVs remain closed with drywell pressure below 2.4 psig.

90. Given the following switch positions for the control air compressors.

- A - second lead
- B - third lead
- C- standby
- D- standby
- G-lead

- A loss of Common Board 1 occurs
- A small system leak causes control air pressure to drop to drop to 94 psig

Which one of the following describes all of expected control air compressors expected to be in operation?

- A. G will be running at full load. A will be running at half load
- B. G will be running at full load. B will be running at half load.
- C. A and G will be running at full load. C will be running at half load.
- D. A, and G will be running at full load. D will be running at half load.

91. Due to an accident condition, the following plant parameters exist:

- |   |             |
|---|-------------|
| - Drywell Hydrogen                        | 5.4%        |
| - Drywell Oxygen                          | 6.0%        |
| - Suppression Chamber Hydrogen            | 4.0%        |
| - Suppression Chamber Oxygen              | 5.5%        |
| - Suppression Pool Level                  | 17 feet     |
| - Drywell temperature                     | 250 degrees |
| - Drywell Pressure                        | 18 psig     |
| - RPV Level                               | +30 inches  |
| - Torus and Drywell Sprays are in service |             |

Which one of the following actions is required?  
(Reference attached)

- A. Perform Appendix 9 to determine and monitor Suppression Pool water level.
- B. Stop Drywell Sprays.
- C. Perform Appendix 14A, Nitrogen Make-up, to control containment hydrogen and oxygen levels.
- D. Perform Emergency Depressurization.

92. Which one of the following positions represents the minimum level of approval required to make a currently approved operator aid permanent?

- A. Site Engineering Labeling Coordinator.
- B. Shift Manager.
- C. Operations Superintendent.
- D. Plant Manager.

93. Which one of the following choices describes the method used for verifying the position of a locked and throttled valve?

- A. Remove the locking device, carefully close the valve counting the number of turns, then reopen the valve the same number of turns. Reapply a locking device to the valve and record the as left position.
- B. Place "NA" in the verification signature space for this valve. Locked and/or throttled valves cannot be independently verified without disturbing the position.
- C. Since the valve is already locked, the valve may be assumed to be throttled in the correct position. The verification may be signed off as complete.
- D. Independent verification of this valve cannot be performed. Second party verification must be performed during initial valve positioning.

94. Unit 2 is in a refueling outage and RHR Pump 2A is tagged to replace the pump seal. Electrical Maintenance has determined that the motor must be replaced on the pump minimum flow valve which is part of the RHR Pump 2A clearance boundary.

Which one of the following statements describes how this additional work affects the clearance boundary?

- A. The valve operator must have a collar installed to prevent motion before the clearance boundary can be modified.
- B. The Shift Manager Representative can modify the clearance boundary with concurrence from the Maintenance Shift Supervisor.
- C. All work under the clearance must be stopped while the clearance is modified and reissued.
- D. An operator must be assigned to independently verify component positioning and tag replacement.

95. Which one of the following choices correctly describes the response of the Unit 2 and Unit 3 reactor recirculation pump (RRP) speed control to an increase in core differential pressure?

- A. Both Unit 2 RRP and Unit 3 will automatically reposition the scoop tube to bring speed back to the setpoint.
- B. Unit 2 will automatically reposition the scoop tube to bring speed back to the setpoint but on Unit 3 the RRP speed must be manually adjusted by the operator.
- C. On Unit 2 the RRP speed must be manually adjusted by the operator but Unit 3 will automatically reposition the scoop tube to bring speed back to the setpoint.
- D. Both Unit 2 and Unit 3 must be manually adjusted by the operator to bring speed back to the setpoint.

96. While off-loading fuel bundles from the reactor, fuel pool level begins to decrease uncontrollably.

Which one of the following describes a method available from the control room to add water to the fuel pool?

- A. Align fuel pool cooling and cleanup heat exchanger RBCCW supply to the fuel pool to maintain level.
- B. Start a condensate pump and inject to the reactor vessel to maintain fuel pool level.
- C. Open emergency makeup supply valve from EECW 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.

97. Given the following conditions at a work site.

Airborne activity: 3 DAC

Radiation level: 40 mr/hr

Radiation level with shielding: 10 mr/hr

Time to place shielding: 15 minutes

Time to conduct task with respirator: 1 hour

Time to conduct task without respirator: 30 minutes

Assume the following:

- the airborne dose with a respirator will be zero.
- a dose rate of 40 mr/hr will be received while placing the shielding.
- all tasks will be performed by one worker.
- shielding can be placed in 15 minutes with or without a respirator.

Which one of the following would result in the lowest whole body dose?

- A. Place shielding while wearing respirator and conduct task with respirator.
- B. Place shielding while wearing respirator and conduct task without respirator.
- C. Conduct task with respirator and without shielding.
- D. Conduct task without respirator or shielding.

98. Unit 2 startup is in progress with the reactor at 920 psig and 6% power. The Reactor Mode Switch is in STARTUP. Primary containment is being inerted with the purge filter fan in service.

Which one of the following statements is correct concerning inerting in this plant condition?

- A. Turning the purge filter fan off will automatically close the drywell and suppression chamber exhaust valves.
- B. Placing the Reactor Mode Switch in RUN will automatically close all valves required for inerting with the purge filter fan unless Bypass switches are placed in BYPASS on panel 9-3.
- C. Placing the Reactor Mode Switch in RUN will give a Group 6 PCIS unless Bypass switches are placed in BYPASS on panel 9-3.
- D. Placing the Reactor Mode Switch in RUN will automatically close the drywell and suppression chamber exhaust isolation valves unless the Drywell/Suppression Chamber Train A/B Vent keylock switches are positioned to DRYWELL.

99. EOI-1, RPV Control, is being executed following a scram due to a turbine trip at high power. During the initial phase of the transient, one of the SRV's stuck open. Suppression pool temperature has now (approximately 7 minutes after the turbine trip) reached 96 degrees.

Which one of the following states the Unit Supervisor's procedural response to this condition?

- A. Re-enter EOI-1 at the beginning.
- B. Re-enter EOI-1 at the beginning and simultaneously enter EOI-2.
- C. Continue in EOI-1 and simultaneously enter EOI-2.
- D. Continue in EOI-1.

100. During a plant startup on Unit 3, reactor power was passing through 80% RTP when there was a loss of power to the control room annunciators. Thirty minutes have passed, and power has not yet been restored. SPDS and ICS are available.

Which one of the following describes the required control room operators' response?

- A. Commence a reactor shutdown, dispatch personnel for local monitoring of equipment.
- B. Scram the reactor manually, dispatch personnel to monitor and manipulate plant equipment in response to the scram.
- C. Suspend the power ascension and avoid any system manipulation, dispatch personnel for local monitoring of equipment.
- D. Expedite maintenance activities to restore power while slowly continuing the ascension to full power, monitor equipment with SPDS and ICS.

**ENCLOSURE 2**

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

**Applicant Information**

Name:	Region: II
Date: 6/30/00	Facility/Unit: Browns Ferry Nuclear Plant
License Level: RO	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. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected five hours after the examination starts.

**Applicant Certification**

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

\_\_\_\_\_   
Applicant's Signature

**Results**

Examination Value	_____	Points
Applicant's Score	_____	Points
Applicant's Grade	_____	Percent

Name: \_\_\_\_\_

1. With regard to the RWM, which one of the following describes the action(s) to be taken to allow manual rod insertion during an ATWS condition?

- A. Manually substitute rod positions through the Integrated Computer System.
- B. Use the RWM Manual Bypass Switch.
- C. Remove control power fuses from RWM.
- D. Place Mode Switch in REFUEL, then use the EMERGENCY IN position of HS-85-47.

2. In addition to a ROD OVERTRAVEL annunciator, which one of the following is indication of an uncoupled control rod when fully withdrawing a control rod?

- A. Backlighting is red on the 4 rod-display, backlighting is not present on the full core display.
- B. Backlighting is not present on the 4 rod-display, backlighting is present on the full core display.
- C. Backlighting is red on the 4 rod-display, backlighting is present on the full core display.
- D. Backlighting is red and green on the 4 rod-display, backlighting is not present on the full core display.

3. While Reactor Recirculation Pump A is operating at 80%, a failure in the pump's individual Manual/Auto station occurs and a signal is sent to the Bailey Positioner, calling for a pump speed of zero.

Which one of the following states the expected response of the pump?

- A. Speed will decrease to zero.
- B. Speed will decrease to 20%.
- C. Speed will decrease to 28%.
- D. The scoop tube will lock up and speed will remain at 80%.

4. Following a reactor trip the following conditions exist:

RPV water level at +19 inches.  
Turbine exhaust pressure at 100 psig.  
Steamline space temperature 150°F in the Torus Area.  
Ambient temperature of 140°F HPCI Pump Room.  
Suppression Pool Level High at +9 in.  
RPV pressure at 300 psig (does not seal-in).  
Pressure between HPCI rupture diaphragms at 3 psig.  
Drywell pressure at 3.25 psig.

Based on these conditions, what is the status of the HPCI system?

- A. OUTBD SUCT VLV, 2-FCV-73-27, and INBD SUCT VALVE, 2-FCV-73-26 open, HPCI System not running.
- B. OUTBD SUCT VLV, 2-FCV-73-27, and INBD SUCT VALVE, 2-FCV-73-26 open, HPCI turbine tripped.
- C. OUTBD SUCT VLV, 2-FCV-73-27, and INBD SUCT VALVE, 2-FCV-73-26 closed HPCI System isolated.
- D. OUTBD SUCT VLV, 2-FCV-73-27, and INBD SUCT VALVE, 2-FCV-73-26 open, HPCI System running.

5. Conditions on Unit 2 exist that required the initiation of Standby Liquid Control (SLC).

Which one of the following would indicate on panel 9-5 that SLC is injecting?

- A. The selected pump red light is ILLUMINATED, the blue SQUIB valve continuity lights are EXTINGUISHED, SLC pump discharge pressure is at 1100 psig, and the red flow light is ILLUMINATED.
- B. The selected pump white light is ILLUMINATED, the RWCU System ISOLATED, and the Loss of Squib Valve Continuity annunciator is in ALARM.
- C. The selected pump red light is ILLUMINATED, the blue SQUIB valve continuity lights are ILLUMINATED, and SLC pump discharge pressure is 1100 psig.
- D. The selected pump white light is ILLUMINATED, the blue SQUIB valve continuity lights are ILLUMINATED, SLC pump discharge pressure is 1100 psig, and the red flow light is EXTINGUISHED.

6. Which one of the following choices describes the operation of the Unit 2 RHR pump torus suction valves with the RHR LOOP MODE SELECTOR (NORMAL/SHUTDOWN) switch in the SHUTDOWN position?
- A. Allows operation at breaker only but does not bypass in-line valve interlock.
  - B. Allows operation from the Reactor MOV Boards only when the corresponding pump Shutdown Cooling suction valve is fully closed.
  - C. Causes the valves to cycle full open (unless stopped locally or the Unit Operator placed the 9-3 control switch in the close position) and cycle back closed.
  - D. Allows valve to be operated from the Control room or the Reactor MOV Boards.

7. The unit receives an inadvertent Group 6 Isolation while operating at power. The unit remains at power. The group 6 isolation signal cleared and the isolation reset switches on panel 9-4 were taken to the reset positions. What additional procedural actions must be taken to open all of the following valves?:
- 64-17 DW / SUPPR CHMBR AIR PURGE ISOL VLV
  - 64-30 DRYWELL VENT OUTBD ISOL VLV
  - 64-33 SUPP CHMBR VENT OUTBD ISOL VLV
  - 76-24 PRI CTMT N2 PURGE OUTBD ISOL VLV
- A. Primary Containment Division II Run Mode Bypass switch on panel 9-3 is placed to the BYPASS position.
  - B. Drywell/Torus Bypass switch on panel 9-3 is taken to the DRYWELL or TORUS position and verify any SGT fan is running.
  - C. Drywell/Suppression Chamber Train A Vent keylock switch on panel 9-55 is placed to the SUPP CHBR position.
  - D. Drywell/Suppression Chamber Train B Vent keylock switch on panel 9-54 is placed to the DRYWELL position.

8. When the drywell equipment drains sump automatic temperature controlled recirc loop senses a high temperature, it causes the recirc valve to open and discharge valves to close and routes the sump water through a heat exchanger. What is the purpose of this realignment?

- A. to prevent the high temperature to the D/W floor drain inbd/outbd isol valve FCV-77-2A/B and a subsequent inadvertent group 2 isolation.
- B. to prevent high temperature damage to the equipment drain integrator 2-FQ-77-16.
- C. to prevent high temperature damage to both the Flow integrators and pump fill rate timers used to determine leakage in the drywell.
- D. to prevent high temperature to damage to only the Radwaste components.

9. Unit 3 receives a primary containment isolation actuated by Low-Low-Low reactor water level. All MSIVs closed; however, only the inboard main steam line drain valves and the recirculation loop sample valves have closed.

Which one of the following could have caused this condition?

- A. PCIS channels A1 and B1 tripped, PCIS channels A2 and B2 did not trip.
- B. PCIS channels A1, A2, and B1 tripped, PCIS channel B2 did not trip.
- C. PCIS channels A2, B1, and B2 tripped, PCIS channel A1 did not trip.
- D. PCIS channels A2 and B1 tripped, PCIS channels A1 and B2 did not trip.

10. A transient has occurred on Unit 2 requiring initiation of torus spray. Plant conditions are as follows:

- Reactor water level        -132 inches (slowly lowering)
- Reactor pressure            600 psig (steady)
- Drywell pressure            2.0 psig (slowly rising)
- Drywell temperature        205 degrees

Which of the following should have occurred?

- A. Drywell pressure switches initiate LPCI mode of RHR, interlock Containment Cooling/spray valves closed, initiate PCIS Group 2 isolation and initiate a reactor scram.
- B. Drywell pressure switches provide pressure permissive signal to containment spray valves.
- C. Drywell pressure switches operated LPCI relays in the RHR Logic system, but did not work thru Core Spray
- D. Drywell pressure switches operated relays in the RHR Logic system and worked thru Core Spray

11. The following conditions exist on Unit 3:

Reactor power is 85%.  
Load set is 100%.  
Load Limit is 100%.  
Maximum Combined Flow Limiter is set at 125%.

Which one of the following describes how the plant will respond if the Maximum Combined Flow Limiter setting is reduced to 75%?

- A. Control valves close, turbine bypass valves open, and reactor pressure remains relatively constant.
- B. Control valves close, turbine bypass valves remain closed, and reactor pressure increases.
- C. Turbine bypass valves throttle open, control valve position remains relatively constant, and reactor pressure decreases.
- D. Turbine bypass valves remain closed, control valves open, and reactor pressure lowers.

12. A refueling zone high radiation signal has just caused auto initiation of the Standby Gas Treatment (SGT) System.

Which one of the following is an ABNORMAL indication or lineup, given this radiation condition?

- A. SGT Train A to Train B crosstie damper 65-22 shut.
- B. SGT Train B charcoal temperature (TI-65-47) reading 125 DEG. F.
- C. SGT Train C decay heat removal Damper 65-52 shut.
- D. SGT Train C relative humidity heater outlet temperature (TI-65-62) reading 190 DEG. F.

13. Which of the following describes the consequences of losing the Unit 2 Panel 9-9 Cabinet 6 while operating at power?

- A. The high reactor water level trip circuit for the main turbine and the reactor feed pump turbines will be de-energized. RCIC and HPCI AC control circuits will become de-energized rendering those systems inoperable.
- B. The automatic reactor feedwater control system becomes inoperable and controls on the last known setpoint, there is a loss of power to the Control Rod Drive FCV-85-11 valves, In addition to normal power to panel 9-9 cabinet 5
- C. The short cycle valves FCV-2-29A and -29B fail open and the reactor feedwater pumps may trip on low suction. In addition, all of the reactor feedwater pump minimum flow valves will fail open, resulting in decreased flow to the reactor.
- D. The Raw Service Water head tank isolation valve closes. The temperature control valves for the main turbine lube oil, reactor recirculation pump MG sets, feedwater pump turbine lube oil, RBCCW, and Main Turbine EHC hydraulics will all fail.

14. Which one of the following would be affected if the 48 VDC system was lost?

- A. Microwave communications.
- B. Control Room Annunciators.
- C. Emergency Diesel Generator Control and Logic.
- D. 480V Shutdown Board Control.

15. Which of the following raises the rate of water decomposition?

- A. Increase in the amount of freon, oil, or halogens in the Catalytic Recombiner.
- B. Running the Off-gas system without the dehumidification coil in service.
- C. Securing the Off-gas pre-heaters.
- D. Removing Hydrogen Water Chemistry from service.

16. A barrel of trash was placed on the North side of Unit 2 Fuel Pool. The following conditions were noted on the Reactor and Refuel Zone Radiation Monitors:

Channel A: Reactor Zone Detector A (2RM90142A)	85 MR/HR
Reactor Zone Detector B (2RM90142B)	56 MR/HR
Refuel Zone Detector A (2RM90140A)	67 MR/HR
Refuel Zone Detector B (2RM90140B)	78 MR/HR
Channel B: Reactor Zone Detector A (2RM90143A)	81 MR/HR
Reactor Zone Detector B (2RM90143B)	62 MR/HR
Refuel Zone Detector A (2RM90141A)	93 MR/HR
Refuel Zone Detector B (2RM90141B)	84 MR/HR

Which one of the following describes the plant equipment response based on the above conditions?

- A. Reactor zone supply and exhaust fans trip on Unit 3 only.
- B. Reactor zone supply and exhaust fans are tripped on all units.
- C. Drywell Control Air Compressor suction valves, FCV 32-62 and 32-63 close.
- D. Isolates fresh air paths to Control Bay Elevation 3C.

17. While operating at 90% power the Unit 3 B Reactor Recirculation Field Breaker is tripped.

Immediately upon the field breaker trip the associated jet pump loop flow is:

- A. subtracted from total core flow. This results in a severe lowering in indicated core flow, then as the tripped loop indicated flow decays toward zero, the core flow indication will rise toward the actual core flow value.
- B. subtracted from total core flow. This results in a severe increase in indicated core flow, then as the tripped loop indicated flow decays toward zero, the core flow indication will rise toward the actual core flow value.
- C. added to total core flow. This results in a severe lowering in indicated core flow, then as the tripped loop indicated flow will trend to the actual loop flow, the core flow indication will decay towards zero.
- D. added to total core flow. This results in a severe increase in indicated core flow, then as the tripped loop indicated flow trend toward zero, the core flow indication will lower toward the actual core flow value.

18. During a level transient on Unit 2 the following events occurred:

- RPV water level decreased to -125 inches during the transient
- ADS actuated
- RHR Pump 2A and 2B started and injected to the reactor vessel
- RPV water level is now +25 inches and increasing
- No operator actions have been taken

Which one of the following statements describes the RHR system response to placing the RHR Pump 2A control switch to the STOP position?

- A. RHR Pump 2A will stop and the amber light above the control switch will light.
- B. No change; RHR Pump 2A will continue to run until the LOCA initiation signal is reset.
- C. RHR Pump 2A will stop and the amber light above the control switch will extinguish.
- D. RHR Pump 2A will stop and then restart when the switch is released. The amber light above the control switch will not change indication.

19. Initial Conditions:

Reactor pressure is approximately 1000 psig.  
The Unit is slowly heating up.  
The operating CRD Pump has tripped  
Standby CRD Pump (1B) is AVAILABLE

You perform the following actions at Panel 2-9-5:

PLACE CRD SYSTEM FLOW CONTROL, 2-FIC-85-11, in MAN at minimum setting.  
START associated standby CRD PUMP 1B by using 2-HS-85-2A.  
OPEN CRD PUMP 1B DISCH TO U2, using 2-HS-85-8A.

ADJUST CRD SYSTEM FLOW CONTROL, 2-FIC-85-11, and establish the following conditions:

CRD CLG WTR HDR DP, 2-PDI-85-18A, approximately 20 psid.  
CRD SYSTEM FLOWCONTROL, 2-FIC-85-11, at approximately 55 gpm.

Balance the CRD flow and place the CRD SYSTEM FLOW CONTROL, 2-FIC-85-11 in AUTO.

Charging Water pressure is stable at 900 psig.

What are your required IMMEDIATE ACTIONS?

- A. Manually SCRAM the reactor and Place the mode switch in the refuel position.
- B. Verify the CRD system flow controller is nulled and ensure the CRD SYSTEM FLOW CONTROL, 2-FIC-85-11, is PLACED in Balance.
- C. CLOSE CRD PUMP 1B DISCH TO U2, using 2-HS-85-8A.
- D. There are no additional IMMEDIATE ACTIONS required.

20. The Reactor Building ventilation exhaust duct radiation high signal has just been received on Unit 3.

Which one of the following describes the expected plant response?

- A. Only the Reactor Zone isolates, SGT starts and aligns to the Reactor Zone only, and a Group 6 PCIS occurs, except the drywell air compressor suction valves remain open.
- B. The Reactor and Refueling Zones isolate, SGT starts and aligns to Reactor and Refueling Zones, and a Group 6 PCIS occurs, except the drywell air compressor suction valves remain open.
- C. Only the Reactor Zone isolates, SGT starts and aligns to the Reactor Zone only, and a complete Group 6 PCIS occurs.
- D. The Reactor and Refueling Zones isolate, SGT starts and aligns to Reactor and Refueling Zones, and a complete Group 6 PCIS occurs.

21. Due to a fire in the turbine building, the 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 do not have a source of power available.
- C. Place the NORMAL/EMERGENCY 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.

22. When performing technical procedure with a level of classification of "Reference Use Procedure" in a C-Zone.

- A. The procedure must be performed as though it was classified as a "Continuous Use Procedures."
- B. A QC holdpoint can be marked N/A with Nuclear Assurance Approval.
- C. Each step of the procedure must be read before performing the step and acknowledgment of the step's completion is required before proceeding to the next step.
- D. Each step of the procedure must be read before performing the step, however, acknowledgment of the step's completion is not required before proceeding to the next step.

23. Which one of the following conditions is a violation of the Unit 3 ITS Safety Limits?

- A. Reactor water level at -175 inches with all MSIVs open.
- B. Reactor pressure at 750 psig and reactor power at 25%.
- C. Reactor power at 95% and MFLCPR = 0.98.
- D. A Group 1 isolation occurs due to main steam tunnel temperature high and reactor pressure reaches 1262 psig.

24. Committed Effective Dose Equivalent (CEDE) is defined as:

- A. The dose equivalent to organs or tissues that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.
- B. The derived limit for the amount of radioactive materials taken into the body of an adult worker by inhalation or ingestion in a year.
- C. The sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues.
- D. A numerical dose constraint established at a level below the regulatory limits set forth in 10CFR Part 20, which are established as a guideline to administratively control and help optimize individual and collective radiation exposure.

25. The shift manager has just informed you that the Operations Duty Specialist reports that a breach of Wheeler Dam has just occurred. Level is lowering in the intake structure. What are your required immediate actions?

- A. Begin a controlled shutdown to mode 4.
- B. Activate the Automatic Paging System, obtain a hand held radio, proceed to 4kV Shutdown Board A.
- C. Manually trip the reactor and enter the EOIs.
- D. Verify automatic actions, perform any automatic action that failed to occur.

26. Unit 2 is operating with only the 2B Recirc Pump (Single Loop Operation) at 60% power. The following alarms and conditions currently exist:

- Jet Pump Flow No. 11 Thru 20 (2-FI-68-46) 13 Mlbm/hr
- Jet Pump Flow No. 1 Thru 10 (2-FI-68-48) 57 Mlbm/hr
- TOTAL CORE FLOW Recorder (2-XR-68-50) 43.4 Mlbm/hr
- APRM FLOW 43.5%
- Mode Switch in RUN

DETERMINE how the Core Flow Indication and PRNM Systems are affected by these conditions.

- A. The OPRM trip function is BYPASSED and the Total Core Flow Indication is correct.
- B. The OPRM trip function is ENABLED and the Total Core Flow Indication is correct.
- C. The OPRM trip function is BYPASSED and the Total Core Flow Indication may be inaccurate.
- D. The OPRM trip function is ENABLED and the Total Core Flow Indication may be inaccurate.

27. Control Rod 38-23 has been selected for a single notch withdrawal from position 02 to position 04. The following response from the CRD system was observed:

- Insert light illuminates and goes out.
- Withdrawal light illuminates and goes out.
- Settle light illuminates and goes out.

The operator also observes and reports that the selected rod is now at position 06 and is continuing to drift out. A rod drift alarm is also present.

Which one of the following has caused this condition?

- A. The automatic sequence timer has failed.
- B. Stuck open collet fingers.
- C. Low CRDM cooling water pressure/flow.
- D. Leaking scram outlet valve.

28. With the Rod Worth Minimizer keylock switch in NORMAL, which one of the following describes the effect of a loss of all control rod position signals from the RPIS?

- A. Withdraw, insert, and select rod blocks will occur if power is less than the Low Power Alarm point.
- B. Only withdraw and select rod blocks will occur if power is less than the Low Power setpoint.
- C. Withdraw, insert, and select rod blocks will occur at any power level.
- D. RWM-PROG lights on INOP-RESET pushbutton. This will occur at any power level.

29. With both reactor recirculation pump speeds matched and the reactor at 100% power, which one of the following is an indication of a reactor recirculation jet pump failure?

In the loop with the failed jet pump, if indicated recirculation loop flow:

- A. decreases, indicated core pressure will increase.
- B. increases, indicated main generator output will decrease.
- C. decreases, indicated total core flow will increase.
- D. increases, indicated core thermal power will increase.

30. By disconnecting the recirc pump motor from the generator rather than tripping the MG set supply breakers, which of the following occurs?

- A. The recirc pump will coast down more quickly. Lower core flow causes more voiding. This lowers the slowing down length of fast neutrons which raises the thermal neutron flux. Higher thermal neutron flux results in more power.
- B. The recirc pump will coast down more slowly. Higher core flow causes less voiding. This raises the slowing down length of fast neutrons which lowers the thermal neutron flux. Lower thermal neutron flux results in less fission and less power.
- C. The recirc pump will coast down more slowly. Higher core flow causes less voiding. This lowers the slowing down length of fast neutrons which raises the thermal neutron flux. Higher thermal neutron flux results in more power.
- D. The recirc pump will coast down more quickly. Lower core flow causes more voiding. This raises the slowing down length of fast neutrons which lowers the thermal neutron flux. Lower thermal neutron flux results in less fission and less power.

31. During the performance of RHR System MOV operability testing, the RHR pump torus suction valves were closed. Immediately thereafter, a LPCI initiation signal is received.

Assuming the LPCI initiation signal remains present, which one of the following statements is correct?

- A. The suction valves will open automatically, and then the respective RHR pumps will auto start.
- B. The suction valves will open automatically and then the respective RHR pump must be started manually.
- C. The suction valves will not open automatically. They must be fully reopened manually, and then the respective RHR pumps will auto start.
- D. The suction valves will not open automatically. The valves must be fully reopened manually, and then the pumps must be manually started.

32. On Unit 3, the Reactor Water Cleanup (RWCU) System is operating with RWCU Pump A running and the Filter/Demineralizer B in service with 130 gpm flow.

Which one of the following choices describes the expected automatic response of the RWCU system if Filter/Demineralizer B is inadvertently valved out of service?

- A. Filter/Demineralizer B holding pump will start. RWCU Pump A trips when system flow decreases to less than 56 gpm for 35 seconds.
- B. Filter/Demineralizer B BYPASS valve will automatically open to maintain at least 90 gpm and RWCU Pump A will continue to operate.
- C. Filter/Demineralizer A automatically returns to service when Filter/Demineralizer B dp exceeds 20 psid.
- D. The system automatically isolates and Pump A trips when system flow decreases to less than 40 gpm for 7 seconds.

33. The Unit 2 reactor is in cold shutdown with RHR Loop B in the Shutdown Cooling (SDC) mode when reactor water level rapidly decreases to -130.0 inches. Which one of the following correctly describes the operation of the RHR System?

- A. The LPCI Inboard Injection valves automatically open and the operator must wait 5 minutes before throttling flow.
- B. The LPCI Inboard Injection valves automatically close and the operator must wait 5 minutes before manually opening the valve.
- C. The operator must depress the SDC isolation reset pushbuttons on panel 9-3 before the LPCI Inboard Injection valves automatically open.
- D. The operator must manually open the LPCI Inboard Injection valves after resetting the PCIS isolation using the reset switches on panel 9-4.

34. The following conditions exist during a loss of all A/C power (Onsite and Offsite):

- The high pressure coolant injection (HPCI) system was started in response to a valid actuation signal.
- A valid HPCI isolation signal is subsequently generated.

Which one of the following is the expected result?

- A. The HPCI pump will continue to operate with the mini-flow valve open.
- B. The steam supply inboard isolation Valve 73-2 will close, and the turbine will trip.
- C. The steam supply outboard isolation Valve 73-3 will close, and the turbine will trip.
- D. A full HPCI system isolation will occur, and the turbine will trip.

35. During a Unit 2 LOCA, the following plant conditions exist:

- Reactor water level is dropping at a rate of 20 inches per minute.
- RPV level is currently at -132 inches.
- RPV pressure is 468 psig.
- Drywell pressure is 2.5 psig.

Which one of the following describes the expected status of the Core Spray System?

- A. The Core Spray System has not initiated.
- B. The Core Spray pumps have started, but the injection valves are CLOSED.
- C. The Core Spray pumps have started, and the injection valves are OPEN, but pump flow is dead headed against the closed check valve.
- D. Core Spray pumps have started and are injecting into the RPV.

36. Unit 3 is operating at power with Diesel Generator 3A under clearance. A transient occurs resulting in a reactor scram signal and an ATWS. The SLC control switch is taken to the START PUMP B position. Plant conditions are as follows:

Reactor power	10%
480v S/D bd 3A	De-energized (A/C only)
SLC switch	NOR-AFT-START

How will the SLC system respond?

- A. SLC squib valve A fires, no SLC pump starts.
- B. SLC squib valve B fires, no SLC pump starts.
- C. SLC squib valves A and B fire, one SLC pump starts.
- D. SLC squib valve B fires, both SLC pump starts.

37. During main turbine stop valve testing, the No. 2 Stop Valve would not close. The Unit Supervisor directs placing the Stop Valve No. 2 input to the Reactor Protection System (RPS) in a tripped condition.

Which one of the following describes the impact of this action on the RPS?

No. 2 Stop Valve provides input to:

- A. only RPS Channel A, and placing the inputs in a tripped condition will cause a half scram.
- B. only RPS Channel B, but placing the inputs in a tripped condition will NOT cause a half scram.
- C. both RPS Channels A and B, and placing the inputs in a tripped condition will cause a full scram.
- D. both RPS Channels A and B, but placing the inputs in a tripped condition will NOT cause a half scram.

38. While walking down the control room panels on a tour, the Unit 2 Unit Supervisor notices the F5 fuse indicator for the TIP channel B Valve Control Monitor is de-energized.

Which one of the following statements correctly describes the information provided by this condition?

- A. The TIP shear valve will not fire.
- B. The TIP ball valve will not open when the TIP is out of the shield.
- C. The TIP channel will not respond to a automatic scan.
- D. The TIP channel will not respond to a containment isolation signal.

39. A traversing in-core probe (TIP) trace is being performed on Unit 2. With the probe in core, a spurious Group 8 isolation occurs.

Which one of the following describes how the TIP system responds to the isolation signal?

- A. No response; the TIP system only responds to a Group 2 isolation signal.
- B. The TIP drive withdraws at fast speed and the ball valve closes once the probe has withdrawn to the shield chamber.
- C. The TIP drive withdraws at slow speed until the core bottom is cleared, then shifts to fast speed, withdraws from the core and the ball valve closes when the probe has withdrawn to the indexer.
- D. The TIP drive withdraws at fast speed and if the probe is not in the shield within 30 seconds, the shear valve fires to cut the cable and seal the tube.

40. A unit 3 IRM channel is set to range 5 and reading 60. Which one of the following is correct if the IRM range selector switch is turned to range 6?

- A. A different preamplifier circuit is put into service and the reading should be about 6.
- B. A different preamplifier circuit is put into service and the reading should be about 19.
- C. The same preamplifier circuit remains in service and the reading should be about 6.
- D. The same preamplifier circuit remains in service and the reading should be about 19.

41. A reactor startup is in progress on Unit 3 with reactor power at 20%. APRM 1 is bypassed due to failing high. Then, IRM A fails high.

Which one of the following describes the response of the RPS to the IRM upscale trip?

- A. No RPS trip action
- B. A rod block
- C. A half scram
- D. A full scram

42. Unit 2 is operating at 100% power, when a loss of RPS B power occurs.

Which one of the following describes the type of fault detected for BOTH the RBM and APRM channels?

- A. A critical fault is generated in both the RBM channels, and in all of the APRM channels.
- B. A non-critical fault is generated in both the RBM channels, and in all of the APRM channels.
- C. A critical fault is generated in RBM Channel B, and in APRM Channels 2 and 4.
- D. A critical fault is generated in RBM Channel B, and non-critical faults are generated in all of the APRM channels.

43. Which one of the following describes a characteristic of a fill oil leak from a Rosemount transmitter?

- A. The instrument readings repeatedly drift in both directions over a period of time.
- B. The instrument exhibits an inability to follow plant transients over a period of time.
- C. The instrument responds normally until the isolating diaphragm contacts the convolution plate, when it fails to function properly.
- D. The instrument responds more slowly until the isolating diaphragm contacts the convolution plate, when it fails to function properly.

44. The following Unit 2 plant conditions are given:

Reactor power is 65%  
Suppression Pool temperature is 78 degrees  
Suppression Pool temperature is increasing by 2 degrees every 12 minutes  
Suppression Pool cooling is in service providing maximum cooling  
The time is 12:00 noon.

2-SR-3.5.3.3, RCIC SYSTEM RATED FLOW AT NORMAL OPERATING PRESSURE is in progress.

Which one of the following is the latest time the test may be conducted before Technical Specifications limits would be exceeded?

- A. 1:42 pm
- B. 2:42 pm
- C. 3:12 pm
- D. 5:24 pm

45. Which one of the following would occur if power is lost to 250VDC RMOV Board 3B?

- A. The ADS logic will not operate after automatic transfer to the alternate power supply.
- B. The ADS logic will not operate, however, TWO of the six ADS valves can be operated manually.
- C. The ADS logic will not operate, however, FOUR of the six ADS valves can be operated manually
- D. The ADS logic will not operate, however, the SIX ADS valves can be operated manually.

46. Which one of the following gives the two PCIS groups NOT affected by RPV water level?

- A. Groups 1 and 4
- B. Groups 4 and 5
- C. Groups 5 and 6
- D. Groups 6 and 8

47. Given the following conditions:

RPV level                -190 inches  
RPV Pressure            920 psig  
Drywell pressure        2.95 psig  
A valid LPCI initiation signal is present

Which one of the following are required to be completed in conjunction with **ONLY** placing the RHR Containment Spray select switch XS-74-1-121/129 in Select to open the Containment Spray valves?

- A. Raise RPV level to -180 inches only.
- B. Reduce drywell pressure to 1.6 psig only.
- C. Raise RPV level >-120" AND reset the LPCI initiation signal.
- D. Raise RPV level to >-120 inch reactor level AND reduce drywell pressure to 1.6 psig.

48. A trip of the 480 V Shutdown Board 1A will have which of the following effects on the spent fuel pool system?

- A. Trips Fuel Pool Circulating Pump 1A.
- B. Trips Fuel Pool Circulating Pump 1B.
- C. Isolates the fuel pool water flow to the fuel pool heat exchanger.
- D. Isolates the RBCCW to the fuel pool heat exchangers.

49. Both MSRV vacuum breakers (the 10 inch and the 2 1/2 inch) on each relief line have failed closed. Some water from the suppression pool was siphoned into the relief line upon completion of blowdown when the steam in the relief line condensed.

What are the potential consequences of future MSRV operation?

- A. Insufficient flow through the relief line.
- B. Uneven heating of the suppression pool.
- C. Direct pressurization of the drywell air space.
- D. Overpressurize the relief line.

50. The following plant conditions exist:

- The reactor is operating at 100% power and 1000 psig.
- A turbine control valve malfunction resulted in reactor safety relief valve (SRV) 1-4 lifting and failing to reseal.

Which one of the following SRV tailpipe temperatures would you expect to see on the SRV that failed to close? (References attached)

- A. 212 degrees Fahrenheit
- B. 290 degrees Fahrenheit
- C. 345 degrees Fahrenheit
- D. 545 degrees Fahrenheit

51. The following conditions exist on Unit 2:

Turbine Steam Throttle Press: 990 psig  
Pressure setpoint: 970 psig  
Load Limit: 100%  
Load Setpoint: 100%

Which one of the following describes the EHC Pressure Regulating System response, and the effect on RPV pressure, if the turbine steam throttle pressure transmitter input to Pressure Regulator A failed upscale to 1100 psig?

- A. Pressure Regulator B takes over; RPV pressure increases.
- B. Pressure Regulator B takes over; RPV pressure decreases.
- C. Pressure Regulator A remains in control; RPV pressure increases.
- D. Pressure Regulator A remains in control; RPV pressure decreases.

52. Which one of the following states the reason why the condensate pump header pressure should be between 100 and 150 psig during a reactor startup?

- A. To minimize thrust on the condensate pump motor bearings.
- B. To ensure adequate condensate flow for the steam jet air ejectors.
- C. To ensure adequate flow through the condensate demineralizers.
- D. To maximize condensate pump efficiency.

53. Which one of the following is an acceptable method for reducing thermal duty on RPV feedwater nozzles during low power and/or hot standby operation?

- A. Minimize reactor power.
- B. Increase reactor pressure.
- C. Maximize RWCU flow.
- D. Reduce CRD flow.

54. A full scram from 100% power occurred on Unit 2 as a result of a fault in the main turbine EHC system. After the SCRAM, the following conditions exist: (Assume no operator actions have occurred)

All three Reactor Feed Pumps (RFPs) are in AUTO  
Master Level Controller is in AUTO  
Reactor water level is at 10 inches and rising  
Scram Response logic is not inhibited

Which one of the following describes the Reactor Feed System response to this situation?

- A. RFPs A and B are available for AUTO or MANUAL mode of operation and may be taken to 5600 rpm.
- B. RFPs A and B are set at 600 rpm, and cannot be raised to >600 rpm until the Scram Response logic is reset.
- C. RFPs A and B are available for MANUAL mode only and will be limited to 3900 rpm until the Scram Response logic is reset.
- D. RFPs A and B are available for AUTO or MANUAL mode of operation but are limited to 3900 rpm until the Scram Response logic is reset.

55. Unit 2 and 3 are operating normally and are tied to the grid. Which one of the following would occur if a DG control switch was taken to start and the output breaker was closed? ( Assume the diesel generator speed setpoint is higher than grid frequency and no other operator actions were performed)
- A. The speed regulator will keep lowering the fuel supply to the diesel in order to try and lower grid/DG output voltage to the governor's setpoint. The DG will trip on under voltage.
  - B. The zero droop governor will keep advancing the fuel supply to the diesel in order to try and raise grid/DG output frequency to the governor's setpoint. This will cause the DG to overspeed.
  - C. The zero droop governor will keep advancing the fuel supply to the diesel in order to try and raise grid/DG output frequency to the governor's setpoint. This will cause the diesel to overload.
  - D. The speed regulator will keep lowering the fuel supply to the diesel in order to try and lower grid/DG output frequency to the governor's setpoint. This will cause the DG to trip on reverse current.

56. On Unit 2, the operator is attempting a manual fast transfer of the 4kV Shutdown Board C normal power supply to the first alternate power supply. The following conditions are in effect:

- The Emergency Control Transfer Switch (ECTS) is in NORMAL.
- The Shutdown Board C AUTO TO MANUAL TRIP pushbutton was depressed, and the amber light extinguished.
- The alternate breaker synchronizing selector switch is in the OFF position.
- The operator is holding the alternate power supply breaker control switch in the CLOSED position.

Which one of the following describes the plant equipment response when the operator next trips the normal supply breaker?

- A. A fast transfer to the alternate supply occurs.
- B. A slow transfer to the alternate supply occurs.
- C. The alternate breaker trips and Shutdown Board C is locked out.
- D. The alternate breaker trips and Emergency Diesel Generator C starts and ties to Shutdown Board C.

57. Diesel Generator 3A is synchronized to 4KV Shut Down Board 3A. The instrumentation readings for the diesel generator are as follows:

voltage: 4160 VAC  
frequency = 59.8  
current = 340 amps  
vars = 1600 Kvars  
watts = 2585 KW

What actions are required if the diesel is expected to be operated for an extended period?

- A. The operator must take the voltage regulator control switch to raise to avoid excessive stator currents.
- B. The operator must take the voltage regulator control switch to lower to avoid excessive stator currents.
- C. The operator must take the governor control switch to raise to avoid excessive field current.
- D. The operator must take the governor control switch to lower to avoid excessive field current.

58. Which one of the following describes the response of the Main Steam Line Radiation Monitoring System when a level of 3 times normal full power background radiation is reached?

- A. The system will trip the mechanical condenser vacuum pump and close the condenser vacuum pump discharge valves.
- B. The system will trip the mechanical condenser vacuum pump, close the condenser vacuum pump suction valves, scram the reactor, and initiate a PCIS Group 1 isolation.
- C. The system will trip the mechanical condenser vacuum pump and close the condenser vacuum pump suction valves.
- D. The system will trip the mechanical condenser vacuum pump, close the condenser vacuum pump discharge valves, scram the reactor, and initiate a PCIS Group 1 isolation.

59. The 3B Raw Service Water (RSW) pump has automatically started to increase level in the RSW storage tanks. Subsequently, Fire Pump A receives an automatic start signal.

Which one of the following describes the response of the RSW storage tank isolation valves and the RSW pump to this situation?

- A. The 3B RSW pump immediately trips. The RSW storage tank isolation valves CLOSE but will automatically REOPEN when the fire pump stops. The 1A RSW pump will automatically start if the tank level demand signal is still present.
- B. The 3B RSW pump immediately trips. The RSW storage tank isolation valves CLOSE. When the fire pump stops, one of the isolation valves automatically REOPENS; however, the backup isolation valve must be manually REOPENED. The 1A RSW pump can then automatically start if the tank level demand signal is still present.
- C. The 3B RSW pump continues running in support of the fire pump. The RSW storage tank isolation valves CLOSE, and will automatically REOPEN when the fire pump stops. When the tank is filled, the 3B RSW pump stops.
- D. The 3B RSW pump continues running in support of the fire pump. The RSW storage tank isolation valves CLOSE. When the fire pump stops, the 3B RSW pump stops. Both tank isolation valves remain CLOSED until manually reopened, and normal tank level control will then resume.

60. A small break LOCA on Unit 2 results in the following plant conditions:

- Reactor water level 12 inches above instrument zero.
- Drywell pressure 2.0 psig.
- Ventilation radiation:
  - Reactor building 68 mR/hr.
  - Refueling Zone 35 mR/hr.
  - Air inlets to Control Room 200 cpm above background.

Which one of the following statements describes the expected status of the control room ventilation system under the above conditions?

- A. The normal ventilation system is operating. The control room emergency ventilation (CREV) system is supplying filtered air from the control bay.
- B. The normal ventilation system is supplying air to the control room from the control bay supply fans.
- C. The CREV system is operating, supplying filtered outside air. The normal ventilation system is isolated.
- D. The CREV system is operating, supplying filtered outside air. The normal ventilation system is NOT isolated.

61. The following plant conditions exist:

- Reactor mode switch:    STARTUP/HOT STANDBY
- Main turbine:           Shell warming
- Feedwater lineup:       RFP A maintaining level in single element

Which one of the following statements describes the expected sequence of actions as a condensate system leak causes condenser vacuum to decrease from 24 inches Hg Vacuum to atmospheric pressure?

- A. The Main turbine trips, then later, the RFP turbine trips and the main turbine bypass valves close at the same time.
- B. The RFP turbine trips, then later, the turbine bypass valves close, followed by a reactor scram on low condenser vacuum.
- C. The RFP turbine trips and the main turbine bypass valves close at the same time, then later, the main turbine trips
- D. Main turbine trips and the reactor scrams in response to the turbine trip, then later, the RFP turbine trips and main turbine bypass valves close at the same time.

62. An accident has occurred concurrent with a partial loss of AC power on Unit 2 resulting in the following indications:

Drywell pressure	2.1 psig
RPV	-135 inches
Reactor pressure	490 psig

The diesel operator incorrectly diagnoses a loss of lube oil and initiates an emergency stop at panel 9-23. Which one of the following is required to reset the Diesel Generator Auto Start Lockout?

- A. Both generator lockout relays (86 relays) AND the protective relay logic (74) must be manually reset.
- B. The core spray initiation signal seal-ins on Panel 9-3 must be reset.
- C. Both the core spray initiation signal seal-ins on Panel 9-3 must be reset and the DG control switch must be taken to RESET.
- D. The DG control switch must be taken to RESET.

63. The following plant conditions exist:

- The plant is operating at 100% power.
- A loss of RPS 'B' power occurs.

Which one of the following isolation valve groups will close?

- A. Group 1 Isolation Valves, Inboard Only
- B. Group 2 Isolation Valves, Outboard only
- C. Group 2 Isolation Valves, Inboard and Outboard
- D. Group 3 Isolation Valves, Inboard and Outboard

64. A reactor startup is in progress and reactor power is on IRM Range 7, when the operator observes the following instrument failures:

- SRM Channels A and C fail downscale.
- IRM Channels A, C, and E fail downscale.

Which one of the following power supplies would have to be lost to cause such failures?

- A. 24 VDC Power Distribution Panel
- B. 48 VDC Power Distribution Panel
- C. 125 VDC Power Distribution Panel
- D. 120 VAC Instrument and Control Power Distribution Panel

65. Given the following plant conditions:

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

Which one of the following describes the response of the reactor if a main turbine trip occurs?

- A. Reactor immediately scrams on turbine stop valve 10% closure.
- B. Reactor scrams on high reactor pressure.
- C. Reactor continues to operate at 38% power.
- D. Reactor continues to operate and power decreases to 30%.

66. Unit 3 is operating at 100% power.

Which one of the following combinations of events will **ONLY** initiate a **half scram** signal?

- A. Both MSIVs in steam lines "B" and "C" drift to less than 90% open.
- B. Both MSIVs in steam lines "A" and "D" drift to less than 90% open.
- C. PRMN voter #1 to test X relay
- D. APRMs 3 and 4 trip on hi-hi flux.

67. Unit 2 is operating at 100 % power. Reactor pressure is being controlled by Pressure Regulator A.

If Pressure Regulator A fails down scale, which one of the following lists of symptoms is likely to occur? (Assume all systems respond as designed and no operator action.)

- A. Reactor pressure will increase, reactor thermal power will increase, and generator output will increase.
- B. Reactor pressure will increase, reactor thermal power will increase, but generator output will decrease.
- C. Reactor pressure will decrease, reactor thermal power will decrease, and generator output will decrease.
- D. Reactor pressure will decrease, reactor thermal power will decrease, but generator output will increase.

68. The following plant conditions exist:

- The reactor has scrammed from 100% power.
- HPCI and RCIC initiated due to a drop in reactor vessel level.

Which one of the following would result in a RCIC turbine trip and the Trip Throttle Valve, FCV 71-9, remaining open? (Assume no operator action.)

- A. Electrical overspeed.
- B. High Turbine exhaust pressure.
- C. Manual Trip.
- D. High Reactor Vessel Water Level.

69. Following a reactor feed pump trip from 100% thermal power, which one of the following reactor recirculation runback circuits seals in and must be manually reset?

- A. 75% runback.
- B. Core flow runback.
- C. Mid power runback.
- D. Upper power runback.

70. During a LOCA on Unit 3, it is determined that the drywell is in the action required region of the drywell spray initiation limit curve.

Which one of the following describes the proper use of drywell sprays in this condition?

Drywell sprays must:

- A. be secured, if currently in use, to prevent exceeding the drywell/suppression chamber differential pressure limits.
- B. remain in service, if currently in use, until drywell/suppression chamber differential pressure reaches -0.5 psid.
- C. NOT be placed in service, if NOT currently in use, to prevent dropping below the drywell high pressure scram setpoint. If in use, drywell sprays may remain in use.
- D. NOT be placed in service, if NOT currently in use, to prevent exceeding drywell/suppression chamber differential pressure limits. If in use, drywell sprays may remain in use.

71. Following a LOCA, the unit operator (board) notices that drywell pressure peaked at 52 psig and drywell temperature peaked at 290 degrees.

Which one of the following describes the conclusions that can be made from this information?

- A. Both drywell design pressure and temperature were exceeded.
- B. Only drywell design pressure was exceeded.
- C. Only drywell design temperature was exceeded.
- D. Neither the drywell design pressure nor temperature were exceeded.

72. Following a LOCA the following Containment characteristics exist.

Steam is condensing in the drywell and drywell pressure is steadily lowering and is approaching the external design pressure. Which one of the following has caused these conditions?

- A. CS System Suction valve from CST failed open with the suction MOV from Torus open.
- B. CS System Suction valve from CST failed open with the CS test valve open.
- C. The torus-drywell vacuum breakers have failed open.
- D. The torus-drywell vacuum breakers have failed closed.

73. The following conditions exist:

- Reactor power is 90%.
- A control rod initially at position 24 begins to drift out.

Per 2-AOI-85-6, which one of the following is the required IMMEDIATE action?

- A. Select and insert the control rod to position 24.
- B. Insert and maintain the control rod at position 00.
- C. Reduce core flow to prevent a power increase.
- D. Manually scram the reactor.

74. Unit 2 is operating at 100% power. The Unit Operator notes that three turbine stop valves have drifted to 80% open. No rod movement has occurred. You observe that the individual blue lights for each control rod on the full core display are illuminated. Also, the eight scram solenoid group indicating lights are extinguished.

Which one of the following describes the status of the RPS?

- A. Both scram pilot valves have failed to open on all HCUs.
- B. Only one RPS bus has deenergized.
- C. Scram inlet and outlet valves have failed to open on all HCUs.
- D. A hydraulic lock has occurred on the scram discharge volume.

75. Unit 3 is operating at full power with 3A and 3B RBCCW pumps running. 3B RBCCW pump trips due to an operator error. Discharge header pressure drops to 60 psig before the pump is restarted.

Which one of the following describes the response of FCV-70-48 (non-essential equipment loop Isolation valve) to the above condition?

- A. FCV-70-48 will close and isolate the non-essential equipment loop. Operator action will be required to reopen the valve, which can ONLY be operated from the MCR.
- B. FCV-70-48 will close and isolate the non-essential equipment loop. Operator action will be required to reopen the valve, which can ONLY be operated locally.
- C. FCV-70-48 will close and isolate the non-essential equipment loop. Operator action will be required to reopen the valve from the MCR or locally.
- D. FCV-70-48 will not close and the non-essential equipment loop will not isolate.

76. Which one of the following correctly describes the power supplies to the motors for Control Air Compressors "A" through "D"?

- A. "A" and "B" are fed from 480V Common Board #1, and "C" and "D" from 480V Shutdown Boards 1B and 2B respectively.
- B. "A" and "D" are fed from 480V Common Board #1, and "B" and "C" from 480V Shutdown Boards 1B and 2B respectively.
- C. "A" is fed from 480V Shutdown Board 2A, "B" from 480V Common Board #3, "C" from 480V Shutdown Board 1A, and "D" from 480V Shutdown Board 2B.
- D. "A" is fed from 480V Shutdown Board 1A, "D" from 480V Shutdown Board 2A, and "B" and "C" from 480V Common Board #1.

77. During calibration of Unit 2 temperature switches on the RWCU System, 2-TIS-69-11A (NonRegenerative Heat Exchanger outlet temperature switch) was inadvertently actuated.

Which one of the following will be the response of the RWCU System?

- A. The system will isolate; the RWCU pumps will remain running for 30 seconds and then trip on low flow.
- B. The system will isolate; the RWCU pumps will receive a trip signal on NRHX outlet temperature >140 degrees.
- C. The system will isolate; the pumps will trip upon isolation valve closure.
- D. The system will isolate; the pumps will trip on low flow (following a 7 second time delay).

78. Unit 2 is in Cold Shutdown for a short mid-cycle outage, when a complete loss of Shutdown Cooling occurs. Plant conditions are as follows:

- Reactor Recirculation pumps are out of service
- Reactor recirculation suction temperature is 140 degrees and slowly decreasing
- Shutdown cooling flow cannot be re-established in a timely manner

The Shift Manager has directed that RPV level be adjusted.

Which one of the following is the appropriate action and the basis for this action?

- A. Verify level is 60 inches to aid in heat removal by injecting cold water.
- B. Verify level is 80 inches, to provide natural circulation cooling for the reactor.
- C. Verify level is 60 inches, to increase core submergence thereby preventing or minimizing localized fuel channel boiling.
- D. Verify level is 80 inches, to reduce stratification so that more representative temperatures can be obtained to assess bulk reactor coolant temperature.

79. Operators are moving fuel assemblies within the RPV. Water level is 23½ feet above the top of the RPV flange.

Which one of the following describes the basis for a minimum RPV water level requirement during fuel handling operations according to ITS 3.9.6?

- A. Sufficient water is necessary to retain iodine fission product activity in the water in the event of a fuel handling accident.
- B. An adequate water shield thickness is necessary to protect refueling personnel from excessive radiation exposure as they perform the refueling process.
- C. To keep the vessel cavity walls and other contaminated surfaces wet and under water as much as possible during the refueling process to minimize airborne contamination.
- D. To provide radiation protection to refueling personnel in the event of an inadvertent criticality event while moving fuel assemblies and control rods.

80. Which one of the following describes the basis for the Drywell Spray Initiation Limit Curve?

- A. To prevent unstable steam condensation in the MSR/V tailpipes from exerting excessive cyclic hydraulic loads on suppression pool structure.
- B. To ensure that the torus to drywell delta P limit is maintained.
- C. To prevent chugging in the drywell to torus downcomers from exerting excessive cyclic hydraulic loads on the suppression pool structure.
- D. To ensure adequate noncondensibles remain in the drywell to prevent the torus to drywell vacuum breakers from opening during drywell steam condensation.

81. During a plant transient on Unit 2, a Group I isolation is caused by high temperature. Five control rods fail to insert. Suppression pool level is 12 feet and suppression pool temperature is 94 degrees.

Which one of the following identifies the systems available to help maintain pressure below 1073 psig?

- A. HPCI and RCIC.
- B. RCIC and RWCU.
- C. RWCU and MSL drains.
- D. MSL drains and HPCI.

82. Unit 3 is in an ATWS condition and EOI-2 (Primary Containment Control) has been entered.

Which one of the following describes the reason for injecting SLC prior to suppression pool temperature exceeding 110 degrees?

- A. To ensure that "power chugging" does not occur within the reactor vessel during subsequent use of the MSRVs.
- B. To ensure that hot shutdown boron weight is adequate to maintain the reactor subcritical under all hot shutdown conditions.
- C. To ensure the reactor is subcritical prior to leaving the safe area of the heat capacity temperature limit curve.
- D. To ensure the reactor is subcritical prior to leaving the safe area of the pressure suppression pressure curve.

83. Unit 2 has just experienced a small LOCA. Drywell pressure is 3 psig and increasing. Reactor pressure is 800 psig and steady. The increasing drywell temperature causes the most reliability concerns for which one of the following level instruments?

- A. Emergency Range indicators.
- B. Normal Range indicators.
- C. Post Accident indicators.
- D. Shutdown Flood-up indicator.

84. During an accident on Unit 2, suppression pool water level reaches 18 feet and continues to increase. Reactor pressure is 300 psig and decreasing.

Which one of the following containment components will NOT properly function at this point?

- A. Normal control room suppression pool level instrumentation.
- B. Suppression Chamber-to-Drywell vacuum breakers.
- C. Suppression chamber spray nozzles.
- D. MSRv tail pipes and/or supports.

85. Which one of the following is the MINIMUM suppression pool level at which the drywell-to-torus downcomers will be covered?

- A. 9.75 feet.
- B. 10.75 feet.
- C. 11.75 feet.
- D. 12.75 feet.

86. During an ATWS, conditions develop which require Emergency Depressurization.

Which one of the following describes the minimum number of Main Safety Relief Valves (MSRVs) required for Emergency Depressurization, and the basis for this number?

- A. 6 ADS MSRVs, to reliably depressurize the reactor vessel as rapidly as possible, and to uniformly distribute the heat load to the suppression pool.
- B. 6 MSRVs, which, if opened, will remove all decay heat from the core at a pressure sufficiently low that ECCS with the lowest head will be capable of making up for MSRV steam flow.
- C. 4 ADS MSRVs, the least number of the most reliable MSRVs that correspond to a minimum alternate RPV flooding pressure sufficiently low that ECCS with the lowest head will be capable of making up MSRV steam flow.
- D. 4 MSRVs, which, if opened, will remove all decay heat from the core at a pressure sufficiently low that ECCS with the lowest head will be capable of making up MSRV steam flow.

87. EOI-3, Secondary Containment control is being executed due to an unisolable RCIC steam line break in the reactor building. EOI-3 requires that EOI-1, RPV Control be entered and executed concurrently before which one of the following occur.

- A. Any area temperature reached the maximum normal operating temperature.
- B. Reactor zone ventilation exhaust reached 72 m<sup>3</sup>/hr.
- C. Any area radiation level reached the maximum safe operating level.
- D. At least two area temperature reached the maximum normal operating temperature.

88. The plant is operating at full power. The Reactor Building assistant unit operator reports there is about 6 inches of water accumulating on the floor in the RHR Room, SE area, and it appears to be from floor drains backing up.

Which one of the following is the first action the control room operators should taken in accordance with the EOIs?

- A. Operate all available sump pumps to maintain the sump water level to less than 66 inches.
- B. Enter EOI-1 and scram the reactor before RHR Room water level reaches 20 inches.
- C. Isolate all systems discharging into the RHR Room, except those required for safe shutdown of the reactor.
- D. Initiate a controlled shutdown of the reactor per 2-GOI-10012A.

89. The following conditions exist:

An ATWS has occurred.  
Reactor water level is being lowered in accordance with C-5, Level/Power Control.  
SLC has been initiated.

Which one of the following conditions would require RPV level to be restored to normal?

- A. SLC Tank level drops to 41%.
- B. SLC Tank level drops to 48%.
- C. Reactor power drops below 5%.
- D. All MSRVs remain closed with drywell pressure below 2.4 psig.

90. Given the following switch positions for the control air compressors.

- A - second lead
- B - third lead
- C- standby
- D- standby
- G-lead

- A loss of Common Board 1 occurs
- A small system leak causes control air pressure to drop to drop to 94 psig

Which one of the following describes all of expected control air compressors expected to be in operation?

- A. G will be running at full load. A will be running at half load
- B. G will be running at full load. B will be running at half load.
- C. A and G will be running at full load. C will be running at half load.
- D. A, and G will be running at full load. D will be running at half load.

91. Due to an accident condition, the following plant parameters exist:

- |   |             |
|---|-------------|
| - Drywell Hydrogen                        | 5.4%        |
| - Drywell Oxygen                          | 6.0%        |
| - Suppression Chamber Hydrogen            | 4.0%        |
| - Suppression Chamber Oxygen              | 5.5%        |
| - Suppression Pool Level                  | 17 feet     |
| - Drywell temperature                     | 250 degrees |
| - Drywell Pressure                        | 18 psig     |
| - RPV Level                               | +30 inches  |
| - Torus and Drywell Sprays are in service |             |

Which one of the following actions is required?  
(Reference attached)

- A. Perform Appendix 9 to determine and monitor Suppression Pool water level.
- B. Stop Drywell Sprays.
- C. Perform Appendix 14A, Nitrogen Make-up, to control containment hydrogen and oxygen levels.
- D. Perform Emergency Depressurization.

92. Which one of the following positions represents the minimum level of approval required to make a currently approved operator aid permanent?

- A. Site Engineering Labeling Coordinator.
- B. Shift Manager.
- C. Operations Superintendent.
- D. Plant Manager.

93. Which one of the following choices describes the method used for verifying the position of a locked and throttled valve?

- A. Remove the locking device, carefully close the valve counting the number of turns, then reopen the valve the same number of turns. Reapply a locking device to the valve and record the as left position.
- B. Place "NA" in the verification signature space for this valve. Locked and/or throttled valves cannot be independently verified without disturbing the position.
- C. Since the valve is already locked, the valve may be assumed to be throttled in the correct position. The verification may be signed off as complete.
- D. Independent verification of this valve cannot be performed. Second party verification must be performed during initial valve positioning.

94. Unit 2 is in a refueling outage and RHR Pump 2A is tagged to replace the pump seal. Electrical Maintenance has determined that the motor must be replaced on the pump minimum flow valve which is part of the RHR Pump 2A clearance boundary.

Which one of the following statements describes how this additional work affects the clearance boundary?

- A. The valve operator must have a collar installed to prevent motion before the clearance boundary can be modified.
- B. The Shift Manager Representative can modify the clearance boundary with concurrence from the Maintenance Shift Supervisor.
- C. All work under the clearance must be stopped while the clearance is modified and reissued.
- D. An operator must be assigned to independently verify component positioning and tag replacement.

95. Which one of the following choices correctly describes the response of the Unit 2 and Unit 3 reactor recirculation pump (RRP) speed control to an increase in core differential pressure?

- A. Both Unit 2 RRP and Unit 3 will automatically reposition the scoop tube to bring speed back to the setpoint.
- B. Unit 2 will automatically reposition the scoop tube to bring speed back to the setpoint but on Unit 3 the RRP speed must be manually adjusted by the operator.
- C. On Unit 2 the RRP speed must be manually adjusted by the operator but Unit 3 will automatically reposition the scoop tube to bring speed back to the setpoint.
- D. Both Unit 2 and Unit 3 must be manually adjusted by the operator to bring speed back to the setpoint.

96. While off-loading fuel bundles from the reactor, fuel pool level begins to decrease uncontrollably. Which one of the following describes a method available from the control room to add water to the fuel pool?

- A. Align fuel pool cooling and cleanup heat exchanger RBCCW supply to the fuel pool to maintain level.
- B. Start a condensate pump and inject to the reactor vessel to maintain fuel pool level.
- C. Open emergency makeup supply valve from EECW 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.

97. Given the following conditions at a work site.

Airborne activity: 3 DAC  
Radiation level: 40 mr/hr  
Radiation level with shielding: 10 mr/hr  
Time to place shielding: 15 minutes  
Time to conduct task with respirator: 1 hour  
Time to conduct task without respirator: 30 minutes

Assume the following:

- the airborne dose with a respirator will be zero.
- a dose rate of 40 mr/hr will be received while placing the shielding.
- all tasks will be performed by one worker.
- shielding can be placed in 15 minutes with or without a respirator.

Which one of the following would result in the lowest whole body dose?

- A. Place shielding while wearing respirator and conduct task with respirator.
- B. Place shielding while wearing respirator and conduct task without respirator.
- C. Conduct task with respirator and without shielding.
- D. Conduct task without respirator or shielding.

98. Unit 2 startup is in progress with the reactor at 920 psig and 6% power. The Reactor Mode Switch is in STARTUP. Primary containment is being inerted with the purge filter fan in service.

Which one of the following statements is correct concerning inerting in this plant condition?

- A. Turning the purge filter fan off will automatically close the drywell and suppression chamber exhaust valves.
- B. Placing the Reactor Mode Switch in RUN will automatically close all valves required for inerting with the purge filter fan unless Bypass switches are placed in BYPASS on panel 9-3.
- C. Placing the Reactor Mode Switch in RUN will give a Group 6 PCIS unless Bypass switches are placed in BYPASS on panel 9-3.
- D. Placing the Reactor Mode Switch in RUN will automatically close the drywell and suppression chamber exhaust isolation valves unless the Drywell/Suppression Chamber Train A/B Vent keylock switches are positioned to DRYWELL.

99. EOI-1, RPV Control, is being executed following a scram due to a turbine trip at high power. During the initial phase of the transient, one of the SRV's stuck open. Suppression pool temperature has now (approximately 7 minutes after the turbine trip) reached 96 degrees.

Which one of the following states the Unit Supervisor's procedural response to this condition?

- A. Re-enter EOI-1 at the beginning.
- B. Re-enter EOI-1 at the beginning and simultaneously enter EOI-2.
- C. Continue in EOI-1 and simultaneously enter EOI-2.
- D. Continue in EOI-1.

100. During a plant startup on Unit 3, reactor power was passing through 80% RTP when there was a loss of power to the control room annunciators. Thirty minutes have passed, and power has not yet been restored. SPDS and ICS are available.

Which one of the following describes the required control room operators' response?

- A. Commence a reactor shutdown, dispatch personnel for local monitoring of equipment.
- B. Scram the reactor manually, dispatch personnel to monitor and manipulate plant equipment in response to the scram.
- C. Suspend the power ascension and avoid any system manipulation, dispatch personnel for local monitoring of equipment.
- D. Expedite maintenance activities to restore power while slowly continuing the ascension to full power, monitor equipment with SPDS and ICS.

Name: \_\_\_\_\_

1. 202002A1.05 001/ / SROT2G1/ 3.6/3.6/ MEMORY/ NEW/ BF00301/ SRO/ 117

Which one of the following is the purpose of the Maximum Extended Load Line Limit Analysis (MELLLA) region of the Power-to-Flow map?

- A. to prevent cavitation of the jet pumps and the recirculation pumps.
- B. to allow a maximum flow of  $107.62 \times 10^6$  lbm/hr at 100% power and to lengthen the cycle when all rods are fully withdrawn.
- C. to prevent a temporary rise in water level, a lowering of power, and a higher flow on the operating pump when recirculation pump stops or when there are rapid recirculation flow reductions.
- ✓D. to ensure that operation at the 100% Rod Line is easily achieved at full power and to take advantage of the neutron spectral shift which occurs at higher power/flow lines.

REF: OPL171.007, Revision 18

SOURCE: NEW

JMP

JUSTIFICATION

- a. This is the purpose of the recirculation pump and jet pump NPSH limit lines
- b. The Increased Core Flow area is bounded by points D, G, H, and I
- c. Operation on this line causes these actions, it does not prevent them
- d. (Correct)

2. 215004A2.02 001/ / SROT2G1/ 3.4/3.7/ MEMORY/ NEW/ BF00301/ SRO/ 143

What is the effect of the failure to remove shorting links on SRM performance?

- A. Rod Block unless IRMs are on range 8 or higher.
- ✓B. SRM high high scram is bypassed.
- C. Rod Block unless IRMs are on range 3 or lower.
- D. Detector full in bypassed.

REF: 2-OI-92, rev 16 page 12

- A. SRM high signal is not effected by link
- B. Reactor scram is bypassed with shorting links
- C. SRM downscale is not effected by links
- D. SRM Detector wrong position not effected by shorting links.

JMP

JUSTIFICATION

- 3 cps is the minimum for an SRM to be operable
- 5 cps is for the rod block

3. 234000A3.02 001/ / SROT2G2/ 3.1/3.7/ C/A/ NEW/ BF00301/ SRO/ 133

During refueling activities, which one of the following conditions can cause a Fault lockout Light Status indicator to be lit?

- A. The boundary zone has been by-passed.
- B. The Bridge is over the core and a rod-out indication is detected.
- C. The Bridge and/or Trolley has exceeded a Travel Limit.
- ✓D. There is demanded motion present when the refueling bridge motor is started.

REF: OPL171.053, Obj 4 Rev. 9, Page 12

New Question

- a. This lights the Boundary Zone Bypass Light
- b. This lights the Rod Block Interlock #1 light
- c. This lights the safety travel interlock light
- d. Correct answer

JMP

4. 261000K6.01 001/ / SROT2G1/ 2.9 / 3.0/ C/A/ NEW/ BF00301/ SRO/ 139

Unit 2 drywell pressure exceeds 2.45 psig and a 480 volt load shed logic is initiated three minutes later. Which one of the following describes expected status of the Standby Gas Treatment system 30 seconds after the load shed?

- A. SGT trains A, B and C will be running.
- B. Only SGT trains A and B will be running.
- ✓C. Only SGT train C will be running.
- D. No SGT trains will be running.

REF: OPL171.018, Rev. 7, page 18

SOURCE: NEW QUESTION

JMP

JUSTIFICATION

All pumps will auto start on High drywell pressure. SGT A and B will trip on initiation of the 480V load-shed logic but will auto.-restart after forty seconds if initiation signal is present. SGT C is not affected by 480 volt load shed logic initiation.

During RHR system surveillance testing, the 480V molded case breaker for Valve 2-FCV-74-61 trips immediately after closing.

In addition to making an operability determination, which one of the following choices describes the proper response to this situation?

- A. One more attempt to close the breaker is permitted before notifying maintenance.
- B. One more attempt to close the breaker is permitted after inspection and adjustment (if necessary) of cell switches.
- C. Do not attempt to reclose the breaker until Electrical Maintenance is available at the breaker panel to observe.
- ✓D. Do not attempt to reclose the breaker. Initiate a Work Request to have the breaker inspected.

REF: 0-GOI-300-2, Rev. 34, Para. 3.20

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

- a. This is not allowed by procedure, but some plants do it.
- b. This is allowed for non-molded case 480V breakers.
- c. This is a logical choice, but not allowed.
- d. (Correct)

Following a loss of all AC, which one of the following paths would restore one of the required qualified offsite circuits?

- A. From the 500kV switchyard, through USST 1A to 4.16kV Unit Board 2B, to 4.16kV Shutdown Bus 1, to 4.16kV Shutdown Boards C and D.
- ✓B. From the 500kV switchyard, through USST 1B to 4.16kV Unit Board 1A, to 4.16kV Shutdown Bus 1, to 4.16kV Shutdown Boards A and B.
- C. From Athens 161kV transmission system, through CSST B to Unit Board 2B, to Start Bus 1A, to Shutdown Bus 2, to Shutdown Boards A and B.
- D. From Trinity 161kV transmission system, through CSST A to Unit Board 2A, to Start Bus 1A, to 4.16kV Shutdown Bus 2, to Shutdown Boards A and B.

REF: Technical Specification Basis, Page B 3.8-7

SOURCE; NEW QUESTION

JMP changed startup bus to start bus

JUSTIFICATION

- a. Incorrect because USST 2B is the connection to 2B.
- b. (Correct)
- c. Incorrect because it must be through Shutdown Bus 1.
- d. Incorrect because unit board must be 1A or 2B.

Unit 2 is in refueling. You are the SRO on the refueling floor. Upon insertion of a new fuel assembly, there is an unexpected criticality. Your crew commences the immediate actions of 2-AOI-79-2, "INADVERTANT CRITICALITY DURING INCORE FUEL MOVEMENTS."

The crew verifies the fuel grapple is latched onto the fuel assembly handle and immediately removes the fuel assembly from the reactor core. However, you cannot determine if the reactor is subcritical again with the indications available.

Which one of the following describes the remaining immediate actions required by 2-AOI-79-2 for this situation?

- A. Place the fuel assembly in a spent fuel storage pool location with the least possible number of surrounding fuel assemblies, leaving the fuel grapple latched to the fuel assembly handle. Evacuate the refueling floor.
- B. Place the fuel assembly in a spent fuel storage pool location with the least possible number of surrounding fuel assemblies, and disengage the fuel grapple. Evacuate the refueling floor.
- ✓C. Move the refueling bridge and fuel assembly away from the reactor core, preferably to the area of the cattle chute, and evacuate the refuel floor.
- D. If the Refueling Zone radiation monitors did not trip, instruct the control room operators to manually place the monitors in a tripped condition so that the Refueling Zone ventilation will isolate, SGT and CREV will actuate, and a Group 6 isolation will occur. Evacuate the refueling floor.

REF: 2-AOI-79-2, Rev. 0009, Para. 4.1

SOURCE: MODIFIED QUESTION

JMP

JUSTIFICATION

- a. Required if the Rx is subcritical.
- b. Required if the Rx is subcritical but an adverse radiological condition exists.
- c. (Correct)
- d. This may be appropriate after implementing the required immediate actions, but it is not delineated in the AOP.

A fire has required evacuation of the Unit 2 control room. 2/3-SSI-001, "Safe Shutdown Instructions," has been implemented. The procedure directs a rapid depressurization of the RPV. Currently, only three MSRVs have been able to be opened. The following reactor pressures are recorded at the indicated times.

0000 750 psig  
0015 510 psig  
0030 390 psig  
0045 300 psig  
0100 210 psig

Which one of the following describes the correct operator actions?

- A. Reduce the cooldown rate to less than 90 degrees per hour by periodically and sequentially closing MSRVs.
- B. Increase cooldown rate if possible to 90 degrees per hour.
- C. A fourth MSRV needs to be opened in order to provide sufficient blowdown to depressurize the RPV to allow LPCI injection.
- ✓D. No action is needed, adequate blowdown is available to depressurize the RPV to allow LPCI injection and no SSI cooldown limit requirements are being exceeded.

REF: 2/3-SSI-001, Rev. 3, page 78, TBD-23

2/3-SSI-2-1, Rev. 3, page 7, step 2.17

OPL171.039, Rev. 9, Page 12

SOURCE: 4/97 BSEP exam RO #98

**JMP add SSI COOLDOWN LIMITS to D ?help need steam tables**

JUSTIFICATION

90 degree cooldown limit is for a controlled cooldown

TBD-23 requires only 3 valves for adequate blowdown

9. 295017AA1.03 001 / / SROT1G1/ 3.4/3.4/ C/A/ NEW/ BF00301/ SRO/ 107

You are the Unit Supervisor on Unit 2. A chemistry technician taking routine samples reports that a sample from the roof vent monitored by RM-90-250 indicates there is a release of Xe133 from the roof of the reactor building. The sample had a total activity of 1.5E5 microcuries per cubic centimeter and no other gases or isotopes were detected.

Which one of the following states your required actions?

- A. Direct the chemistry technician to continue routine monitoring.
- B. Without delay, take appropriate actions to terminate the release.
- C. Monitor the release and prepare to notify the NRC pursuant to 10 CFR 50.73.
- D. Terminate the release within one hour and initiate a Special Report pursuant to the ODCM.

REF: ODCM, Rev. 10, Section 1/2.2

OPL171.033, Rev. 7

SOURCE: NEW QUESTION

help is this expected operator knowledge or a lookup

JUSTIFICATION

- a. (Correct)
- b. No action required. The objective was to confirm the candidate's knowledge that the reading was just about LLD for the RM.
- c. Not a reportable release level.
- d. No need to terminate the release, nor is it reportable by special report.

10. 295023AA1.05 001 / / SROT1G1/ 2.8/3.5/ MEMORY/ MODIFIED/ BF00301/ SRO/ 151

Fuel loading is in progress on Unit 2. A bundle is in transport from the SFSP to the core, when the fire alarm sounds. Which one of the following describes the correct actions to be taken?

- A. Stop all fuel movement until determination of the fire's impact on refueling operations can be made.
- B. Immediately lower the bundle to the closest location in the core and wait for determination of the fire's impact on refueling operations can be made.
- C. Refueling SRO will monitor the Fire/Medical radio frequency and discontinue fuel movement only if the fire could adversely affect refueling.
- D. Fire brigade team leader will determine if refueling operations could be adversely affected and direct the refueling SRO to discontinue fuel movement if necessary.

REF: OPL171.060, Rev. 9, Page 17

SOURCE: MODIFIED BANK QUESTION OPL171.060 005

lookup

Which one of the following choices states the BASIS for Caution #1 in the EOIs?

- A. Caution #1 is an accommodation for inaccuracies in RPV water level indication when plant conditions are different from those for which the instruments are calibrated.
- ✓B. Caution #1 defines conditions under which the value and trend of indicated level cannot be relied upon. Under extreme conditions, a high and increasing water level can be indicated when actual RPV level is decreasing.
- C. Caution #1 defines conditions beyond the Environmental Qualification of the RPV level instrumentation. Excessive temperatures in the electronics make the indicated level and trend unreliable.
- D. Caution #1 defines conditions under which drywell temperatures are high enough to interfere with the function of the condensing pots on the variable legs of the RPV level indicators.

REF: EOI PM, Operator Cautions, Rev. 2, Section 0-VB, Page 7

OPL171.003, Rev. 12, EO B.13

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

- a. The EOI PM points out that the caution is not just a simple accommodation.
- b. (Correct)
- c. The caution does not address EQ considerations.
- d. The condensing pots are on the reference legs.

Due to a LOCA and a subsequent loss of all RHR pumps, Standby Coolant is being used to spray the drywell per appendix 17B. Due to high pressure injection failures, reactor water level lowers to the point that the Unit Supervisor enters C-1, Alternate Level Control. No Injection Subsystems can be lined up for injection. What is the required action required of the RHR standby coolant system.

- ✓A. Secure the standby coolant drywell spray and line up for injection immediately.
- B. Standby coolant drywell sprays can continue provided that other Alternate Injections subsystems are capable of restoring RPV water level to >-162 inches.
- C. Standby coolant drywell sprays can continue until RPV water level drops to -162 inches.
- D. Standby coolant drywell sprays can continue until Emergency Depressurization is required.

REF:

replaced

JUSTIFICATION

During a small line break in the drywell, a controlled cooldown is being conducted per the guidance of EOI-1 RC/P leg.

What effect will the cooldown have on delta P (sensed by the wide range level instrument) and what effect will this have on indicated reactor vessel wide range level?

This will result in:

- A. lower sensed delta P and indicated level lower than actual level.
- B. higher sensed delta P and indicated level lower than actual level.
- ✓C. lower sensed delta P and indicated level higher than actual level.
- D. higher sensed delta P and indicated level higher than actual level.

a. Level is higher

b. Sensed delta P is lower due to boiling

C. Changes in ambient temperature change temperature and density of water in the reference leg. Changes in density causes erroneous indications in sensed delta P . Lower density in reference leg decreases sensed delta P and indicated level is higher than actual.

When variable leg temperature is above saturation temperature for the existing Reactor pressure, water in the variable leg will boil. Boiling increases pressure on the variable leg side resulting in lower sensed delta P and indicated higher than actual level.

d. Level is higher

Changed EOP to EOI REF leg conditions stay constant in stem in justification we talk about it changing **confusing**

A RWCU Backwash Receiver Tank (BWRT) drain line has cracked during transfer to Radwaste and is spilling into the Reactor Building. Radiation levels in the Reactor Building are as follows:

Reactor Building Elevation 593	1200 mR/hr
Reactor Building Elevation 565 West	800 mR/hr
Reactor Building Elevation 565 East	850 mR/hr
Reactor Building Elevation 565 Northeast	1100 mR/hr
All other Reactor Building areas	NOT ALARMED

Per the EOIs, which one of the following is the required action that MUST be directed by the Unit Supervisor and/or Shift Manager?

- A. Continue reactor operation and direct attempts to stop the tank drain line leakage.
- ✓B. Commence a normal reactor shutdown to Cold Shutdown.
- C. Scram the reactor and commence a normal cooldown.
- D. Scram the reactor and commence an emergency depressurization.

REF: EOI3, Rev. 6, SC/R

EOI PM, Section 0-VE, Rev. 1, Page 71.

SOURCE: 1995 BFNP SRO EXAM #72

JMP COLD S/D vice HOT S/D ref material?

JUSTIFICATION

- a. This is only appropriate when the area radiation levels above the EOI-3 entry conditions (1000 mR/hr in all but the TIP room) are confined to one area.
- b. (Correct)
- c. Not a conservative option, and the EOI doesn't direct it for these conditions. Challenges safety systems and puts the plant through a transient.
- d. This path is for when a primary system is discharging into the Reactor Building and the operators are unable to keep rad levels <1000 mR/hr.

The following conditions have existed for 30 minutes:

- Plant Stack noble gas is  $3.88E+8$  uc/second.
- SI 4.8.B.1.a.1 release fraction is 2.7.
- Site boundary radiation reading is 28.7 mR/hr (gamma and beta).
- Site boundary I-131 is at  $4.1E-8$  uc/cc.

Which one of the following emergency classifications, if applicable, should be declared based on the above conditions? (Reference Material Provided)

- A. None.
- B. Unusual Event.
- C. Alert.
- D. Site Area Emergency.

REF: ODCM, Rev. 10  
EPIP-1, Rev. 21, Section 4.0  
SOURCE: NEW QUESTION

**Reference material EPIP 1**

JUSTIFICATION

- a. This is incorrect because the plant is in an alert due to site boundary radiation levels.
- b. This is incorrect because the condition must exist for 1 hour to be an Unusual Event.
- c. (Correct) The site boundary radiation reading is about 2.5 times the 15-minute site boundary limit.
- d. This is incorrect because based on the time the conditions have existed, the gaseous release rates are two orders of magnitude below their limits.

Given the following conditions for Unit 2:

- All control rods have been inserted
- Drywell pressure is 2.1 psig
- Drywell temperature is 89 F
- Drywell hydrogen concentration is 3.1 percent
- RPV pressure is 1025 psig
- RPV water level is +16.2 inches
- Reactor Building ventilation exhaust radiation levels are 10 mR/hr
- Secondary containment temperatures are below maximum values
- Secondary containment sump water level is 56 inches
- Secondary containment area rad monitors are below maximum values
- Suppression pool temperature is 89 F
- Suppression pool level is - 4.3 inches

Based only on the above conditions, which one of the following describes the EOI flow paths you are REQUIRED to enter?

- A. RC/P, RC/L and RC/Q.
- B. PC/H, SP/L, SC/L, SC/T, DW/T, PC/P, SC/R and SP/T.
- C. SC/L, SC/T, and SC/R.
- ✓D. DW/T, PC/P, SP/T, PC/H, AND SP/L.

REF: EOI-1,2 and 3

SOURCE: NEW QUESTION

eo-3 entry due to 66" changed it to 56 inches, deleted "only" JMP

JUSTIFICATION

- a. Incorrect because there are no required entries for EOI-1 and these are all EOI-1 flow paths.
- b. Incorrect because entry into both EOI-3 and EOI-2 are not required.
- c. Incorrect because entry into EOI-3 is not required.
- d.

(Correct) Any entry into EOI-2 requires entry into each of the flow paths, irrespective of the entry conditions. EOI-2 entry is required because of hydrogen concentration in excess of 2.4 percent.

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?

- 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 operable.

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

SOURCE: NEW QUESTION

Competent operator OR REF Material

#### JUSTIFICATION

- 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.

Given the following information about the total number of shifts worked during the first quarter of 2000:

SRO A worked: One 12 hour shift as Shift Manager, two 12 hour shifts as Unit 1 / 2 supervisor, and two 12 hour shifts as Unit 3 Unit Supervisor. While assigned as Shift Manager, SRO A spent approximately 4 hours attending Plan-of-the-Day meetings and routine interface with the Operations Work Control Group.

RO B worked: Three 8 hour shifts as Unit 2 Board UO, three 8 hour shifts as Unit 2 Desk UO, and one 8 hour shift as the Operations Representative in the Operations Work Control Group (Tagout Reviewer).

With regard to 10 CFR 55.53, "Conditions of Licenses," which one of the following describes the license status of the above operators?

- A. Neither SRO A nor RO B have maintained an active license.
- B. SRO A has maintained an active license, RO B has not maintained an active license.
- C. RO B has maintained an active license, SRO A has not maintained an active license.
- D. Both SRO A and RO B have maintained an active license.

REF: OSIL-105, 5/1/98.

10 CFR 55.53, Conditions of Licenses

SOURCE: NEW QUESTION

JMP

#### JUSTIFICATION

The SRO met the requirements because he was actively performing the functions of a senior operator. As Shift Manager, he has certain management responsibilities, i.e., attending the POD, or periodic oversight of the Work Control Center.

The RO did not meet the requirements for an active license because normal duties under his license do not include collateral assignments such as Ops Rep in the Clearance process.

During refueling operations a Portable floating work platform is being used and has been secured so that it is not free floating in the spent fuel pool (e.g. secured with tube lock or similar Attachment to pool wall, etc.).

According to 0-GOI-100-3C," FUEL MOVEMENT OPERATIONS DURING REFUELING," Work must stop and all personnel exit the portable floating work platform if which one of the following occurs?

- A. Any testing of the neutron monitoring system.
- B. Any time a control rod is not fully inserted in a control cell containing more than one fuel assemblies and the vessel head is removed.
- ✓C. Any time Fuel Handling Supervisor must leave the refuel floor without being properly relieved.
- D. Any failure of the refueling floor CAM unit, that causes all three channels to be inoperable.

0GOI1003C, FUEL MOVEMENT OPERATIONS DURING REFUELING, Revision 32

took time reference out JMP

JUSTIFICATION

- a. Must involve moving sources or the detectors.
- b. Two or more must be removed
- c. Correct. no minimum time allowed
- d. Monitor not required for refueling floor work

During abnormal or emergency conditions a UO shall not place an ECCS system in MANUAL unless directed by the Control Room Unit Supervisor/Shift Manager in compliance with EOs or which of the following?

- ✓A. System misoperation in AUTOMATIC is confirmed by two independent indications.
- B. Adequate core cooling is confirmed by at least one indication that meets REG Guide 1.97 requirements AND indications are approaching and cannot be prevented from exceeding an automatic action setpoint.
- C. System misoperation in AUTOMATIC is confirmed by one indication AND adequate core cooling is confirmed by at least one indication that meets REG Guide 1.97 requirements.
- D. Adequate core inventory is confirmed by at least two independent indications AND indications are approaching and cannot be prevented from exceeding an automatic action setpoint.

REF: SSP-12.1, Rev. 0037a, Pages 17, 19, and 25.

SOURCE: NEW

a. correct answer 3.1.10.k.2.c

b. requires two independent indications of adequate core cooling. Approaching a set point is initiation criteria, not criteria for taking system to manual.

c. requires two independent indications of adequate core cooling.

d. requires two independent indications of adequate core cooling not core inventory and Approaching a set point is initiation criteria, not criteria for taking system to manual.

JMP

Liquid Radwaste Effluent Monitor RM-90-130 has been operating erratically. A release is scheduled for 10:00.

The following is the sequence of events:

- 09:58 Two independent samples of the tank being discharged were analyzed in accordance with the sampling and analysis program specified in the ODCM
- 10:00 Two qualified persons independently verified the release rate calculations and independently verified the valve line up prior to the release.
- 10:02 Commenced batch radwaste release
- 10:04 RM-90-130 fails

Which one of the following describes the MINIMUM actions required, if any?

- A. Continue with the release. No additional actions are required for this situation.
- B. Continue with the release. Within 1 hour, require an additional sample to confirm the original sample results. If the sample results confirm the previous results, complete the release. Require a qualified person to independently verify the release rate calculations.
- C. Suspend the release. Require an additional sample to confirm the original sample results. If the sample results confirm the previous results, then resume the release.
- D. Suspend the release. Require two additional independent samples of the tank being discharged. Require two qualified persons to independently verify the release rate calculations. If the sample results confirm the previous results and the release rate is confirmed, then resume the release.

REF: ODCM, Rev. 10, Table 1.1-1; 2.2.1

SOURCE: NEW QUESTION

REF MATERIAL ODCM JMP

JUSTIFICATION

- a. (Correct) The ODCM requires either the monitor be operable OR prior to the release two independent samples of the tank being discharged were analyzed in accordance with the sampling and analysis program specified in the ODCM table 2.2.1. Two qualified persons independently verified the release rate calculations and independently verified the valve line up prior to the release.
- b,c,d. Additional samples are not required; the minimum requirements for release have been met.

Unit 3 is operating at 100% power.

Which one of the following is the reason for entering EOI-1 at Step RC1 if drywell temperature cannot be maintained below 200F per EOI-2?

- A. To prevent exceeding the design temperature of the drywell structure.
- B. To prevent exceeding the maximum normal operating temperature of the drywell with the reactor at power.
- C. To ensure drywell temperature remains below the design temperature of the environmentally qualified drywell components.
- ✓D. To ensure the reactor is shutdown by control rod insertion should emergency depressurization be required.

REF: EOI PM, Rev. 0, SEC 0-VD, pg 23

OPL171.203, Rev 3, EO B4b

SOURCE: 1995 BFNP SRO EXAM #66

JMP

JUSTIFICATION

- a. This action does nothing to cool the drywell below 280 F.
- b. This action does nothing to cool the drywell below 200 F.
- c. This action is to minimize the impact on non EQ equipment.
- d.

(Correct)

While performing Steam Cooling, which one of the following describes the level at which Emergency Depressurization must be initiated and the reason for emergency depressurizing?

- A. -190 inches to ensure adequate core cooling by core submergence.
- B. -200 inches to ensure adequate core cooling by core submergence.
- C. -190 inches to ensure the covered portion of the core will generate sufficient steam to prevent any fuel clad damage in the uncovered portion of the core.
- ✓D. -200 inches to ensure the covered portion of the core will generate sufficient steam to prevent any fuel clad damage in the uncovered portion of the core.

REF: EOI program manual, Section 0-V-I, page 15 of 18

SOURCE: NEW QUESTION

JUSTIFICATION

-162 inches is TAF

24. G2.4.30 001/ / SROT3/ 2.2/3.6/ C/A/ NEW/ BF00301/ SRO/ 138

A chemistry sample has been directed due to steadily rising SJAE rad monitor readings. The following sequence of events occur at the times noted:

- 0855 Chemistry reports coolant activity of 4.3  $\mu$ ci/ml based on sample
- 0900 SM enters a 12 to Hot Shutdown LCO based on coolant activity
- 0905 SM declares an Unusual Event based on abnormal core conditions
- 0910 A plant shutdown is started to comply with Technical Specifications.

The NRC must be notified of events in progress no later than:

- A. 0955
- B. 1000
- ✓C. 1005
- D. 1010

REF: 10 CFR 50.72

SOURCE: 4/97 BSEP exam RO #80

JMP

25. G2.4.44 001/ / SROT3/ 2.1/4.0/ MEMORY/ NEW/ BF00301/ SRO/ 140

Which one of the following has the authority for offsite recovery efforts during an emergency?

- A. Site Emergency Director (SED)
- B. Central Emergency Control Center (CECC) Director
- ✓C. State of Alabama
- D. Nuclear Regulatory Commission

REF: EPIP-16, revision 3, Section 3.1.2.2 page 2

SOURCE: NEW QUESTION

JMP

Unit 2 is operating with only the 2B Recirc Pump (Single Loop Operation) at 60% power. The following alarms and conditions currently exist:

- Jet Pump Flow No. 11 Thru 20 (2-FI-68-46) 13 Mlbm/hr
- Jet Pump Flow No. 1 Thru 10 (2-FI-68-48) 57 Mlbm/hr
- TOTAL CORE FLOW Recorder (2-XR-68-50) 43.4 Mlbm/hr
- APRM FLOW 43.5%
- Mode Switch in RUN

DETERMINE how the Core Flow Indication and PRNM Systems are affected by these conditions.

- A. The OPRM trip function is BYPASSED and the Total Core Flow Indication is correct.
- ✓B. The OPRM trip function is ENABLED and the Total Core Flow Indication is correct.
- C. The OPRM trip function is BYPASSED and the Total Core Flow Indication may be inaccurate.
- D. The OPRM trip function is ENABLED and the Total Core Flow Indication may be inaccurate.

T=4

AOI-68-1

Control Rod 38-23 has been selected for a single notch withdrawal from position 02 to position 04. The following response from the CRD system was observed:

- Insert light illuminates and goes out.
- Withdrawal light illuminates and goes out.
- Settle light illuminates and goes out.

The operator also observes and reports that the selected rod is now at position 06 and is continuing to drift out. A rod drift alarm is also present.

Which one of the following has caused this condition?

- A. The automatic sequence timer has failed.
- ✓B. Stuck open collet fingers.
- C. Low CRDM cooling water pressure/flow.
- D. Leaking scram outlet valve.

REF: OPL171.006, Rev. 5, EO 13d

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

- a. This would more than likely cause failures to notch in or out.
- b. (Correct)
- c. High pressure/flow might cause drift. Low pressure/flow will not.
- d. Might cause rod insert drift.

With the Rod Worth Minimizer keylock switch in NORMAL, which one of the following describes the effect of a loss of all control rod position signals from the RPIS?

- ✓A. Withdraw, insert, and select rod blocks will occur if power is less than the Low Power Alarm point.
- B. Only withdraw and select rod blocks will occur if power is less than the Low Power setpoint.
- C. Withdraw, insert, and select rod blocks will occur at any power level.
- D. RWM-PROG lights on INOP-RESET pushbutton. This will occur at any power level.

REF: OPL171.024, Rev. 8, Page 36, 4.d.(1), and Page 12, 2.f.(3)

2-AOI-85-4, Rev. 11

SOURCE: 1996 BFPN RO EXAM #31

CHANGED REV ON AOI JMP

JUSTIFICATION

- a. (Correct)
- b. There is also an insert block. This choice implies that the operator can insert at any time to add negative reactivity.
- c. These features do not activate when the plant is above the low power setpoint.
- d. This is in effect when the switch is turned from normal to bypass (Ism)

With both reactor recirculation pump speeds matched and the reactor at 100% power, which one of the following is an indication of a reactor recirculation jet pump failure?

In the loop with the failed jet pump, if indicated recirculation loop flow:

- A. decreases, indicated core pressure will increase.
- ✓B. increases, indicated main generator output will decrease.
- C. decreases, indicated total core flow will increase.
- D. increases, indicated core thermal power will increase.

REF: AOI-68-2, Rev. 11, Page 1, Para 2.0.

OPL171.007, Rev. 15, Page 55, Para E.1

ITS Basis 3.4.2

SOURCE: 1996 BFNPP EXAM #37, distractors modified

help check AOI

JUSTIFICATION

- a. Loop flow decreased because of jet pump fracture, causing lower D/P across the jet pump. This causes the summation of D/Ps to lower the indicated loop flow. However, because of the malfunctioning jet pump, total core flow decreases, as does core pressure drop.
- b. (correct)
- c. 2-AOI-68-2 lists an increase in indicated core flow as a symptom. This is only true if the jet pump throat is restricted or clogged, causing a high D/P across the jet pump.
- d. Core thermal power will decrease with any jet pump flow degradation, whether it be caused by jet pump fracture or obstruction.

By disconnecting the recirc pump motor from the generator rather than tripping the MG set supply breakers, which of the following occurs?

- A. The recirc pump will coast down more quickly. Lower core flow causes more voiding. This lowers the slowing down length of fast neutrons which raises the thermal neutron flux. Higher thermal neutron flux results in more power.
- B. The recirc pump will coast down more slowly. Higher core flow causes less voiding. This raises the slowing down length of fast neutrons which lowers the thermal neutron flux. Lower thermal neutron flux results in less fission and less power.
- C. The recirc pump will coast down more slowly. Higher core flow causes less voiding. This lowers the slowing down length of fast neutrons which raises the thermal neutron flux. Higher thermal neutron flux results in more power.
- ✓D. The recirc pump will coast down more quickly. Lower core flow causes more voiding. This raises the slowing down length of fast neutrons which lowers the thermal neutron flux. Lower thermal neutron flux results in less fission and less power.

REF: OPL171.007, Rev. 18, Page 55

Obj.V.B.4, V.C.2

Obj.V.C.1.b

SOURCE: NEW

Solution:

A. Raises the slowing down length. Lowers power

B. Pumps slow more slowly

C. Pumps slow more slowly. Lowers power

D. Correct - The recirc pump will coast down more quickly. Lower core flow causes more voiding. This raises the slowing down length of fast neutrons which lowers the thermal neutron flux. Lower thermal neutron flux results in less fission and less power

HELP check LP

JUSTIFICATION

a. Only when the field breaker for the idle pump is racked out.

b. This is true for both or no recirc pumps running.

c. (Correct) The summing circuit adds a negative number due to reverse flow in the idle jet pumps.

d. Technically achievable, but not true.

During the performance of RHR System MOV operability testing, the RHR pump torus suction valves were closed. Immediately thereafter, a LPCI initiation signal is received.

Assuming the LPCI initiation signal remains present, which one of the following statements is correct?

- A. The suction valves will open automatically, and then the respective RHR pumps will auto start.
- B. The suction valves will open automatically and then the respective RHR pump must be started manually.
- C. The suction valves will not open automatically. They must be fully reopened manually, and then the respective RHR pumps will auto start.
- ✓D. The suction valves will not open automatically. The valves must be fully reopened manually, and then the pumps must be manually started.

REF: OPL171.044, Rev. 8, Page 38; EO V.B.12

SOURCE: BANK QUESTION

\*

JUSTIFICATION

a,b,c,d. Anti-pump logic will prevent the pump from automatically responding to an ESF signal unless there is a suction path, and it is not automatic.

On Unit 3, the Reactor Water Cleanup (RWCU) System is operating with RWCU Pump A running and the Filter/Demineralizer B in service with 130 gpm flow.

Which one of the following choices describes the expected automatic response of the RWCU system if Filter/Demineralizer B is inadvertently valved out of service?

- ✓A. Filter/Demineralizer B holding pump will start. RWCU Pump A trips when system flow decreases to less than 56 gpm for 35 seconds.
- B. Filter/Demineralizer B BYPASS valve will automatically open to maintain at least 90 gpm and RWCU Pump A will continue to operate.
- C. Filter/Demineralizer A automatically returns to service when Filter/Demineralizer B dp exceeds 20 psid.
- D. The system automatically isolates and Pump A trips when system flow decreases to less than 40 gpm for 7 seconds.

REF: OPL 171.013, Rev. 8, pAGE 19

SOURCE: BANK QUESTION

Changed time delay\*

JUSTIFICATION

- a. (Correct)
- b. The BYPASS valve is not automatic. 90 gpm is the Unit 1 pump trip setpoint. A check valve prevents bypass flow via the holding pump piping.
- c. This feature does not exist; however, there is a flow controller that is normally in manual.
- d. The system doesn't isolate, and the 40 gpm setpoint is for the F/D holding pumps to start.

The Unit 2 reactor is in cold shutdown with RHR Loop B in the Shutdown Cooling (SDC) mode when reactor water level rapidly decreases to -130.0 inches. Which one of the following correctly describes the operation of the RHR System?

- A. The LPCI Inboard Injection valves automatically open and the operator must wait 5 minutes before throttling flow.
- B. The LPCI Inboard Injection valves automatically close and the operator must wait 5 minutes before manually opening the valve.
- ✓C. The operator must depress the SDC isolation reset pushbuttons on panel 9-3 before the LPCI Inboard Injection valves automatically open.
- D. The operator must manually open the LPCI Inboard Injection valves after resetting the PCIS isolation using the reset switches on panel 9-4.

REF: OPL171.044, Rev. 8, EO B.16

OPL171.017, Rev. 8, Page 21, 33

SOURCE: 1995 BFNP EXAM RO # stem modified to change LPCI injection valves to SDC supply.

Changed answer to "C" and "130" to "-130" stem is confusing why 74-48 help

JUSTIFICATION:

c. SDC reset is only for LPCI injection valves

The following conditions exist during a loss of all A/C power (Onsite and Offsite):

- The high pressure coolant injection (HPCI) system was started in response to a valid actuation signal.
- A valid HPCI isolation signal is subsequently generated.

Which one of the following is the expected result?

- A. The HPCI pump will continue to operate with the mini-flow valve open.
- B. The steam supply inboard isolation Valve 73-2 will close, and the turbine will trip.
- ✓C. The steam supply outboard isolation Valve 73-3 will close, and the turbine will trip.
- D. A full HPCI system isolation will occur, and the turbine will trip.

REF: OPL171.042, Rev. 11, Pages 33 - 37.

SOURCE: 1996 BFNP SRO EXAM #60

changed station blackout verses a loss of all AC power

JUSTIFICATION

- a. The pump turbine will trip on a HPCI isolation.
- b. Valve 73-2 will fail as is upon loss of AC power.
- c. (Correct)
- d. When normal or emergency AC power is available, and there is a valid isolation signal, a full HPCI isolation and turbine trip will occur. Valves 73-2, 73-81, and 73-64 are 480 Volt AC powered.

During a Unit 2 LOCA, the following plant conditions exist:

- Reactor water level is dropping at a rate of 20 inches per minute.
- RPV level is currently at -132 inches.
- RPV pressure is 468 psig.
- Drywell pressure is 2.5 psig.

Which one of the following describes the expected status of the Core Spray System?

- A. The Core Spray System has not initiated.
- ✓B. The Core Spray pumps have started, but the injection valves are CLOSED.
- C. The Core Spray pumps have started, and the injection valves are OPEN, but pump flow is dead headed against the closed check valve.
- D. Core Spray pumps have started and are injecting into the RPV.

REF: OPL171.045, Rev. 8; EO B.2

SOURCE: BANK QUESTION

changed typo -132" initiated \*

JUSTIFICATION

- a. Core Spray initiates at -122"
- b. (Correct)
- c. The inboard injection valve does not open until #450 psig in the RPV
- d. (Same as c.)

Unit 3 is operating at power with Diesel Generator 3A under clearance. A transient occurs resulting in a reactor scram signal and an ATWS. The SLC control switch is taken to the START PUMP B position. Plant conditions are as follows:

Reactor power	10%
480v S/D bd 3A	De-energized (A/C only)
SLC switch	NOR-AFT-START

How will the SLC system respond?

- A. SLC squib valve A fires, no SLC pump starts.
- B. SLC squib valve B fires, no SLC pump starts.
- ✓C. SLC squib valves A and B fire, one SLC pump starts.
- D. SLC squib valve B fires, both SLC pump starts.

REF: OPL171.039, Rev. 9, Page 12

SOURCE: 4/97 BSEP exam RO #9

Changed "a lockout of the BOP bus" to "a turbine trip" Change 480 v S/D bd major changes  
Help

#### JUSTIFICATION

In the START PUMP B position, normally pump B starts and both squibs fire. Pump B and Squib B power from SD BD 3B which is energized. Squib A is powered from SD BD 3A and will fire when SD BD 3b is energized.

During main turbine stop valve testing, the No. 2 Stop Valve would not close. The Unit Supervisor directs placing the Stop Valve No. 2 input to the Reactor Protection System (RPS) in a tripped condition.

Which one of the following describes the impact of this action on the RPS?

No. 2 Stop Valve provides input to:

- A. only RPS Channel A, and placing the inputs in a tripped condition will cause a half scram.
- B. only RPS Channel B, but placing the inputs in a tripped condition will NOT cause a half scram.
- C. both RPS Channels A and B, and placing the inputs in a tripped condition will cause a full scram.
- ✓D. both RPS Channels A and B, but placing the inputs in a tripped condition will NOT cause a half scram.

REF: ITS LCO 3.3.1.1, Amendment 253

OPL171.028, Rev. 10, Page 13

SOURCE: BANK QUESTION

\*

JUSTIFICATION

a,b,c,d. All 4 TSVs open a pair of contacts at 10% closure, and input RPS Channels A and B.  
No one TSV will cause a half scram.

While walking down the control room panels on a tour, the Unit 2 Unit Supervisor notices the F5 fuse indicator for the TIP channel B Valve Control Monitor is de-energized.

Which one of the following statements correctly describes the information provided by this condition?

- A. The TIP shear valve will not fire.
- B. The TIP ball valve will not open when the TIP is out of the shield.
- C. The TIP channel will not respond to a automatic scan.
- ✓D. The TIP channel will not respond to a containment isolation signal.

REF: OPL171.023, Rev. 3, EO B.3

SOURCE: BANK QUESTION

help ? blown fuse removes power from isolation relays

JUSTIFICATION

- a. There is a Squib monitor for this.
- b. There are other indicating lights for the ball valve.
- c. There is a scan light.

A traversing in-core probe (TIP) trace is being performed on Unit 2. With the probe in core, a spurious Group 8 isolation occurs.

Which one of the following describes how the TIP system responds to the isolation signal?

- A. No response; the TIP system only responds to a Group 2 isolation signal.
- ✓B. The TIP drive withdraws at fast speed and the ball valve closes once the probe has withdrawn to the shield chamber.
- C. The TIP drive withdraws at slow speed until the core bottom is cleared, then shifts to fast speed, withdraws from the core and the ball valve closes when the probe has withdrawn to the indexer.
- D. The TIP drive withdraws at fast speed and if the probe is not in the shield within 30 seconds, the shear valve fires to cut the cable and seal the tube.

REF: OPL171.023

SOURCE: MODIFIED QUESTION

\*

#### JUSTIFICATION

- a. The same signals trip the Group 2 (RWCU) isolation.
- b. (Correct)
- c. Slow speed is used for scanning the core. The implication of the distractor is that the TIP only moves in slow speed when in the core, which is not so.
- d. The shear valve fires manually with a key-lock switch. That option is open to the operator, but there is no 30-second time constraint.

A unit 3 IRM channel is set to range 5 and reading 60. Which one of the following is correct if the IRM range selector switch is turned to range 6?

- A. A different preamplifier circuit is put into service and the reading should be about 6.
- B. A different preamplifier circuit is put into service and the reading should be about 19.
- C. The same preamplifier circuit remains in service and the reading should be about 6.
- ✓D. The same preamplifier circuit remains in service and the reading should be about 19.

REF: OPL171.020, Rev. 5, Page 12

changed answer from a to d \*

#### JUSTIFICATION

Readings vary by a factor of the square root of 10 from one channel to the next. The different pre-amplifiers are put into service between channels 6 and 7.

A reactor startup is in progress on Unit 3 with reactor power at 20%. APRM 1 is bypassed due to failing high. Then, IRM A fails high.

Which one of the following describes the response of the RPS to the IRM upscale trip?

- A. No RPS trip action
- B. A rod block
- C. A half scram
- D. A full scram

REF: OPL171.020, Rev. 5

Learning Objective B.7

MODIFIED QUESTION

\*

JUSTIFICATION

b,c,d. The candidate needs to demonstrate knowledge of companion APRM/IRMs and the effects of bypassing one companion. The distractors were designed to do that.

Unit 2 is operating at 100% power, when a loss of RPS B power occurs.

Which one of the following describes the type of fault detected for BOTH the RBM and APRM channels?

- A. A critical fault is generated in both the RBM channels, and in all of the APRM channels.
- B. A non-critical fault is generated in both the RBM channels, and in all of the APRM channels.
- C. A critical fault is generated in RBM Channel B, and in APRM Channels 2 and 4.
- D. A critical fault is generated in RBM Channel B, and non-critical faults are generated in all of the APRM channels.

REF: OPL171.148, Rev. 2, Page 67 and 10

SOURCE: BANK QUESTION

help verify on simulator

JUSTIFICATION

- a. RBM Channel A is unaffected, as are the APRMs.
- b. A critical fault is generated in RBM Channel B.
- c. None of the APRM channels have a critical fault.
- d. (Correct)

Which one of the following describes a characteristic of a fill oil leak from a Rosemount transmitter?

- A. The instrument readings repeatedly drift in both directions over a period of time.
- B. The instrument exhibits an inability to follow plant transients over a period of time.
- C. The instrument responds normally until the isolating diaphragm contacts the convolution plate, when it fails to function properly.
- ✓D. The instrument responds more slowly until the isolating diaphragm contacts the convolution plate, when it fails to function properly.

\*REF: Reactor Vessel Process Instrumentation, OPL171.003, Rev. 11, pg. 18

Learning Objective V.B.2

NRC Bulletin 90-01 and NRC Info Notice 89-42

SOURCE: 1995 BFNP SRO EXAM, Question #1, some distractors changed changed obj reference JMP

JUSTIFICATION

- a. A sustained drift in the same direction is detectable over a period of time.
- b. (Same as b)
- c. The instrument exhibits slowed response to, or inability to follow planned plant transients.
- d. (Correct)

*"B" may be correct*

The following Unit 2 plant conditions are given:

Reactor power is 65%

Suppression Pool temperature is 78 degrees

Suppression Pool temperature is increasing by 2 degrees every 12 minutes

Suppression Pool cooling is in service providing maximum cooling

The time is 12:00 noon.

2-SR-3.5.3.3, RCIC SYSTEM RATED FLOW AT NORMAL OPERATING PRESSURE is in progress.

Which one of the following is the latest time the test may be conducted before Technical Specifications limits would be exceeded?

- A. 1:42 pm
- ✓B. 2:42 pm
- C. 3:12 pm
- D. 5:24 pm

REF: TS 3.6.2.1, Amendment 253

2-SR-3.5.3.3, Rev. 0002, Para 3.3

SOURCE: NEW QUESTION

\*Good question A will be selected JMP

JUSTIFICATION

- a. Based on the 95BF limit applicable when no testing is going on.
- b. (Correct)  $105 - 78 + 2 \times 12 = 162$  min or 2 hrs; 42 min.
- c. Based on the 110 degrees limit when in IRM Range 7.
- d. Based on 105 degrees limit, but forgot to divide by 2.

45. 218000K2.01 001/ ROT2G1/ SROT2G1/ 3.1/3.3/ MEMORY/ NEW/ BF00301/ BOTH/ 51

Which one of the following would occur if power is lost to 250VDC RMOV Board 3B?

- A. The ADS logic will not operate after automatic transfer to the alternate power supply.
- B. The ADS logic will not operate, however, TWO of the six ADS valves can be operated manually.
- ✓C. The ADS logic will not operate, however, FOUR of the six ADS valves can be operated manually
- D. The ADS logic will not operate, however, the SIX ADS valves can be operated manually.

REF: OPL171.043, Rev. 7, Pages 11 and 16

SOURCE: NEW QUESTION

JMP

JUSTIFICATION

- a. Board 3B does not have an automatic transfer to the alternate power supply
- b. Two ADS valves are powered from 3B
- d. Two of the six ADS valves lose power with no alternate. Thus only four are left that will function manually.

46. 223002K3.01 001/ ROT2G1/ SROT2G1/ 3.7/3.7/ MEMORY/ NEW/ BF00301/ BOTH/ 53

Which one of the following gives the two PCIS groups NOT affected by RPV water level?

- A. Groups 1 and 4
- ✓B. Groups 4 and 5
- C. Groups 5 and 6
- D. Groups 6 and 8

REF: OPL171.017, Rev. 8, Page 15

SOURCE: NEW QUESTION

JMP

JUSTIFICATION

This question was designed to challenge the candidate's knowledge of what systems are in each group, and to either figure out or remember that Groups 4 and 5 (HPCI and RCIC), must not isolate when there is a water inventory problem. Groups 1,2,3,6,&8 all isolate on RPV low levels.

Given the following conditions:

RPV level                -190 inches  
RPV Pressure            920 psig  
Drywell pressure        2.95 psig  
A valid LPCI initiation signal is present

Which one of the following are required to be completed in conjunction with **ONLY** placing the RHR Containment Spray select switch XS-74-1-121/129 in Select to open the Containment Spray valves?

- ✓A. Raise RPV level to -180 inches only.
- B. Reduce drywell pressure to 1.6 psig only.
- C. Raise RPV level >-120" AND reset the LPCI initiation signal.
- D. Raise RPV level to >-120 inch reactor level AND reduce drywell pressure to 1.6 psig.

REF: OPL171.044, Rev. 8, Page 34/36, Sections m.(4) / o.(4).  
1996 BFNP RO EXAM #65 modified to give plant conditions

HELP significant work required change to the select switch being operated JMP

JUSTIFICATION

- a.& d. RPV level interlock is bypassed with keylock
- c.     LPCI initiation signal is bypassed

A trip of the 480 V Shutdown Board 1A will have which of the following effects on the spent fuel pool system?

- ✓A. Trips Fuel Pool Circulating Pump 1A.
- B. Trips Fuel Pool Circulating Pump 1B.
- C. Isolates the fuel pool water flow to the fuel pool heat exchanger.
- D. Isolates the RBCCW to the fuel pool heat exchangers.

NEW - OPL171.052 003 Rev 5 Obj. V.B.7

Solution:

- A. Correct - Obj. V.B.7.
  - B. Pump 1B powered from 480 V Shutdown Board 1B (Similar for Unit 2 & 3)
  - C. Trips only one pump, does not isolate flow to the heat exchanger.
  - D. Does not effect the Shell side - reactor building closed cooling water (RBCCW)
- JMP

Both MSR/V vacuum breakers (the 10 inch and the 2 1/2 inch) on each relief line have failed closed. Some water from the suppression pool was siphoned into the relief line upon completion of blowdown when the steam in the relief line condensed.

What are the potential consequences of future MSR/V operation?

- A. Insufficient flow through the relief line.
- B. Uneven heating of the suppression pool.
- C. Direct pressurization of the drywell air space.
- ✓D. Overpressurize the relief line.

REF: OPL171.009, Rev. 6, Pg. 13 Obj VB5 VC2 VC3

SOURCE: new

Changed DW Vac Breakers to MSR/V Vac bkr, failed Vac bkr closed, future msrv operation.

JMP

JUSTIFICATION

- a. There would be no significant effect on the flow
- b. This would occur if the relief valves were not used in a prescribed pattern
- c. This could only occur if the vacuum breaker fails open
- d. (correct) Due to the presence of moisture in the line.

The following plant conditions exist:

- The reactor is operating at 100% power and 1000 psig.
- A turbine control valve malfunction resulted in reactor safety relief valve (SRV) 1-4 lifting and failing to reseal.

Which one of the following SRV tailpipe temperatures would you expect to see on the SRV that failed to close? (References attached)

- A. 212 degrees Fahrenheit
- ✓B. 290 degrees Fahrenheit
- C. 345 degrees Fahrenheit
- D. 545 degrees Fahrenheit

REF: Steam Tables or Mollier Diagram (INCLUDE WITH EXAM AS ATTACHMENT)

SOURCE: 1996 BFNP RO EXAM #99

check for training coverage JMP

JUSTIFICATION

- a. Saturation temperature for steam at tailpipe pressure (atmospheric).
- b. (Correct) This is a throttling process and is therefore isoenthalpic.
- c. 340 degrees Fahrenheit would be incorrectly determined if the candidate considered the process to be isoenthalpic to the saturation line, then followed the constant superheat line to atmospheric pressure.
- d. Saturation temperature for reactor pressure.

*THE ANSWER ON THE 1996 EXAM WAS GIVEN AS 370 DEGREES.*

The following conditions exist on Unit 2:

Turbine Steam Throttle Press: 990 psig  
Pressure setpoint: 970 psig  
Load Limit: 100%  
Load Setpoint: 100%

Which one of the following describes the EHC Pressure Regulating System response, and the effect on RPV pressure, if the turbine steam throttle pressure transmitter input to Pressure Regulator A failed upscale to 1100 psig?

- A. Pressure Regulator B takes over; RPV pressure increases.
- B. Pressure Regulator B takes over; RPV pressure decreases.
- C. Pressure Regulator A remains in control; RPV pressure increases.
- ✓D. Pressure Regulator A remains in control; RPV pressure decreases.

REF: OPL171.014, Rev. 5, Pages 13-15

SOURCE: BANK QUESTION

JMP changed based on PUR plant values 920 = 970 950 = 990 failed to 1100

JUSTIFICATION

- a. P.R. B won't take over when there is a failure causing P.R. A, which is normally the in-service regulator, to put out a TCV open signal.
- b. P.R. B doesn't take over, but pressure will decrease until the MSIVs close on low steamline pressure.
- c. P.R. A remains in control, but RPV pressure drops off as the P.R. sends out a TCV open signal in error.
- d. (Correct)

52. 256000K5.10 001/ ROT2G2/ SROT2G3/ 2.8/2.8/ MEMORY/ BANK/ BF00301/ BOTH/ 76

Which one of the following states the reason why the condensate pump header pressure should be between 100 and 150 psig during a reactor startup?

- A. To minimize thrust on the condensate pump motor bearings.
- ✓B. To ensure adequate condensate flow for the steam jet air ejectors.
- C. To ensure adequate flow through the condensate demineralizers.
- D. To maximize condensate pump efficiency.

REF: OPL171.011, Rev. 6  
SOURCE: BANK QUESTION  
REF info JMP

JUSTIFICATION

- a. Makes sense; however, this is not the reason.
- b. (Correct) The Unit 3 SJAE will shut down at <60 psig condensate incoming pressure.
- c. The condensate demins will always get whatever the feedwater demand is for the existing reactor power.

d. Theoretically, the pumps will draw less current at higher pressure, but at the same time, more water is being bypassed around the wear rings, thus it may be a wash. This is not the reason.

53. 259001A1.02 001/ ROT2G1/ SROT2G2/ 3.2/3.3/ MEMORY/ BANK/ BF00301/ BOTH/ 56

Which one of the following is an acceptable method for reducing thermal duty on RPV feedwater nozzles during low power and/or hot standby operation?

- A. Minimize reactor power.
- B. Increase reactor pressure.
- ✓C. Maximize RWCU flow.
- D. Reduce CRD flow.

REF: OPL171.026, Rev. 7, Page 36  
2-OI-3, Rev. 0071, Page 9  
SOURCE: BANK QUESTION  
JMP

JUSTIFICATION

- a. OI-3 suggests minimizing time at low power, not power level.
- b. OI-3 suggests reducing reactor pressure, or increasing power.
- c. (Correct) Warm RWCU return mixes with cooler feedwater.
- d. The only CRD flow path that would help is normally isolated anyway.

A full scram from 100% power occurred on Unit 2 as a result of a fault in the main turbine EHC system. After the SCRAM, the following conditions exist: (Assume no operator actions have occurred)

All three Reactor Feed Pumps (RFPs) are in AUTO  
Master Level Controller is in AUTO  
Reactor water level is at 10 inches and rising  
Scram Response logic is not inhibited

Which one of the following describes the Reactor Feed System response to this situation?

- A. RFPs A and B are available for AUTO or MANUAL mode of operation and may be taken to 5600 rpm.
- B. RFPs A and B are set at 600 rpm, and cannot be raised to >600 rpm until the Scram Response logic is reset.
- C. RFPs A and B are available for MANUAL mode only and will be limited to 3900 rpm until the Scram Response logic is reset.
- D. RFPs A and B are available for AUTO or MANUAL mode of operation but are limited to 3900 rpm until the Scram Response logic is reset.

REF: OPL171.012, Rev. 7, Page 26

SOURCE: BANK QUESTION

5050 is an operational limit JMP change 5600 to 5050?

JUSTIFICATION

- a. (Correct)
- b. A&B get set by the algorithm at 600 rpm (0% output), but they can be manually rolled up to 5600 rpm.
- c. RFP C gets set by the algorithm at a demand limit of 3900 rpm.
- d. A&B are available in either mode, but the manual speed limit is 5600, and not to be confused with the 3900 rpm demand limit set on RFP C.

Unit 2 and 3 are operating normally and are tied to the grid. Which one of the following would occur if a DG control switch was taken to start and the output breaker was closed? ( Assume the diesel generator speed setpoint is higher than grid frequency and no other operator actions were performed)

- A. The speed regulator will keep lowering the fuel supply to the diesel in order to try and lower grid/DG output voltage to the governor's setpoint. The DG will trip on under voltage.
- B. The zero droop governor will keep advancing the fuel supply to the diesel in order to try and raise grid/DG output frequency to the governor's setpoint. This will cause the DG to overspeed.
- ✓C. The zero droop governor will keep advancing the fuel supply to the diesel in order to try and raise grid/DG output frequency to the governor's setpoint. This will cause the diesel to overload.
- D. The speed regulator will keep lowering the fuel supply to the diesel in order to try and lower grid/DG output frequency to the governor's setpoint. This will cause the DG to trip on reverse current.

REF: OPL171.038, Rev. 10, Page 30

SOURCE: NEW QUESTION

JMP do we want to say no other actions performed, PWS or single unit

JUSTIFICATION

Explanation:

The speed regulator senses output frequency, but now the generator output frequency is fixed by the other loads on the grid. If the diesel speed setpoint is higher than grid frequency, the zero droop governor will keep advancing the fuel supply to the diesel in order to try and raise grid/DG output frequency to the governor's setpoint. This will cause the diesel to overload. (495 amps.)

On Unit 2, the operator is attempting a manual fast transfer of the 4kV Shutdown Board C normal power supply to the first alternate power supply. The following conditions are in effect:

- The Emergency Control Transfer Switch (ECTS) is in NORMAL.
- The Shutdown Board C AUTO TO MANUAL TRIP pushbutton was depressed, and the amber light extinguished.
- The alternate breaker synchronizing selector switch is in the OFF position.
- The operator is holding the alternate power supply breaker control switch in the CLOSED position.

Which one of the following describes the plant equipment response when the operator next trips the normal supply breaker?

- A. A fast transfer to the alternate supply occurs.
- ✓B. A slow transfer to the alternate supply occurs.
- C. The alternate breaker trips and Shutdown Board C is locked out.
- D. The alternate breaker trips and Emergency Diesel Generator C starts and ties to Shutdown Board C.

REF: OPL171.036, Rev. 4, Page 18

0-OI-57A, Rev. 0063, Para 8.1

SOURCE: MODIFIED QUESTION

JMP

JUSTIFICATION

- a. A fast transfer cannot happen because the synch switch was off.
- b. (Correct)
- c. The alternate breaker is interlocked with the normal breaker. As soon as the normal breaker opened, the alternate breaker received a signal to close.
- d. Same as c. with or without the EDG.

Diesel Generator 3A is synchronized to 4KV Shut Down Board 3A. The instrumentation readings for the diesel generator are as follows:

voltage: 4160 VAC  
frequency = 59.8  
current = 340 amps  
vars = 1600 Kvars  
watts = 2585 KW

What actions are required if the diesel is expected to be operated for an extended period?

- A. The operator must take the voltage regulator control switch to raise to avoid excessive stator currents.
- B. The operator must take the voltage regulator control switch to lower to avoid excessive stator currents.
- ✓C. The operator must take the governor control switch to raise to avoid excessive field current.
- D. The operator must take the governor control switch to lower to avoid excessive field current.

REF: OI-82

OPL171.038 Rev. 9, page 31

Exam bank question OPL171.038 003

SOURCE: NEW QUESTION (MEE)

ATTACHMENT: Need 3-OI-82, Illustration 1 for exam.

JMP

Which one of the following describes the response of the Main Steam Line Radiation Monitoring System when a level of 3 times normal full power background radiation is reached?

- A. The system will trip the mechanical condenser vacuum pump and close the condenser vacuum pump discharge valves.
- B. The system will trip the mechanical condenser vacuum pump, close the condenser vacuum pump suction valves, scram the reactor, and initiate a PCIS Group 1 isolation.
- ✓C. The system will trip the mechanical condenser vacuum pump and close the condenser vacuum pump suction valves.
- D. The system will trip the mechanical condenser vacuum pump, close the condenser vacuum pump discharge valves, scram the reactor, and initiate a PCIS Group 1 isolation.

REF: OPL171.033, Rev. 7, Page 14

SOURCE: new

JMP

JUSTIFICATION

- a. Closes suction valves
- b. DCN deleted the Group 1 isolation and scram.
- c. Correct
- d. DCN deleted the Group 1 isolation and scram. Closes suction valves

The 3B Raw Service Water (RSW) pump has automatically started to increase level in the RSW storage tanks. Subsequently, Fire Pump A receives an automatic start signal.

Which one of the following describes the response of the RSW storage tank isolation valves and the RSW pump to this situation?

- A. The 3B RSW pump immediately trips. The RSW storage tank isolation valves CLOSE but will automatically REOPEN when the fire pump stops. The 1A RSW pump will automatically start if the tank level demand signal is still present.
- ✓B. The 3B RSW pump immediately trips. The RSW storage tank isolation valves CLOSE. When the fire pump stops, one of the isolation valves automatically REOPENS; however, the backup isolation valve must be manually REOPENED. The 1A RSW pump can then automatically start if the tank level demand signal is still present.
- C. The 3B RSW pump continues running in support of the fire pump. The RSW storage tank isolation valves CLOSE, and will automatically REOPEN when the fire pump stops. When the tank is filled, the 3B RSW pump stops.
- D. The 3B RSW pump continues running in support of the fire pump. The RSW storage tank isolation valves CLOSE. When the fire pump stops, the 3B RSW pump stops. Both tank isolation valves remain CLOSED until manually reopened, and normal tank level control will then resume.

REF: OPL171.049, Rev. 9, Page 42

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

- a. One valve, the backup, does not open.
- b. (Correct)
- c. With a mini-flow bypass, this would work.
- d.

This distractor throws in some doubt as to whether the tank isolation valves are in series or parallel.

A small break LOCA on Unit 2 results in the following plant conditions:

- Reactor water level 12 inches above instrument zero.
- Drywell pressure 2.0 psig.
- Ventilation radiation:

Reactor building 68 mR/hr.

Refueling Zone 35 mR/hr.

Air inlets to Control Room 200 cpm above background.

Which one of the following statements describes the expected status of the control room ventilation system under the above conditions?

- A. The normal ventilation system is operating. The control room emergency ventilation (CREV) system is supplying filtered air from the control bay.
- ✓B. The normal ventilation system is supplying air to the control room from the control bay supply fans.
- C. The CREV system is operating, supplying filtered outside air. The normal ventilation system is isolated.
- D. The CREV system is operating, supplying filtered outside air. The normal ventilation system is NOT isolated.

REF: OPL171.067, Rev. 7, Page 23

MODIFIED QUESTION

JMP

JUSTIFICATION

- a. The CREV doesn't take fresh air from the control bay, whether actuated or not.
- b. (Correct) None of the initiation trip setpoints were reached.
- c. If initiated, this would be the status.
- d. This is the status when the CREV is started from the control room.

The following plant conditions exist:

- Reactor mode switch:    STARTUP/HOT STANDBY
- Main turbine:           Shell warming
- Feedwater lineup:       RFP A maintaining level in single element

Which one of the following statements describes the expected sequence of actions as a condensate system leak causes condenser vacuum to decrease from 24 inches Hg Vacuum to atmospheric pressure?

- ✓A. The Main turbine trips, then later, the RFP turbine trips and the main turbine bypass valves close at the same time.
- B. The RFP turbine trips, then later, the turbine bypass valves close, followed by a reactor scram on low condenser vacuum.
- C. The RFP turbine trips and the main turbine bypass valves close at the same time, then later, the main turbine trips
- D. Main turbine trips and the reactor scrams in response to the turbine trip, then later, the RFP turbine trips and main turbine bypass valves close at the same time.

REF: 2AOI473, Rev. 0010, Section 3.0

SOURCE: BANK QUESTION

JMP could someone argue C

JUSTIFICATION

- a.     (Correct)
- b.     There is no reactor scram on low main condenser vacuum.
- c.     A true statement at 7" Hg Vac; however, this is preceded by a main turbine trip at 21" Hg Vac.
- d.     The reactor won't trip on a turbine trip below 30% RTP.

An accident has occurred concurrent with a partial loss of AC power on Unit 2 resulting in the following indications:

Drywell pressure      2.1 psig  
RPV                      -135 inches  
Reactor pressure      490 psig

The diesel operator incorrectly diagnoses a loss of lube oil and initiates an emergency stop at panel 9-23. Which one of the following is required to reset the Diesel Generator Auto Start Lockout?

- A. Both generator lockout relays (86 relays) AND the protective relay logic (74) must be manually reset.
- B. The core spray initiation signal seal-ins on Panel 9-3 must be reset.
- C. Both the core spray initiation signal seal-ins on Panel 9-3 must be reset and the DG control switch must be taken to RESET.
- ✓D. The DG control switch must be taken to RESET.

REF: OPL171.038, Rev. 9, Page 26

SOURCE: NEW QUESTION

JMP

JUSTIFICATION

- A. Required for loss of DC control power.
- B. Raising the water level to greater than -122 allows manual reset of the core spray logic.
- C. Raising the water level to greater than -122 allows manual reset of the core spray logic.
- D. A lockout generated by a stop signal with a CASx or PASx locked in will automatically reset when the CASx and PASx signals clear and the seal-ins are reset. (In this case the water level) The lockout from an emergency stop of the DG from Panel 9-23 can only be reset by manually taking the DG control switch to reset.

The following plant conditions exist:

- The plant is operating at 100% power.
- A loss of RPS 'B' power occurs.

Which one of the following isolation valve groups will close?

- A. Group 1 Isolation Valves, Inboard Only
- ✓B. Group 2 Isolation Valves, Outboard only
- C. Group 2 Isolation Valves, Inboard and Outboard
- D. Group 3 Isolation Valves, Inboard and Outboard

REF: 2AOI991, Loss of Power to One RPS Bus, Rev 16, page 2 of 6, section 3.0

2-OI-99, RPS, Rev. 39, Para 3.11

SOURCE: 1996 BFNP EXAM - changed to RPS bus B loss

JMP

JUSTIFICATION

- a. Only the half-trip logic deenergizes in PCIS Group 1.
- c. inboard close on loss of a
- d. outboard only close on loss of B

A reactor startup is in progress and reactor power is on IRM Range 7, when the operator observes the following instrument failures:

- SRM Channels A and C fail downscale.
- IRM Channels A, C, and E fail downscale.

Which one of the following power supplies would have to be lost to cause such failures?

- A. 24 VDC Power Distribution Panel
- B. 48 VDC Power Distribution Panel
- C. 125 VDC Power Distribution Panel
- D. 120 VAC Instrument and Control Power Distribution Panel

REF: OPL171.037, Rev 7, pg 16, EO B9

SOURCE: 1995 BFNP RO EXAM #58, new distractor b

JMP

#### JUSTIFICATION

- a. (Correct)
- b. Provides power for annunciators and communications. This is different than the 48 VDC center-tapped battery used for nuclear instruments.
- c. 125 VDC power is dedicated for the EDGs.
- d. 125 VAC I&C power supplies the +/-24 VDC battery chargers; however, the NIs would not go downscale until about 3 hours when the batteries discharged. The operators would be forewarned if 120 VAC was lost.

Given the following plant conditions:

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

Which one of the following describes the response of the reactor if a main turbine trip occurs?

- A. Reactor immediately scrams on turbine stop valve 10% closure.
- ✓B. Reactor scrams on high reactor pressure.
- C. Reactor continues to operate at 38% power.
- D. Reactor continues to operate and power decreases to 30%.

REF: OPL171.028, Rev. 10, Pg. 26

FSAR Section 11.5.3

SOURCE: 1995 BFNP SRO EXAM #48 modified to remove initial condition of bypass ON changed answer to b due to first stage pressure is seeing 23% so TSV scram is bypassed

**JMSTIFICATION**

- b. This would occur were if the bypass in effect.
- c. The turbine bypasses do not have sufficient capacity to handle 38% power. This choice is also distracting because turbine runback occurs at >40% power mismatch.
- d. 30% is the point at which the bypass normally automatically comes into effect. The turbine bypasses could handle this power level, but the reactor was producing 38% and reactor power could not be reduced quickly enough to prevent the pressure transient.

Unit 3 is operating at 100% power.

Which one of the following combinations of events will **ONLY** initiate a **half scram** signal?

- A. Both MSIVs in steam lines "B" and "C" drift to less than 90% open.
- B. Both MSIVs in steam lines "A" and "D" drift to less than 90% open.
- ✓C. PRMN voter #1 to test X relay
- D. APRMs 3 and 4 trip on hi-hi flux.

REF: OPL171.028, Rev 12,

SOURCE: BANK QUESTION

JMP PRNMS changed this logic Is "D" a valid distractor

JUSTIFICATION

- a. Isolating steam lines "B" and "C" does not cause a halfscram.
- b. Isolating steam lines "A" and "D" does not cause a halfscram.
- c. (Correct) One voter to test X or Y relay will cause an 1/2 scram
- d. APRMs 3 and 4 will cause a full scram

Unit 2 is operating at 100 % power. Reactor pressure is being controlled by Pressure Regulator A.

If Pressure Regulator A fails down scale, which one of the following lists of symptoms is likely to occur? (Assume all systems respond as designed and no operator action.)

- A. Reactor pressure will increase, reactor thermal power will increase, and generator output will increase.
- ✓B. Reactor pressure will increase, reactor thermal power will increase, but generator output will decrease.
- C. Reactor pressure will decrease, reactor thermal power will decrease, and generator output will decrease.
- D. Reactor pressure will decrease, reactor thermal power will decrease, but generator output will increase.

REF: OPL171.014, Rev. 5

2-AOI-47-2, Rev. 0010, Para. 2.0

SOURCE: NEW QUESTION

JMP

JUSTIFICATION

- a. Generator power will decrease as the CVs throttle down in response to the pressure regulator sensing low pressure.
- b. (Correct)
- c. This happens if either pressure regulator fails upscale.
- d. If Rx power and pressure decreased due to an opening of the CVs, generator output would increase...for a while.

The following plant conditions exist:

- The reactor has scrammed from 100% power.
- HPCI and RCIC initiated due to a drop in reactor vessel level.

Which one of the following would result in a RCIC turbine trip and the Trip Throttle Valve, FCV 71-9, remaining open? (Assume no operator action.)

- A. Electrical overspeed.
- B. High Turbine exhaust pressure.
- C. Manual Trip.
- ✓D. High Reactor Vessel Water Level.

REF: OPL171.040, Rev. 14, Page 13.

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

- a. Electrical overspeed trips the throttle valve, but can be reset from the control room.
- b. High exhaust pressure is sensed by a pressure switch which electrically trips the throttle valve.
- c. Manual trip trips the throttle valve.
- d. (correct) The steam supply valve FCV-71-8 isolate on high RPV level.

Following a reactor feed pump trip from 100% thermal power, which one of the following reactor recirculation runback circuits seals in and must be manually reset?

- ✓A. 75% runback.
- B. Core flow runback.
- C. Mid power runback.
- D. Upper power runback.

REF: OPL171.007, Rev. 18, Page 30-37 Obj. V.B.17

Obj.V.C.6

JMP

SOURCE: NEW

JUSTIFICATION

A. (Correct) will initiate an automatic runback of recirc pump speed if any individual RFP flow is < 19% AND RPV water level drops to the low level alarm setpoint (+27") The purpose of this limiter is to automatically reduce reactor power to a value within the capacity of the remaining feedwater pumps

B. is enabled (blue light lit) when total core flow is greater than 58%(approx. 60 MIbm/hr). When manually initiated, the speed setpoint will lower until total core flow is » 58% or until rpm lowers to 575. The runback can be stopped when it is in progress by depressing the pushbutton a second time, or if an automatic runback condition occurs, the manual runback will stop./

C. is enabled (blue light lit) when total steam flow is greater than ≈10.9 MIbm/hr (≈78.5%). When manually initiated, the speed setpoint will lower until total steam flow is less than the setpoint or until rpm lowers to 575. The runback can be stopped when it is in progress by depressing the pushbutton a second time, or if an automatic runback condition occurs, the manual runback will stop.

D. is enabled (blue light lit) when total steam flow is greater than ≈ 12.7 MIbm/hr(≈ 90%). The steam flow signal is received from the Feedwater Level Control System. When manually initiated, the speed setpoint will lower until total steam flow is less than the setpoint or until rpm lowers to 700. The runback can be stopped when it is in progress by depressing the pushbutton a second time, or if an automatic runback condition occurs, the manual runback will stop

During a LOCA on Unit 3, it is determined that the drywell is in the action required region of the drywell spray initiation limit curve.

Which one of the following describes the proper use of drywell sprays in this condition?

Drywell sprays must:

- A. be secured, if currently in use, to prevent exceeding the drywell/suppression chamber differential pressure limits.
- B. remain in service, if currently in use, until drywell/suppression chamber differential pressure reaches -0.5 psid.
- C. NOT be placed in service, if NOT currently in use, to prevent dropping below the drywell high pressure scram setpoint. If in use, drywell sprays may remain in use.
- ✓D. NOT be placed in service, if NOT currently in use, to prevent exceeding drywell/suppression chamber differential pressure limits. If in use, drywell sprays may remain in use.

REF: EOI Program Manual, EOIPM Section 2-VID, Rev 2, Drywell Spray Worksheet 3, page 2 of 11, section 1.1 and page 11 of 11, Figure 10.2 (DWSIL Curve)  
2-EOI-2 Flowchart, Rev. 7

SOURCE: 1996 SRO EXAM #63

Change "UNSAFE" TO "ACTION REQUIRED" JMP

JUSTIFICATION

- a. If the candidate does not understand that the DWSIL curve is an initiation limit, this becomes a plausible distractor.
- b. 0.5 psid is a TS operating limit for the vacuum breakers implying a limit of 0.5 psid between the drywell and torus.
- c. The drywell high pressure scram setpoint is an interlock associated with initiating drywell/torus spray, but is not of concern during a LOCA with drywell pressure at 12 psig and increasing.
- d. (Correct)

71. 295012AA2.01 001/ ROT1G2/ SROT1G2/ 3.8/3.9/ MEMORY/ BANK/ BF00301/ BOTH/ 20

Following a LOCA, the unit operator (board) notices that drywell pressure peaked at 52 psig and drywell temperature peaked at 290 degrees.

Which one of the following describes the conclusions that can be made from this information?

- A. Both drywell design pressure and temperature were exceeded.
- B. Only drywell design pressure was exceeded.
- ✓C. Only drywell design temperature was exceeded.
- D. Neither the drywell design pressure nor temperature were exceeded.

REF: OPL171.016, Rev. 10, Page 13; Enabling Objective B.2.

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

This question challenges the candidate's ability to remember when and if the drywell was outside of its design pressure and temperature, given the actuals. The choices are self-explanatory.

Following a LOCA the following Containment characteristics exist.

Steam is condensing in the drywell and drywell pressure is steadily lowering and is approaching the external design pressure. Which one of the following has caused these conditions?

- A. CS System Suction valve from CST failed open with the suction MOV from Torus open.
- B. CS System Suction valve from CST failed open with the CS test valve open.
- C. The torus-drywell vacuum breakers have failed open.
- ✓D. The torus-drywell vacuum breakers have failed closed.

REF: 2-AOI-1-1, Rev. 0021, OPL171.016, Rev. 11, Page 28,29 & 19

SOURCE: NEW

JUSTIFICATION

- A. This will only add water to the suppression pool (obj V.B.12)
- B. This will add water to the suppression pool
- C. Steam flows from drywell to torus through vacuum breakers, equalizing pressure between the two immediately. Steam is not forced through the water of the suppression pool, so now it will operate only as a surface condenser. As a result, drywell pressure will probably exceed the design pressure. (Obj V.B.6 and V.C.5)
- D. Correct answer Steam in drywell will condense and drywell pressure will lower. With vacuum breakers failed shut, pressure cannot equalize between the suppression pool and the drywell. With this condition drywell pressure may lower such that external design pressure is reached. (Obj V.B.6 and V.C.5)

The following conditions exist:

- Reactor power is 90%.
- A control rod initially at position 24 begins to drift out.

Per 2-AOI-85-6, which one of the following is the required IMMEDIATE action?

- ✓A. Select and insert the control rod to position 24.
- B. Insert and maintain the control rod at position 00.
- C. Reduce core flow to prevent a power increase.
- D. Manually scram the reactor.

REF: 2-AOI-85-6, Rev. 13, Para. 4.1

SOURCE: 1996 BFNP SRO EXAM #84

JMP

JUSTIFICATION

- a. (Correct)
- b. Subsequent action if rod will not latch but responds to EMERG ROD IN signal, and persists drifting out.
- c. Subsequent action if the rod does not respond to INSERT signal.
- d. Subsequent action if power cannot be satisfactorily controlled with core flow.

Unit 2 is operating at 100% power. The Unit Operator notes that three turbine stop valves have drifted to 80% open. No rod movement has occurred. You observe that the individual blue lights for each control rod on the full core display are illuminated. Also, the eight scram solenoid group indicating lights are extinguished.

Which one of the following describes the status of the RPS?

- A. Both scram pilot valves have failed to open on all HCUs.
- B. Only one RPS bus has deenergized.
- C. Scram inlet and outlet valves have failed to open on all HCUs.
- ✓D. A hydraulic lock has occurred on the scram discharge volume.

REF: OPL171.005, Rev. 8, Page 25, Objective 16

OPL171.028, Rev. 7, Page 10

SOURCE: BANK QUESTION

JUSTIFICATION

- a,c. The pilots had to open, because the scram inlet and outlet valves are open as indicated by the blue lights.
- b. All eight RPS lights are out, therefore both busses are de-energized.
- d. (Correct)

Unit 3 is operating at full power with 3A and 3B RBCCW pumps running. 3B RBCCW pump trips due to an operator error. Discharge header pressure drops to 60 psig before the pump is restarted.

Which one of the following describes the response of FCV-70-48 (non-essential equipment loop Isolation valve) to the above condition?

- A. FCV-70-48 will close and isolate the non-essential equipment loop. Operator action will be required to reopen the valve, which can ONLY be operated from the MCR.
- B. FCV-70-48 will close and isolate the non-essential equipment loop. Operator action will be required to reopen the valve, which can ONLY be operated locally.
- C. FCV-70-48 will close and isolate the non-essential equipment loop. Operator action will be required to reopen the valve from the MCR or locally.
- ✓D. FCV-70-48 will not close and the non-essential equipment loop will not isolate.

REF: OPL171.047, Rev. 11, page 11 of 31 objective V.B.4

SOURCE: NEW QUESTION

JMP changed supply header pressure to discharge header

JUSTIFICATION

- a. The valve will not close. Operator action is only required after automatic closure
- b. The valve will not close. Operator action is only required after automatic closure
- c. The valve will not close. Operator action is only required after automatic closure
- d. (correct) The header pressure does not reach the setpoint for non-essential loop isolation.

Which one of the following correctly describes the power supplies to the motors for Control Air Compressors "A" through "D?"

- A. "A" and "B" are fed from 480V Common Board #1, and "C" and "D" from 480V Shutdown Boards 1B and 2B respectively.
- B. "A" and "D" are fed from 480V Common Board #1, and "B" and "C" from 480V Shutdown Boards 1B and 2B respectively.
- C. "A" is fed from 480V Shutdown Board 2A, "B" from 480V Common Board #3, "C" from 480V Shutdown Board 1A, and "D" from 480V Shutdown Board 2B.
- ✓D. "A" is fed from 480V Shutdown Board 1A, "D" from 480V Shutdown Board 2A, and "B" and "C" from 480V Common Board #1.

REF: OPL171.054, Rev. 6, OE V.B.1.

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

The distractors are set up with an assortment of possible power sources that are incorrect. The objective is to discriminate between those candidates who know the correct power sources and those who do not.

During calibration of Unit 2 temperature switches on the RWCU System, 2-TIS-69-11A (NonRegenerative Heat Exchanger outlet temperature switch) was inadvertently actuated.

Which one of the following will be the response of the RWCU System?

- A. The system will isolate; the RWCU pumps will remain running for 30 seconds and then trip on low flow.
- B. The system will isolate; the RWCU pumps will receive a trip signal on NRHX outlet temperature >140 degrees.
- ✓C. The system will isolate; the pumps will trip upon isolation valve closure.
- D. The system will isolate; the pumps will trip on low flow (following a 7 second time delay).

REF: OPL171.013, Rev. 8; 2-AOI-64-2a, Rev. 0017

SOURCE: BANK QUESTION

JUSTIFICATION

- a. The pumps would trip in 30 seconds were it not for the closure interlock between the pumps and FCVs 69-1, 2, and 12.
- b. There is only a Group 3 isolation initiated by the pressure switch at >140°F.
- c. (Correct)
- d. TDCN 40287 changed the 7 second time delay to 30 seconds for Unit 2 only.

NOTE: NOT SURE IF THIS K/A FITS?

Unit 2 is in Cold Shutdown for a short mid-cycle outage, when a complete loss of Shutdown Cooling occurs. Plant conditions are as follows:

- Reactor Recirculation pumps are out of service
- Reactor recirculation suction temperature is 140 degrees and slowly decreasing
- Shutdown cooling flow cannot be re-established in a timely manner

The Shift Manager has directed that RPV level be adjusted.

Which one of the following is the appropriate action and the basis for this action?

- A. Verify level is 60 inches to aid in heat removal by injecting cold water.
- B. Verify level is 80 inches, to provide natural circulation cooling for the reactor.
- C. Verify level is 60 inches, to increase core submergence thereby preventing or minimizing localized fuel channel boiling.
- ✓D. Verify level is 80 inches, to reduce stratification so that more representative temperatures can be obtained to assess bulk reactor coolant temperature.

REF: 2-AOI-74-1, Rev. 0021, LOSS OF SDC, pg 6

SOURCE: MODIFIED QUESTION

we would be at 70-90 inches modified choices to read verify vice raise JMP

JUSTIFICATION

- a. 60 inches is not appropriate per the AOP, though there may be some cooling with stratification.
- b. Though 80 inches facilitates natural circulation, there is not a heat sink that facilitates cooling during a short mid-cycle outage.
- c. 60 is an old number, and it was for the purpose of obtaining better temperatures.
- d. (Correct)

Operators are moving fuel assemblies within the RPV. Water level is 23½ feet above the top of the RPV flange.

Which one of the following describes the basis for a minimum RPV water level requirement during fuel handling operations according to ITS 3.9.6?

- ✓A. Sufficient water is necessary to retain iodine fission product activity in the water in the event of a fuel handling accident.
- B. An adequate water shield thickness is necessary to protect refueling personnel from excessive radiation exposure as they perform the refueling process.
- C. To keep the vessel cavity walls and other contaminated surfaces wet and under water as much as possible during the refueling process to minimize airborne contamination.
- D. To provide radiation protection to refueling personnel in the event of an inadvertent criticality event while moving fuel assemblies and control rods.

REF: BFN Unit 2 Basis B 3.9.6, Rev. 0  
BFN ITS LCO 3.9.6, Amendment No. 253

SOURCE: NEW QUESTION

JMP

JUSTIFICATION

a. (Correct)

b,c,d. While the other three choices are true statements, they are not the basis of the 22-foot requirement.

Which one of the following describes the basis for the Drywell Spray Initiation Limit Curve?

- A. To prevent unstable steam condensation in the MSR/V tailpipes from exerting excessive cyclic hydraulic loads on suppression pool structure.
- ✓B. To ensure that the torus to drywell delta P limit is maintained.
- C. To prevent chugging in the drywell to torus downcomers from exerting excessive cyclic hydraulic loads on the suppression pool structure.
- D. To ensure adequate noncondensibles remain in the drywell to prevent the torus to drywell vacuum breakers from opening during drywell steam condensation.

REF: EOI PM, Section 0-VD, Rev 0, p.75 of 244

SOURCE: BANK QUESTION

changed torus to RB vac bkr to DW to torus vac bkr JMP

JUSTIFICATION

- a. Conceivably, the colder water spraying on the MSR/V discharge piping could cause a water hammer effect due to steam condensing. The MSR/V vacuum breakers would have to fail closed for this to credibly happen.
- b. (Correct)
- c. Some chugging could occur in the downcomers; however, the short length and volumetric capacity prevent this from being a concern.
- d. The partial pressure of noncondensable inerting nitrogen is considered in the derivation of the DSIL curve, but is not germane to this question.

During a plant transient on Unit 2, a Group I isolation is caused by high temperature. Five control rods fail to insert. Suppression pool level is 12 feet and suppression pool temperature is 94 degrees.

Which one of the following identifies the systems available to help maintain pressure below 1073 psig?

- A. HPCI and RCIC.
- ✓B. RCIC and RWCU.
- C. RWCU and MSL drains.
- D. MSL drains and HPCI.

REF: OPL171.202, Rev. 4, Pg. 9; Obj. V.B.8

OPL171.203, Rev. 3, Pg. 13

EOIPM Section 0-V-C, Page 43 of 127

EOIPM Section 0-V-D, Page 101 of 244

SOURCE: BANK QUESTION

JMP changed radiation to temperature as cause for isolation AND 1043 TO 1073

JUSTIFICATION

- a. HPCI is unavailable because SP level is below the exhaust pipe (12.75').
- b. (Correct)
- c. With the knowledge that a Group I isolation is in effect, the operator should know that this is an MSIV isolation, and as such, the MSL drains are isolated.
- d. Neither HPCI nor the MSL drains are available as discussed above.

82. 295026EK3.04 001/ ROT1G2/ SROT1G1/ 3.7/4.1/ MEMORY/ BANK/ BF00301/ BOTH/ 28

Unit 3 is in an ATWS condition and EOI-2 (Primary Containment Control) has been entered.

Which one of the following describes the reason for injecting SLC prior to suppression pool temperature exceeding 110 degrees?

- A. To ensure that "power chugging" does not occur within the reactor vessel during subsequent use of the MSRVs.
- B. To ensure that hot shutdown boron weight is adequate to maintain the reactor subcritical under all hot shutdown conditions.
- ✓C. To ensure the reactor is subcritical prior to leaving the safe area of the heat capacity temperature limit curve.
- D. To ensure the reactor is subcritical prior to leaving the safe area of the pressure suppression pressure curve.

REF: EOIPM Section 0-V-D, Rev. 0, Page 87 of 244

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

The purpose of this question is to ensure the operators understand that the heat capacity temperature limit may be exceeded if the reactor is allowed to remain critical with the suppression pool average temperature at or above 110 degrees.

83. 295028EA2.03 001/ ROT1G2/ SROT1G2/ 3.7/3.9/ MEMORY/ BANK/ BF00301/ BOTH/ 118

Unit 2 has just experienced a small LOCA. Drywell pressure is 3 psig and increasing. Reactor pressure is 800 psig and steady. The increasing drywell temperature causes the most reliability concerns for which one of the following level instruments?

- A. Emergency Range indicators.
- B. Normal Range indicators.
- C. Post Accident indicators.
- ✓D. Shutdown Flood-up indicator.

REF: EOIPM Section IIB, Rev. 2, Operator Cautions, page 4

OPL171.003, Rev. 12

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

- a,b,c. These three instruments do not have a specified minimum indicated level associated with maximum DW run temperatures. See EOP Caution #1.
- d. (Correct)

84. 295029EK2.05 001/ ROT1G2/ SROT1G2/ 3.1/3.3/ C/A/ NRC95301/ BF00301/ BOTH/ 30

During an accident on Unit 2, suppression pool water level reaches 18 feet and continues to increase. Reactor pressure is 300 psig and decreasing.

Which one of the following containment components will NOT properly function at this point?

- A. Normal control room suppression pool level instrumentation.
- ✓B. Suppression Chamber-to-Drywell vacuum breakers.
- C. Suppression chamber spray nozzles.
- D. MSRV tail pipes and/or supports.

REF: EOI PM, SEC 0-V-D, Rev. 0, pg 111

OPL171.203, Rev 3, pg 13, EO B7.b

SOURCE: 1995 BFNP RO EXAM #73, new distractor d  
check eoi handout\*

JUSTIFICATION

- a. Ceases to function at 20 ft.
- b. Correct (Ceases to function at 18 ft)
- c. Ceases to function at 26 ft.
- d. Ceases to function at 20 ft. per Curve 4

85. 295030EK1.01 001/ ROT1G2/ SROT1G1/ 3.8/4.1/ MEMORY/ BANK/ BF00301/ BOTH/ 31

Which one of the following is the MINIMUM suppression pool level at which the drywell-to-torus downcomers will be covered?

- A. 9.75 feet.
- B. 10.75 feet.
- ✓C. 11.75 feet.
- D. 12.75 feet.

REF: EOI Program Manual, Section 0VD, Rev. 0, page 105, and Section 3-IV, Rev. 4, Curve 7.

OPL171.203, Rev. 3, Page 13.

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

- a. This is the level at which HPCI turbine exhaust is uncovered.
- b. No significance to this number.
- c. (Correct) See Curve 7.
- d. No significance to this number.

During an ATWS, conditions develop which require Emergency Depressurization.

Which one of the following describes the minimum number of Main Safety Relief Valves (MSRVs) required for Emergency Depressurization, and the basis for this number?

- A. 6 ADS MSRVs, to reliably depressurize the reactor vessel as rapidly as possible, and to uniformly distribute the heat load to the suppression pool.
- B. 6 MSRVs, which, if opened, will remove all decay heat from the core at a pressure sufficiently low that ECCS with the lowest head will be capable of making up for MSRV steam flow.
- C. 4 ADS MSRVs, the least number of the most reliable MSRVs that correspond to a minimum alternate RPV flooding pressure sufficiently low that ECCS with the lowest head will be capable of making up MSRV steam flow.
- ✓D. 4 MSRVs, which, if opened, will remove all decay heat from the core at a pressure sufficiently low that ECCS with the lowest head will be capable of making up MSRV steam flow.

REF: EOIPM Section 0-V-H, Rev. 0, Page 23 of 40

SOURCE: NEW QUESTION

HELP does this question discriminate a competent operator

JUSTIFICATION

- a. 6 ADS MSRVs are preferred because they are of the best quality and should be more reliable; however, 6 is not the minimum.
- b. 6 MSRVs are the second choice, but are not the minimum.
- c. 4 is the minimum, but not necessarily from ADS.
- d.

(Correct)

EOI-3, Secondary Containment control is being executed due to an unisolable RCIC steam line break in the reactor building. EOI-3 requires that EOI-1, RPV Control be entered and executed concurrently before which one of the following occur.

- A. Any area temperature reached the maximum normal operating temperature.
- B. Reactor zone ventilation exhaust reached 72 m/hr.
- ✓C. Any area radiation level reached the maximum safe operating level.
- D. At least two area temperature reached the maximum normal operating temperature.

REF: OPL171.039, Rev. 9, Page 12

SOURCE: BANK QUESTION OPL171.204 010

JMP

The plant is operating at full power. The Reactor Building assistant unit operator reports there is about 6 inches of water accumulating on the floor in the RHR Room, SE area, and it appears to be from floor drains backing up.

Which one of the following is the first action the control room operators should taken in accordance with the EOIs?

- ✓A. Operate all available sump pumps to maintain the sump water level to less than 66 inches.
- B. Enter EOI-1 and scram the reactor before RHR Room water level reaches 20 inches.
- C. Isolate all systems discharging into the RHR Room, except those required for safe shutdown of the reactor.
- D. Initiate a controlled shutdown of the reactor per 2-GOI-10012A.

REF: EOI-1, Rev. 4; EOI-3, Rev. 6  
OPL171.204, Rev. 3, Page 10, EO V-B-3  
EOIPM, Section 0-V-E, Page 37+

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

- a. (Correct)
- b. This is only applicable if a primary system is discharging into the room and they cannot keep the room water level below 20 inches.
- c. By procedure, the operators are required to establish that they cannot keep the sump level below 66 inches.
- d. By procedure, the operators are required to determine that a primary system is not discharging into the area, and two pump rooms cannot be maintained below 20 inches water level.

The following conditions exist:

An ATWS has occurred.  
Reactor water level is being lowered in accordance with C-5, Level/Power Control.  
SLC has been initiated.

Which one of the following conditions would require RPV level to be restored to normal?

- ✓A. SLC Tank level drops to 41%.
- B. SLC Tank level drops to 48%.
- C. Reactor power drops below 5%.
- D. All MSRVs remain closed with drywell pressure below 2.4 psig.

REF: C5, Rev. 7, Step, C5-17

SOURCE: 1996 BFNP RO EXAM #84

2c5 to C5 CHANGED VALUES OF SLC TANK LEVEL DUE TO REV. CHANGED ANSWER  
AND REF JMP

JUSTIFICATION

- a. CORRECT
- b. 43% is the SLC tank level at which C-5 restores water level.
- c. 5% power and above is one criterion to initiate SLC.
- d. If all MSRVs remain closed and drywell pressure is below 2.4 psig, one criterion is satisfied to get to the point of restoring level.

Given the following switch positions for the control air compressors.

- A - second lead
- B - third lead
- C- standby
- D- standby
- G-lead

- A loss of Common Board 1 occurs
- A small system leak causes control air pressure to drop to drop to 94 psig

Which one of the following describes all of expected control air compressors expected to be in operation?

- A. G will be running at full load. A will be running at half load
- B. G will be running at full load. B will be running at half load.
- C. A and G will be running at full load. C will be running at half load.
- ✓D. A, and G will be running at full load. D will be running at half load.

REF: OPL171.054, Rev. 6.

SOURCE: MODIFIED QUESTION

JMP

JUSTIFICATION

B and C are powered from #1 Common Board

First pump comes on at half load at 97.5

First pump goes to full load at 96

Second pump goes to half load at 94.5

Due to an accident condition, the following plant parameters exist:

- Drywell Hydrogen 5.4%
- Drywell Oxygen 6.0%
- Suppression Chamber Hydrogen 4.0%
- Suppression Chamber Oxygen 5.5%
- Suppression Pool Level 17 feet
- Drywell temperature 250 degrees
- Drywell Pressure 18 psig
- RPV Level +30 inches
- Torus and Drywell Sprays are in service

Which one of the following actions is required?  
(Reference attached)

- A. Perform Appendix 9 to determine and monitor Suppression Pool water level.
- B. Stop Drywell Sprays.
- ✓C. Perform Appendix 14A, Nitrogen Make-up, to control containment hydrogen and oxygen levels.
- D. Perform Emergency Depressurization.

REF: OPL171.203, Rev. 3, Page 15. Obj. V.B.14

Dwg. 2-EOI-2, Rev. 4, Page 2 of 2.

EOIPM Section 0-V-D, PC/H, Rev. 0

SOURCE: BANK QUESTION

REPLACE JMP

JUSTIFICATION

a.EOI-2 initiates CAD to the DW only.

b.EOI-2 initiates CAD to the DW only and sprays the SP.

c.(Correct)

d.Emergency Depress is an incorrect option under the existing conditions, per EOI-2.

NOTE; NOT EXACTLY SURE WHAT THE SUPPLIED REFERENCES SHOULD BE?

92. G2.1.1 001/ ROT3/ SROT3/ 3.7/3.8/ MEMORY/ NEW/ BF00301/ BOTH/ 145

Which one of the following positions represents the minimum level of approval required to make a currently approved operator aid permanent?

- A. Site Engineering Labeling Coordinator.
- B. Shift Manager.
- ✓C. Operations Superintendent.
- D. Plant Manager.

REF: SSP-12.53, Revision 17, Section 3.10.2, page 11 of 38

SOURCE: NEW QUESTION

JMP IS THIS DISCRIMINATING A COMPETENT OPERATOR

- A. requires coordination of labeling, but not approval
- B. Can approve the aid, but not make it permanent.
- C. Correct
- D. This is not the minimum level

93. G2.1.29 001/ ROT3/ SROT3/ 3.4/3.3/ MEMORY/ BANK/ BF00301/ BOTH/ 92

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

- A. Remove the locking device, carefully close the valve counting the number of turns, then reopen the valve the same number of turns. Reapply a locking device to the valve and record the as left position.
- B. Place "NA" in the verification signature space for this valve. Locked and/or throttled valves cannot be independently verified without disturbing the position.
- C. Since the valve is already locked, the valve may be assumed to be throttled in the correct position. The verification may be signed off as complete.
- ✓D. Independent verification of this valve cannot be performed. Second party verification must be performed during initial valve positioning.

REF: OPL171.071, Rev. 10, EO B.20

SPP-10.3, Rev. 0, Para 3.3.1.E

SOURCE: BANK QUESTION

JMP Changed the reference

JUSTIFICATION

- a. Incorrect because the action becomes an initial positioning again.
- b. "NA" is contrary to the SSP. Second party verification is required.
- c. Verification by assumption is incorrect.
- d. (Correct)

Unit 2 is in a refueling outage and RHR Pump 2A is tagged to replace the pump seal. Electrical Maintenance has determined that the motor must be replaced on the pump minimum flow valve which is part of the RHR Pump 2A clearance boundary.

Which one of the following statements describes how this additional work affects the clearance boundary?

- A. The valve operator must have a collar installed to prevent motion before the clearance boundary can be modified.
- B. The Shift Manager Representative can modify the clearance boundary with concurrence from the Maintenance Shift Supervisor.
- C. All work under the clearance must be stopped while the clearance is modified and reissued.
- ✓D. An operator must be assigned to independently verify component positioning and tag replacement.

REF: OPL171.086, Rev. 8, Page 9

SSP-12.3, Rev. 26, Para 3.2.5.(9)

SOURCE: BANK QUESTION

Help\*

JUSTIFICATION

- a. Not a requirement of SSP-12.3
- b. The SMR reviews and approves proposed changes, but cannot unilaterally modify the clearance with or without the Maint. Supv. concurrence. The process must be followed.
- c. Work can continue in unaffected areas of the existing clearance.
- d. (Correct)

95. G2.2.3 001/ ROT3/ SROT3/ 3.1/3.3/ MEMORY/ NEW/ BF00301/ BOTH/ 93

Which one of the following choices correctly describes the response of the Unit 2 and Unit 3 reactor recirculation pump (RRP) speed control to an increase in core differential pressure?

- A. Both Unit 2 RRP and Unit 3 will automatically reposition the scoop tube to bring speed back to the setpoint.
- B. Unit 2 will automatically reposition the scoop tube to bring speed back to the setpoint but on Unit 3 the RRP speed must be manually adjusted by the operator.
- C. On Unit 2 the RRP speed must be manually adjusted by the operator but Unit 3 will automatically reposition the scoop tube to bring speed back to the setpoint.
- D. Both Unit 2 and Unit 3 must be manually adjusted by the operator to bring speed back to the setpoint.

REF: OPL171.007, Rev. 15, Page 36

OPL171R007, Rev. 0, Page 11

SOURCE: NEW QUESTION

replace question\*

JUSTIFICATION

Unit 2 and 3 speed feedback are enabled.

96. G2.2.30 001/ ROT3/ SROT3/ 3.5/3.3/ C/A/ BANK/ BF00301/ BOTH/ 96

While off-loading fuel bundles from the reactor, fuel pool level begins to decrease uncontrollably.

Which one of the following describes a method available from the control room to add water to the fuel pool?

- A. Align fuel pool cooling and cleanup heat exchanger RBCCW supply to the fuel pool to maintain level.
- B. Start a condensate pump and inject to the reactor vessel to maintain fuel pool level.
- C. Open emergency makeup supply valve from EECW 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.

REF: 2-AOI-78-1, Rev 0014, Para 4.2.2.3

2-ARP-9-4C, Rev. 0012, Page 2.

2-OI-78, Rev. 0040, Page 38

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

a,c,d. These options are partially done from outside the control room.

b.

(Correct) Since the fuel pool to RPV gates are open, this is the simplest method, and can be done from the control room.

Given the following conditions at a work site.

Airborne activity: 3 DAC

Radiation level: 40 mr/hr

Radiation level with shielding: 10 mr/hr

Time to place shielding: 15 minutes

Time to conduct task with respirator: 1 hour

Time to conduct task without respirator: 30 minutes

Assume the following:

- the airborne dose with a respirator will be zero.
- a dose rate of 40 mr/hr will be received while placing the shielding.
- all tasks will be performed by one worker.
- shielding can be placed in 15 minutes with or without a respirator.

Which one of the following would result in the lowest whole body dose?

- A. Place shielding while wearing respirator and conduct task with respirator.
- ✓B. Place shielding while wearing respirator and conduct task without respirator.
- C. Conduct task with respirator and without shielding.
- D. Conduct task without respirator or shielding.

REF: 10 CFR 20

SOURCE: NEW QUESTION

HELP\*

JUSTIFICATION

$3 \text{ DAC} \times 2.5 \text{ mr/DAC} \times 0.5 \text{ hours} = 3.75 \text{ mr}$

- a. 10 mr placing shielding, 10 mr conducting task, zero airborne = 20 mr
- b. 10 mr placing shielding, 5 mr conducting task, 3.75 mr airborne = 18.75 mr
- c. 40 mr conducting task, zero airborne = 40 mr
- d. 20 mr conducting task, 3.75 mr airborne = 23.75 mr

98. G2.3.9 001/ ROT3/ SROT3/ 2.5/3.4/ C/A/ BANK/ BF00301/ BOTH/ 98

Unit 2 startup is in progress with the reactor at 920 psig and 6% power. The Reactor Mode Switch is in STARTUP. Primary containment is being inerted with the purge filter fan in service.

Which one of the following statements is correct concerning inerting in this plant condition?

- A. Turning the purge filter fan off will automatically close the drywell and suppression chamber exhaust valves.
- ✓B. Placing the Reactor Mode Switch in RUN will automatically close all valves required for inerting with the purge filter fan unless Bypass switches are placed in BYPASS on panel 9-3.
- C. Placing the Reactor Mode Switch in RUN will give a Group 6 PCIS unless Bypass switches are placed in BYPASS on panel 9-3.
- D. Placing the Reactor Mode Switch in RUN will automatically close the drywell and suppression chamber exhaust isolation valves unless the Drywell/Suppression Chamber Train A/B Vent keylock switches are positioned to DRYWELL.

REF: OPL171.032, Rev. 7.

SOURCE: BANK QUESTION

JMP

99. G2.4.14 001/ ROT3/ SROT3/ 3.0/3.9/ C/A/ BANK/ BF00301/ BOTH/ 100

EOI-1, RPV Control, is being executed following a scram due to a turbine trip at high power. During the initial phase of the transient, one of the SRV's stuck open. Suppression pool temperature has now (approximately 7 minutes after the turbine trip) reached 96 degrees.

Which one of the following states the Unit Supervisor's procedural response to this condition?

- A. Re-enter EOI-1 at the beginning.
- B. Re-enter EOI-1 at the beginning and simultaneously enter EOI-2.
- ✓C. Continue in EOI-1 and simultaneously enter EOI-2.
- D. Continue in EOI-1.

REF: OPL171.201, Rev. 4, EO B.4

SOURCE: BANK QUESTION

JMP TYPOS EOI1 TO EOI-1

JUSTIFICATION

- a. EOI-1 doesn't direct the operator to reenter EOI-1.
- b. Same as (a) except entering EOI-2 is correct at SP temp >95 degrees.
- c. (Correct)
- d. Continuing in EOI-1 is correct; however EOI-2 must be entered.

During a plant startup on Unit 3, reactor power was passing through 80% RTP when there was a loss of power to the control room annunciators. Thirty minutes have passed, and power has not yet been restored. SPDS and ICS are available.

Which one of the following describes the required control room operators' response?

- A. Commence a reactor shutdown, dispatch personnel for local monitoring of equipment.
- B. Scram the reactor manually, dispatch personnel to monitor and manipulate plant equipment in response to the scram.
- ✓C. Suspend the power ascension and avoid any system manipulation, dispatch personnel for local monitoring of equipment.
- D. Expedite maintenance activities to restore power while slowly continuing the ascension to full power, monitor equipment with SPDS and ICS.

REF: 0-AOI-57-8, Rev. 0007, 4.2 (Caution)

EPIP-1, Rev. 21, Section 8.0

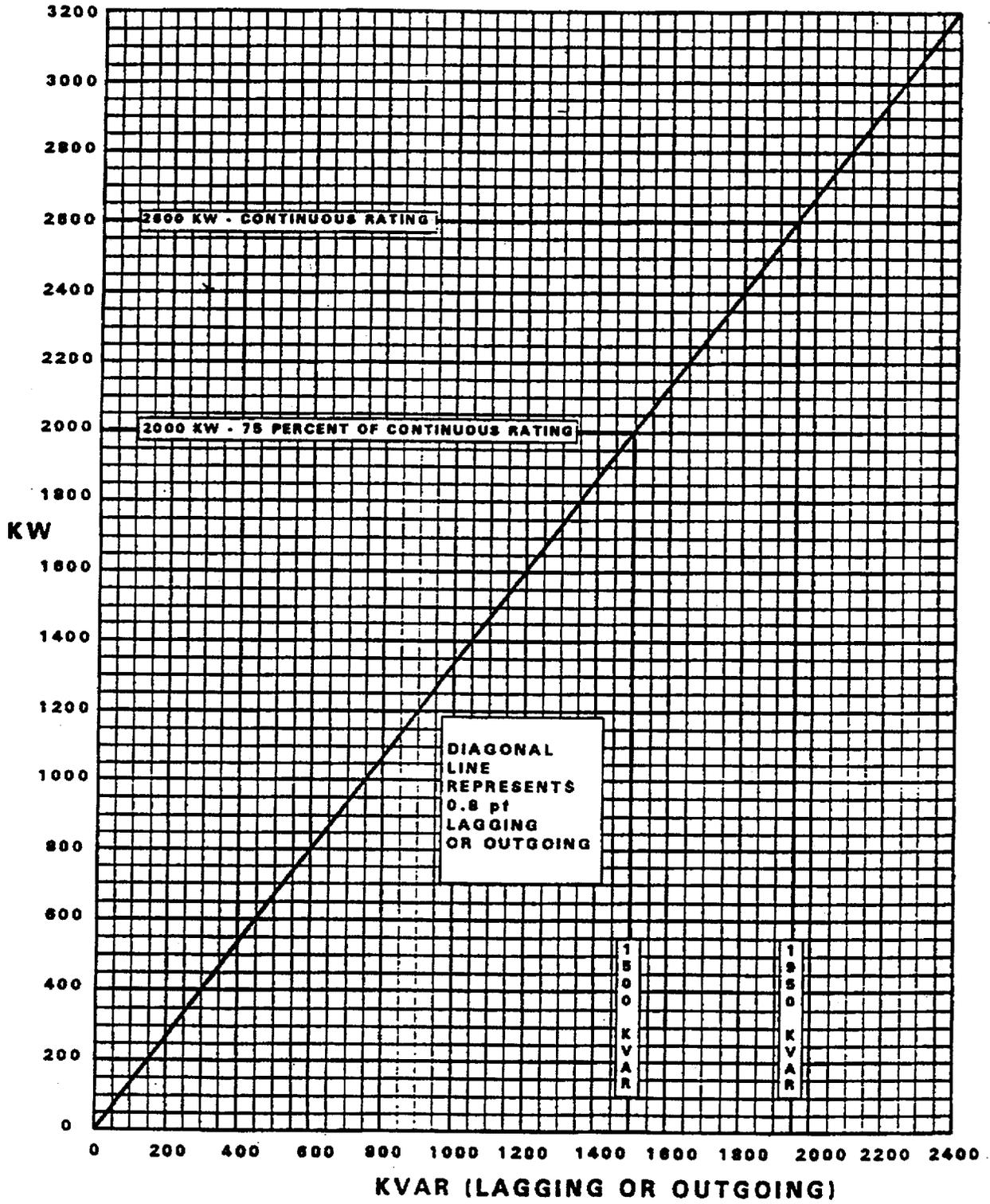
SOURCE: NEW QUESTION

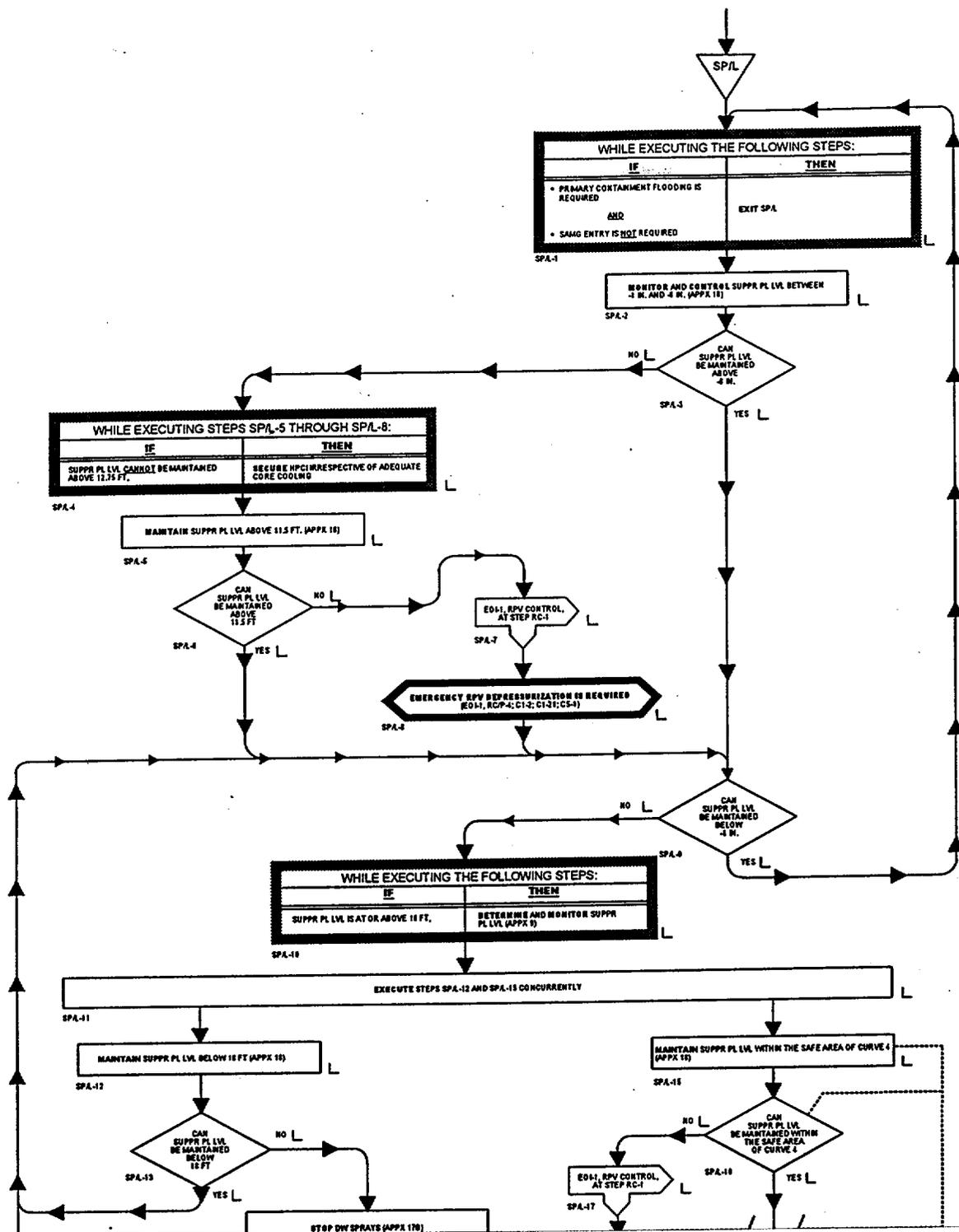
JMP

JUSTIFICATION

- a. d. The AOI requires avoidance of system manipulation
- b. Scramming the reactor places the plant in a major transient, which should be avoided
- c. (Correct)

### DG KW vs KVAR LOADING





**WHILE EXECUTING THE FOLLOWING STEPS:**

IF	THEN
PRIMARY CONTAINMENT FLOODING IS REQUIRED AND SARG ENTRY IS NOT REQUIRED	EXIT SPA

**WHILE EXECUTING STEPS SPA-5 THROUGH SPA-8:**

IF	THEN
SUPPR PL LVL CANNOT BE MAINTAINED ABOVE 12.25 FT.	SECURE NPCIR RESPECTIVE OF ADEQUATE CORE COOLING

**WHILE EXECUTING THE FOLLOWING STEPS:**

IF	THEN
SUPPR PL LVL IS AT OR ABOVE 16 FT.	DETERMINE AND MONITOR SUPPR PL LVL APPX 15

EXECUTE STEPS SPA-12 AND SPA-13 CONCURRENTLY

MAINTAIN SUPPR PL LVL BELOW 16 FT. APPX 15

MAINTAIN SUPPR PL LVL WITHIN THE SAFE AREA OF CURVE 4 APPX 15

CAN SUPPR PL LVL BE MAINTAINED BELOW 16 FT.

CAN SUPPR PL LVL BE MAINTAINED WITHIN THE SAFE AREA OF CURVE 4

STOP DW SPRAY APPX 17

EDM, RPV CONTROL AT STEP RC-1

EMERGENCY RPV DEPRESSURIZATION IS REQUIRED  
(EOM, RCP-4; C1-2; C1-3; C5-1)

EDM, RPV CONTROL AT STEP RC-1

Name: \_\_\_\_\_

1. 201002A2.04 001/ ROT2G1/ / 3.2/3.1/ C/A/ MODIFIED/ BF00301/ RO/ 39

With regard to the RWM, which one of the following describes the action(s) to be taken to allow manual rod insertion during an ATWS condition?

- A. Manually substitute rod positions through the Integrated Computer System.
- B. Use the RWM Manual Bypass Switch.
- C. Remove control power fuses from RWM.
- D. Place Mode Switch in REFUEL, then use the EMERGENCY IN position of HS-85-47.

REF: Lesson Plan OPL171.029, Rev. 7

EO B.8.a and b

SOURCE: modified

JMP

JUSTIFICATION

- a. Does not bypass the RWM
- b. (Correct)
- c. Will not bypass RWM.
- d. NO requirement to place mode switch in Refuel. Will not allow operation of HS8547

*For Common Questions  
26-100 see SRO Exam*

In addition to a ROD OVERTRAVEL annunciator, which one of the following is indication of an uncoupled control rod when fully withdrawing a control rod?

- A. Backlighting is red on the 4 rod-display, backlighting is not present on the full core display.
- ✓B. Backlighting is not present on the 4 rod-display, backlighting is present on the full core display.
- C. Backlighting is red on the 4 rod-display, backlighting is present on the full core display.
- D. Backlighting is red and green on the 4 rod-display, backlighting is not present on the full core display.

REF: 2-AOI-85-2, Rev. 8, para 2.0

OPL171.029, Rev. 8, pages 20 thru 23

SOURCE: Modified

JMP

JUSTIFICATION

- a. ROD DRIFT does not annunciate immediately, while in the process of withdrawing the rod.
- b. (Correct)
- c. The red backlighting for the uncoupled control rod on the full core display goes out.
- d. The white rod selected light stays on.

THIS WAS MISTAKENLY LISTED AS A 2/3 KA. IT SHOULD BE 2/2

While Reactor Recirculation Pump A is operating at 80%, a failure in the pump's individual Manual/Auto station occurs and a signal is sent to the Bailey Positioner, calling for a pump speed of zero.

Which one of the following states the expected response of the pump?

- A. Speed will decrease to zero.
- ✓B. Speed will decrease to 20%.
- C. Speed will decrease to 28%.
- D. The scoop tube will lock up and speed will remain at 80%.

REF: OPL171.007, Rev. 15, Obj. 8, page 21-23

BANK QUESTION

JMP

JUSTIFICATION

- a. 20% is as low as the pump will go until it is tripped.
- b. (Correct)
- c. This is the dual function limiter setpoint.
- d. It takes a signal to maintain the scoop tube position for 80%...If anything, the scoop tube will lock up at minimum flow.

Following a reactor trip the following conditions exist:

RPV water level at +19 inches.  
Turbine exhaust pressure at 100 psig.  
Steamline space temperature 150°F in the Torus Area.  
Ambient temperature of 140°F HPCI Pump Room.  
Suppression Pool Level High at +9 in.  
RPV pressure at 300 psig (does not seal-in).  
Pressure between HPCI rupture diaphragms at 3 psig.  
Drywell pressure at 3.25 psig.

Based on these conditions, what is the status of the HPCI system?

- A. OUTBD SUCT VLV, 2-FCV-73-27, and INBD SUCT VALVE, 2-FCV-73-26 open, HPCI System not running.
- B. OUTBD SUCT VLV, 2-FCV-73-27, and INBD SUCT VALVE, 2-FCV-73-26 open, HPCI turbine tripped.
- C. OUTBD SUCT VLV, 2-FCV-73-27, and INBD SUCT VALVE, 2-FCV-73-26 closed HPCI System isolated.
- ✓D. OUTBD SUCT VLV, 2-FCV-73-27, and INBD SUCT VALVE, 2-FCV-73-26 open, HPCI System running.

REF: 2-OI-73, Rev. 0059, Page 7

SOURCE: NEW QUESTION

typos

JUSTIFICATION

- a. Drywell Pressure cause system to run
- b. No conditions exist to cause turbine trip
- c. No conditions exist to cause system isolation
- d. (Correct) High Supression Pool level opens valves and high drywell pressure causes system to run

Conditions on Unit 2 exist that required the initiation of Standby Liquid Control (SLC).

Which one of the following would indicate on panel 9-5 that SLC is injecting?

- ✓A. The selected pump red light is ILLUMINATED, the blue SQUIB valve continuity lights are EXTINGUISHED, SLC pump discharge pressure is at 1100 psig, and the red flow light is ILLUMINATED.
- B. The selected pump white light is ILLUMINATED, the RWCU System ISOLATED, and the Loss of Squib Valve Continuity annunciator is in ALARM.
- C. The selected pump red light is ILLUMINATED, the blue SQUIB valve continuity lights are ILLUMINATED, and SLC pump discharge pressure is 1100 psig.
- D. The selected pump white light is ILLUMINATED, the blue SQUIB valve continuity lights are ILLUMINATED, SLC pump discharge pressure is 1100 psig, and the red flow light is EXTINGUISHED.

REF: OPL171.039, Rev.9, Page 18

SOURCE: BANK QUESTION

JMP deleted hold lights term

JUSTIFICATION

- a. (Correct)
- b. Pump light is red.
- c. SLC pump pressure indicates an obstruction...it's running at the relief valve setpoint.
- d. Wrong pump light color; red flow light is illuminated.

Which one of the following choices describes the operation of the Unit 2 RHR pump torus suction valves with the RHR LOOP MODE SELECTOR (NORMAL/SHUTDOWN) switch in the SHUTDOWN position?

- A. Allows operation at breaker only but does not bypass in-line valve interlock.
- B. Allows operation from the Reactor MOV Boards only when the corresponding pump Shutdown Cooling suction valve is fully closed.
- C. Causes the valves to cycle full open (unless stopped locally or the Unit Operator placed the 9-3 control switch in the close position) and cycle back closed.
- ✓D. Allows valve to be operated from the Control room or the Reactor MOV Boards.

\*REF: OPL171.044, Rev. 9, Page 25

SOURCE: new

CHANGED EMERGENCY TO SHUTDOWN EMERGENCY IS A DIFFERENT SWITCH,  
Changed the D choice to correct JMP

JUSTIFICATION

- a. Correct
- b. Emerg position allow operation at breaker only
- c. Logic for the minimum flow valves - page 30
- d. Logic for the minimum flow valves - page 30

The unit receives an inadvertent Group 6 Isolation while operating at power. The unit remains at power. The group 6 isolation signal cleared and the isolation reset switches on panel 9-4 were taken to the reset positions. What additional procedural actions must be taken to open all of the following valves?:

- 64-17 DW / SUPPR CHMBR AIR PURGE ISOL VLV
  - 64-30 DRYWELL VENT OUTBD ISOL VLV
  - 64-33 SUPP CHMBR VENT OUTBD ISOL VLV
  - 76-24 PRI CTMT N2 PURGE OUTBD ISOL VLV
- ✓A. Primary Containment Division II Run Mode Bypass switch on panel 9-3 is placed to the BYPASS position.
- B. Drywell/Torus Bypass switch on panel 9-3 is taken to the DRYWELL or TORUS position and verify any SGT fan is running.
- C. Drywell/Suppression Chamber Train A Vent keylock switch on panel 9-55 is placed to the SUPP CHBR position.
- D. Drywell/Suppression Chamber Train B Vent keylock switch on panel 9-54 is placed to the DRYWELL position.

\*REF: OPL171.032, Rev. 8

SOURCE: NEW QUESTION

Valve names JMP

JUSTIFICATION

- a. Correct answer - Mode switch is still in run.
- b. This is required to open 64-36
- c. This is required to open 64-31
- d. This is required to open 64-29

When the drywell equipment drains sump automatic temperature controlled recirc loop senses a high temperature, it causes the recirc valve to open and discharge valves to close and routes the sump water through a heat exchanger. What is the purpose of this realignment?

- A. to prevent the high temperature to the D/W floor drain inbd/outbd isol valve FCV-77-2A/B and a subsequent inadvertent group 2 isolation.
- B. to prevent high temperature damage to the equipment drain integrator 2-FQ-77-16.
- C. to prevent high temperature damage to both the Flow integrators and pump fill rate timers used to determine leakage in the drywell.
- ✓D. to prevent high temperature to damage to only the Radwaste components.

REF: OPL171.016, Rev. 11. Page 50 to 53

NEW QUESTION

JMP

JUSTIFICATION

- a. DWFD & DWED sumps isolate on PCIS signals, they do not cause them
- b. This is not temperature sensitive.
- c. These are not temperature sensitive.
- d. Correct answer. Prevents temperature sensitive radwaste equipment damage.

Unit 3 receives a primary containment isolation actuated by Low-Low-Low reactor water level. All MSIVs closed; however, only the inboard main steam line drain valves and the recirculation loop sample valves have closed.

Which one of the following could have caused this condition?

- A. PCIS channels A1 and B1 tripped, PCIS channels A2 and B2 did not trip.
- ✓B. PCIS channels A1, A2, and B1 tripped, PCIS channel B2 did not trip.
- C. PCIS channels A2, B1, and B2 tripped, PCIS channel A1 did not trip.
- D. PCIS channels A2 and B1 tripped, PCIS channels A1 and B2 did not trip.

REF: ITS Basis B 3.3.6.1 (Page B 3.3-189)

SOURCE: NEW QUESTION

TOUGH Question JMP

JUSTIFICATION

The following is the basic logic for the system. The incorrect answers will not result in the correct configuration:

A1 and B1 must trip to isolate the inboard isolation for the main steam line drains and recirculation loop sample valves.

A2 and B2 must trip to isolate the outboard isolation for the main steam line drains and recirculation loop sample valves.

A1 or A2 and B1 or B2 will cause the inboard and outboard MSIVs to close.

- a. Incorrect because none of the main steam line drains and recirculation loop sample valves would trip.
- b. (Correct)
- c. Incorrect because the outboard main steam line drains and recirculation loop sample valves would trip.
- d. Incorrect because none of the main steam line drains and recirculation loop sample valves would trip.

A transient has occurred on Unit 2 requiring initiation of torus spray. Plant conditions are as follows:

- Reactor water level -132 inches (slowly lowering)
- Reactor pressure 600 psig (steady)
- Drywell pressure 2.0 psig (slowly rising)
- Drywell temperature 205 degrees

Which of the following should have occurred?

- A. Drywell pressure switches initiate LPCI mode of RHR, interlock Containment Cooling/spray valves closed, initiate PCIS Group 2 isolation and initiate a reactor scram.
- ✓B. Drywell pressure switches provide pressure permissive signal to containment spray valves.
- C. Drywell pressure switches operated LPCI relays in the RHR Logic system, but did not work thru Core Spray
- D. Drywell pressure switches operated relays in the RHR Logic system and worked thru Core Spray

REF: OPL171.044, Rev. 9, Page 30 - 35

SOURCE: NEW

#### JUSTIFICATION

- a. requires pressure of greater than 2.45 psig
  - b. (correct) Drywell pressure switches provide pressure permissive signal to containment spray valves. Permits opening of containment spray only if pressure is significant in containment after accident. DWP decreasing to less than 1.96 psig will automatically close the spray valves if an accident signal is present.
  - c. requires pressure of greater than 2.45 psig
  - d. requires pressure of greater than 2.45 psig
- C is also correct 1.96 relays operated and did not go through Core SprayJMP

The following conditions exist on Unit 3:

Reactor power is 85%.  
Load set is 100%.  
Load Limit is 100%.  
Maximum Combined Flow Limiter is set at 125%.

Which one of the following describes how the plant will respond if the Maximum Combined Flow Limiter setting is reduced to 75%?

- A. Control valves close, turbine bypass valves open, and reactor pressure remains relatively constant.
- ✓B. Control valves close, turbine bypass valves remain closed, and reactor pressure increases.
- C. Turbine bypass valves throttle open, control valve position remains relatively constant, and reactor pressure decreases.
- D. Turbine bypass valves remain closed, control valves open, and reactor pressure lowers.

REF: OPL171.014, Rev. 5, Page 18

SOURCE: BANK QUESTION

JMP

JUSTIFICATION: The objective is to confirm that the candidate understands if the Limiter is set below Rx power, pressure will increase. This can be a MCPR concern.

A refueling zone high radiation signal has just caused auto initiation of the Standby Gas Treatment (SGT) System.

Which one of the following is an ABNORMAL indication or lineup, given this radiation condition?

- A. SGT Train A to Train B crosstie damper 65-22 shut.
- B. SGT Train B charcoal temperature (TI-65-47) reading 125 DEG. F.
- C. SGT Train C decay heat removal Damper 65-52 shut.
- ✓D. SGT Train C relative humidity heater outlet temperature (TI-65-62) reading 190 DEG. F.

REF: OPL171.018, Rev. 7  
0-OI-65, Rev. 0035, Page 13  
SOURCE: BANK QUESTION  
JMP

JUSTIFICATION

- a,c. These dampers are normally shut.
- b. The train temperature is expected to be below 150EF.
- d. (Correct) The heater should have shut down at 180EF.

13. 262002K3.01 001/ ROT2G2/ / 3.1/3.3/ C/A/ NEW/ BF00301/ RO/ 78

Which of the following describes the consequences of losing the Unit 2 Panel 9-9 Cabinet 6 while operating at power?

- A. The high reactor water level trip circuit for the main turbine and the reactor feed pump turbines will be de-energized. RCIC and HPCI AC control circuits will become de-energized rendering those systems inoperable.
- ✓B. The automatic reactor feedwater control system becomes inoperable and controls on the last known setpoint, there is a loss of power to the Control Rod Drive FCV-85-11 valves, In addition to normal power to panel 9-9 cabinet 5
- C. The short cycle valves FCV-2-29A and -29B fail open and the reactor feedwater pumps may trip on low suction. In addition, all of the reactor feedwater pump minimum flow valves will fail open, resulting in decreased flow to the reactor.
- D. The Raw Service Water head tank isolation valve closes. The temperature control valves for the main turbine lube oil, reactor recirculation pump MG sets, feedwater pump turbine lube oil, RBCCW, and Main Turbine EHC hydraulics will all fail.

REF: OPL171.102, Rev. 3.

SOURCE: NEW QUESTION

Modified B to be correct, Changed stem to eliminate auto transfer. JMP

JUSTIFICATION

- a. This occurs if the ECCS ATU inverters are lost.
- b. (Correct) Referring to a loss of the Unit 2 panel 9-9 cabinet 6.
- c. This occurs upon loss of the I&C power system.
- d. This occurs upon loss of the plant preferred power system.

14. 263000K2.01 001/ ROT2G2/ / 3.1/3.4/ MEMORY/ MODIFIED/ BF00301/ RO/ 79

Which one of the following would be affected if the 48 VDC system was lost?

- A. Microwave communications.
- ✓B. Control Room Annunciators.
- C. Emergency Diesel Generator Control and Logic.
- D. 480V Shutdown Board Control.

REF: OPL171.037, Rev. 8

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

- a. Powered by its own 24VDC system
- b. (correct) Powered by 48 VDC system
- c. Powered by the 125VDC EDG Power system.
- d. Powered by the 250VDC Shutdown Board Battery system.

Which of the following raises the rate of water decomposition?

- A. Increase in the amount of freon, oil, or halogens in the Catalytic Recombiner.
- B. Running the Off-gas system without the dehumidification coil in service.
- C. Securing the Off-gas pre-heaters.
- ✓D. Removing Hydrogen Water Chemistry from service.

REF: OPL171.030, Rev. 11 OBJ V.B.4/V.C.2 Page 20.

SOURCE: new

HELP

JUSTIFICATION

- a. Decreases the recombination rate, not the decomposition rate
- b. Operation is allowed by OI-66, decreases the moisture removed, not the decomposition rate
- c. Increases the moisture, not the decomposition rate
- d. (Correct) Hydrogen addition decreases the decomposition rate

A barrel of trash was placed on the North side of Unit 2 Fuel Pool. The following conditions were noted on the Reactor and Refuel Zone Radiation Monitors:

Channel A: Reactor Zone Detector A (2RM90142A)	85 MR/HR
Reactor Zone Detector B (2RM90142B)	56 MR/HR
Refuel Zone Detector A (2RM90140A)	67 MR/HR
Refuel Zone Detector B (2RM90140B)	78 MR/HR
Channel B: Reactor Zone Detector A (2RM90143A)	81 MR/HR
Reactor Zone Detector B (2RM90143B)	62 MR/HR
Refuel Zone Detector A (2RM90141A)	93 MR/HR
Refuel Zone Detector B (2RM90141B)	84 MR/HR

Which one of the following describes the plant equipment response based on the above conditions?

- A. Reactor zone supply and exhaust fans trip on Unit 3 only.
- B. Reactor zone supply and exhaust fans are tripped on all units.
- C. Drywell Control Air Compressor suction valves, FCV 32-62 and 32-63 close.
- D. Isolates fresh air paths to Control Bay Elevation 3C.

REF: OPL171.033, Rev. 7, Page 21

OPL171.067, Rev. 7, Page 12

SOURCE: MODIFIED BANK QUESTION

Verified with Revision 9. Changed correct answer. LSM

VERify 1 high

Trip logic for Reactor zone isolation is both channels above 72 mr/hr

a & b. Reactor zones only isolate on a Reactor Zone alarm.

c. FCV 32-62,63 only close on a reactor zone alarm.

d. Correct - Revision 9 7d.(3).(a) page 32

While operating at 90% power the Unit 3 B Reactor Recirculation Field Breaker is tripped.

Immediately upon the field breaker trip the associated jet pump loop flow is:

- A. subtracted from total core flow. This results in a severe lowering in indicated core flow, then as the tripped loop indicated flow decays toward zero, the core flow indication will rise toward the actual core flow value.
- B. subtracted from total core flow. This results in a severe increase in indicated core flow, then as the tripped loop indicated flow decays toward zero, the core flow indication will rise toward the actual core flow value.

D. added to total core flow. This results in a severe increase in indicated core flow, then as the tripped loop indicated flow trend toward zero, the core flow indication will lower toward the actual core flow value.

A

REF: 2-AOI-68-1

SOURCE: NEW

jmp

Reference: 3-AOI-68-1

#### CAUTION

Operation with one Recirc pump out of service and the inservice jet pump loop flow  $41 \times 10^6$  lbm/hr (3FI6846 or 3FI6848) can result in inaccurate core flow indication. This results from positive jet pump flow in the out of service loop being subtracted instead of added. If operation in this condition is required, contact Reactor Engineers to perform Attachment 2 of 3-SR-3.4.1(SLO) to determine actual core flow and to substitute that value into the ICS as necessary.

Erratic core flow indication can result from Recirc pump field breaker trips. Immediately upon a field breaker trip the associated jet pump loop flow is subtracted even though the loop flow is still positive. This results in a severe indicated lowering in core flow, then as the tripped loop flow decays toward zero, the core flow indication will rise toward the actual value. The severity of the indicated core flow perturbation will depend upon the cause of the Recirc pump trip (i.e., field breaker trip versus drive motor breaker trip) and the speed of the MG set prior to the trip.

[NER/C] The natural circulation line on the Power/Flow map only shows the approximate, nominal characteristic for operation with both Recirc loops out of service. Therefore, indicated core flow in natural circulation operation may not fall directly on the natural circulation line as depicted on the Power/Flow map. [NRC IN 96-016, GE SIL 516]

Per Technical Specifications, the reactor CAN BE operated indefinitely with one Recirc loop out of service, provided the requirements of T.S. 3.4.1 are implemented within 24 hours of entering single loop operations.

During a level transient on Unit 2 the following events occurred:

- RPV water level decreased to -125 inches during the transient
- ADS actuated
- RHR Pump 2A and 2B started and injected to the reactor vessel
- RPV water level is now +25 inches and increasing
- No operator actions have been taken

Which one of the following statements describes the RHR system response to placing the RHR Pump 2A control switch to the STOP position?

- ✓A. RHR Pump 2A will stop and the amber light above the control switch will light.
- B. No change; RHR Pump 2A will continue to run until the LOCA initiation signal is reset.
- C. RHR Pump 2A will stop and the amber light above the control switch will extinguish.
- D. RHR Pump 2A will stop and then restart when the switch is released. The amber light above the control switch will not change indication.

REF: 2-OI-74, Rev. 0083, Section 7.1, pg. 30

OPL171.44, Rev. 8, Pg. 48

SOURCE: BANK QUESTION

JMP changed 125 to -125

JUSTIFICATION

a. (Correct)

b. The RHR system is designed to allow a pump to be secured and auto-initiation lock-out.

c. The amber light is the auto-init. lockout indication and will not extinguish until the LOCA signal is reset.

d. Both sentences are incorrect.

**Initial Conditions:**

Reactor pressure is approximately 1000 psig.  
The Unit is slowly heating up.  
The operating CRD Pump has tripped  
Standby CRD Pump (1B) is AVAILABLE

You perform the following actions at Panel 2-9-5:

PLACE CRD SYSTEM FLOW CONTROL, 2-FIC-85-11, in MAN at minimum setting.  
START associated standby CRD PUMP 1B by using 2-HS-85-2A.  
OPEN CRD PUMP 1B DISCH TO U2, using 2-HS-85-8A.

ADJUST CRD SYSTEM FLOW CONTROL, 2-FIC-85-11, and establish the following conditions:

CRD CLG WTR HDR DP, 2-PDI-85-18A, approximately 20 psid.  
CRD SYSTEM FLOWCONTROL, 2-FIC-85-11, at approximately 55 gpm.

Balance the CRD flow and place the CRD SYSTEM FLOW CONTROL, 2-FIC-85-11 in AUTO.

Charging Water pressure is stable at 900 psig.

What are your required IMMEDIATE ACTIONS?

- A. Manually SCRAM the reactor and Place the mode switch in the refuel position.
- B. Verify the CRD system flow controller is nulled and ensure the CRD SYSTEM FLOW CONTROL, 2-FIC-85-11, is PLACED in Balance.
- C. CLOSE CRD PUMP 1B DISCH TO U2, using 2-HS-85-8A.
- ✓D. There are no additional IMMEDIATE ACTIONS required.

REF: 2AOI-8-53, Rev. 19, CRD SYSTEM FAILURE

OPL171.074, Rev. 6, Obj. V.B.1 and 2

SOURCE: NEW

JMP IOA 85-11 could be placed in bal

**JUSTIFICATION**

- a. Above 900 psig, there is time allowed to take corrective actions. Also there are no requirements to place mode switch in Refuel position.
- b. The Auto position is an exceptable position. Balance is not required.
- c. This is not an IMMEDIATE Action
- d. (Correct). There are 20 minutes to restore flow or take other compensatory measures.

The Reactor Building ventilation exhaust duct radiation high signal has just been received on Unit 3.

Which one of the following describes the expected plant response?

- A. Only the Reactor Zone isolates, SGT starts and aligns to the Reactor Zone only, and a Group 6 PCIS occurs, except the drywell air compressor suction valves remain open.
- B. The Reactor and Refueling Zones isolate, SGT starts and aligns to Reactor and Refueling Zones, and a Group 6 PCIS occurs, except the drywell air compressor suction valves remain open.
- C. Only the Reactor Zone isolates, SGT starts and aligns to the Reactor Zone only, and a complete Group 6 PCIS occurs.
- ✓D. The Reactor and Refueling Zones isolate, SGT starts and aligns to Reactor and Refueling Zones, and a complete Group 6 PCIS occurs.

REF: OPL171.067, Rev. 7, pg 16; Obj. V.B.2

2-AOI-64-2d, Rev. 0020

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

a,b,c. These are logical, credible, but incorrect plant responses from which to choose.

d.

(Correct)

Due to a fire in the turbine building, the 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 do not have a source of power available.
- ✓C. Place the NORMAL/EMERGENCY 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.

REF: OPL171.074, Rev. 6, Page 11

0-AOI-57-1A, Rev. 0041, Page 6

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

- a. The motor driven fire pumps are not on the sequencer. If they happen to be running during a LOOP, a 52Y relay locks out each of the three pumps.
- b. The candidate does not need to remember this, but he should know that the electric pumps are powered from the shutdown boards.
- c. (Correct)
- d.

If there is a signal in place for the pumps to start, they will start automatically after the 52Y relay is released.

22. G2.1.20 001/ ROT3/ / 4.3/4.2/ MEMORY/ NEW/ BF00301/ RO/ 148

When performing technical procedure with a level of classification of "Reference Use Procedure" in a C-Zone.

- A. The procedure must be performed as though it was classified as a "Continuous Use Procedures."
- ✓B. A QC holdpoint can be marked N/A with Nuclear Assurance Approval.
- C. Each step of the procedure must be read before performing the step and acknowledgment of the step's completion is required before proceeding to the next step.
- D. Each step of the procedure must be read before performing the step, however, acknowledgment of the step's completion is not required before proceeding to the next step.

REF: SPP-2.1, Revision 3

SOURCE: NEW QUESTION

JMP

JUSTIFICATION

- a. Should be performed as a reference use procedure
- b. Correct - 3.3.6
- c. This is a requirement of Continuous Use Procedures
- d. The first part is required by continuous use procedures, the second part is false.

23. G2.2.22 001/ ROT3/ / 3.4/4.1/ MEMORY/ BANK/ BF00301/ RO/ 95

Which one of the following conditions is a violation of the Unit 3 ITS Safety Limits?

- ✓A. Reactor water level at -175 inches with all MSIVs open.
- B. Reactor pressure at 750 psig and reactor power at 25%.
- C. Reactor power at 95% and MFLCPR = 0.98.
- D. A Group 1 isolation occurs due to main steam tunnel temperature high and reactor pressure reaches 1262 psig.

REF: OPL173.937, Rev. 4, EO B.4

TS 2.1.1.2

SOURCE: BANK QUESTION

changed 175 to -175 JMP

JUSTIFICATION

- a. (Correct) RPV level would be lower than -162 inches (TAIF) to exceed the safety limit . It does not matter what the MSIV status is.
- b. Reactor power would have to be greater than 25% to exceed the safety limit.
- c. A MFLCPR of >1.0 would exceed the operating limit, even higher to exceed the SL.
- d. The SL for RCS pressure is 1325 psig.

24. G2.3.1 001/ ROT3/ / 2.6/3.0/ MEMORY/ NEW/ BF00301/ RO/ 97

Committed Effective Dose Equivalent (CEDE) is defined as:

- A. The dose equivalent to organs or tissues that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.
- B. The derived limit for the amount of radioactive materials taken into the body of an adult worker by inhalation or ingestion in a year.
- ✓C. The sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues.
- D. A numerical dose constraint established at a level below the regulatory limits set forth in 10CFR Part 20, which are established as a guideline to administratively control and help optimize individual and collective radiation exposure.

REF: SPP5.1, Rev. 3,

SOURCE: NEW

JMP

JUSTIFICATION

a. CDE

b. ALI

c. Correct

D. ADL

25. G2.4.49 001/ ROT3/ / 4.0/4.0/ MEMORY/ NEW/ BF00301/ RO/

The shift manager has just informed you that the Operations Duty Specialist reports that a breach of Wheeler Dam has just occurred. Level is lowering in the intake structure. What are your required immediate actions?

- ✓A. Begin a controlled shutdown to mode 4.
- B. Activate the Automatic Paging System, obtain a hand held radio, proceed to 4kV Shutdown Board A.
- C. Manually trip the reactor and enter the EOIs.
- D. Verify automatic actions, perform any automatic action that failed to occur.

REF: 0-AOI-100-4, Revision 8, Immediate Operator Actions

- A. Immediate actions of 0-AOI-100-4, Revision 8 (correct answer)
  - B. Required for control room abandonment
  - C. Controlled shutdown required
  - D. There are no required automatic actions
- JMP

Unit 2 is operating with only the 2B Recirc Pump (Single Loop Operation) at 60% power. The following alarms and conditions currently exist:

- Jet Pump Flow No. 11 Thru 20 (2-FI-68-46) 13 Mlbm/hr
- Jet Pump Flow No. 1 Thru 10 (2-FI-68-48) 57 Mlbm/hr
- TOTAL CORE FLOW Recorder (2-XR-68-50) 43.4 Mlbm/hr
- APRM FLOW 43.5%
- Mode Switch in RUN

DETERMINE how the Core Flow Indication and PRNM Systems are affected by these conditions.

- A. The OPRM trip function is BYPASSED and the Total Core Flow Indication is correct.
- ✓B. The OPRM trip function is ENABLED and the Total Core Flow Indication is correct.
- C. The OPRM trip function is BYPASSED and the Total Core Flow Indication may be inaccurate.
- D. The OPRM trip function is ENABLED and the Total Core Flow Indication may be inaccurate.

T=4

AOI-68-1

Control Rod 38-23 has been selected for a single notch withdrawal from position 02 to position 04. The following response from the CRD system was observed:

- Insert light illuminates and goes out.
- Withdrawal light illuminates and goes out.
- Settle light illuminates and goes out.

The operator also observes and reports that the selected rod is now at position 06 and is continuing to drift out. A rod drift alarm is also present.

Which one of the following has caused this condition?

- A. The automatic sequence timer has failed.
- ✓B. Stuck open collet fingers.
- C. Low CRDM cooling water pressure/flow.
- D. Leaking scram outlet valve.

REF: OPL171.006, Rev. 5, EO 13d

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

- a. This would more than likely cause failures to notch in or out.
- b. (Correct)
- c. High pressure/flow might cause drift. Low pressure/flow will not.
- d. Might cause rod insert drift.

With the Rod Worth Minimizer keylock switch in NORMAL, which one of the following describes the effect of a loss of all control rod position signals from the RPIS?

- ✓A. Withdraw, insert, and select rod blocks will occur if power is less than the Low Power Alarm point.
- B. Only withdraw and select rod blocks will occur if power is less than the Low Power setpoint.
- C. Withdraw, insert, and select rod blocks will occur at any power level.
- D. RWM-PROG lights on INOP-RESET pushbutton. This will occur at any power level.

REF: OPL171.024, Rev. 8, Page 36, 4.d.(1), and Page 12, 2.f.(3)

2-AOI-85-4, Rev. 11

SOURCE: 1996 BFNP RO EXAM #31

CHANGED REV ON AOI JMP

JUSTIFICATION

- a. (Correct)
- b. There is also an insert block. This choice implies that the operator can insert at any time to add negative reactivity.
- c. These features do not activate when the plant is above the low power setpoint.
- d. This is in effect when the switch is turned from normal to bypass (lsm)

With both reactor recirculation pump speeds matched and the reactor at 100% power, which one of the following is an indication of a reactor recirculation jet pump failure?

In the loop with the failed jet pump, if indicated recirculation loop flow:

- A. decreases, indicated core pressure will increase.
- ✓B. increases, indicated main generator output will decrease.
- C. decreases, indicated total core flow will increase.
- D. increases, indicated core thermal power will increase.

REF: AOI-68-2, Rev. 11, Page 1, Para 2.0.

OPL171.007, Rev. 15, Page 55, Para E.1

ITS Basis 3.4.2

SOURCE: 1996 BFNP EXAM #37, distractors modified

help check AOI

JUSTIFICATION

- a. Loop flow decreased because of jet pump fracture, causing lower D/P across the jet pump. This causes the summation of D/Ps to lower the indicated loop flow. However, because of the malfunctioning jet pump, total core flow decreases, as does core pressure drop.
- b. (correct)
- c. 2-AOI-68-2 lists an increase in indicated core flow as a symptom. This is only true if the jet pump throat is restricted or clogged, causing a high D/P across the jet pump.
- d. Core thermal power will decrease with any jet pump flow degradation, whether it be caused by jet pump fracture or obstruction.

By disconnecting the recirc pump motor from the generator rather than tripping the MG set supply breakers, which of the following occurs?

- A. The recirc pump will coast down more quickly. Lower core flow causes more voiding. This lowers the slowing down length of fast neutrons which raises the thermal neutron flux. Higher thermal neutron flux results in more power.
- B. The recirc pump will coast down more slowly. Higher core flow causes less voiding. This raises the slowing down length of fast neutrons which lowers the thermal neutron flux. Lower thermal neutron flux results in less fission and less power.
- C. The recirc pump will coast down more slowly. Higher core flow causes less voiding. This lowers the slowing down length of fast neutrons which raises the thermal neutron flux. Higher thermal neutron flux results in more power.
- ✓D. The recirc pump will coast down more quickly. Lower core flow causes more voiding. This raises the slowing down length of fast neutrons which lowers the thermal neutron flux. Lower thermal neutron flux results in less fission and less power.

REF: OPL171.007, Rev. 18, Page 55

Obj.V.B.4, V.C.2

Obj.V.C.1.b

SOURCE: NEW

Solution:

A. Raises the slowing down length. Lowers power

B. Pumps slow more slowly

C. Pumps slow more slowly. Lowers power

D. Correct - The recirc pump will coast down more quickly. Lower core flow causes more voiding. This raises the slowing down length of fast neutrons which lowers the thermal neutron flux. Lower thermal neutron flux results in less fission and less power

HELP check LP

JUSTIFICATION

a. Only when the field breaker for the idle pump is racked out.

b. This is true for both or no recirc pumps running.

c. (Correct) The summing circuit adds a negative number due to reverse flow in the idle jet pumps.

d. Technically achievable, but not true.

During the performance of RHR System MOV operability testing, the RHR pump torus suction valves were closed. Immediately thereafter, a LPCI initiation signal is received.

Assuming the LPCI initiation signal remains present, which one of the following statements is correct?

- A. The suction valves will open automatically, and then the respective RHR pumps will auto start.
- B. The suction valves will open automatically and then the respective RHR pump must be started manually.
- C. The suction valves will not open automatically. They must be fully reopened manually, and then the respective RHR pumps will auto start.
- ✓D. The suction valves will not open automatically. The valves must be fully reopened manually, and then the pumps must be manually started.

REF: OPL171.044, Rev. 8, Page 38; EO V.B.12

SOURCE: BANK QUESTION

\*

**JUSTIFICATION**

a,b,c,d. Anti-pump logic will prevent the pump from automatically responding to an ESF signal unless there is a suction path, and it is not automatic.

On Unit 3, the Reactor Water Cleanup (RWCU) System is operating with RWCU Pump A running and the Filter/Demineralizer B in service with 130 gpm flow.

Which one of the following choices describes the expected automatic response of the RWCU system if Filter/Demineralizer B is inadvertently valved out of service?

- ✓A. Filter/Demineralizer B holding pump will start. RWCU Pump A trips when system flow decreases to less than 56 gpm for 35 seconds.
- B. Filter/Demineralizer B BYPASS valve will automatically open to maintain at least 90 gpm and RWCU Pump A will continue to operate.
- C. Filter/Demineralizer A automatically returns to service when Filter/Demineralizer B dp exceeds 20 psid.
- D. The system automatically isolates and Pump A trips when system flow decreases to less than 40 gpm for 7 seconds.

REF: OPL 171.013, Rev. 8, pAGE 19

SOURCE: BANK QUESTION

Changed time delay\*

JUSTIFICATION

- a. (Correct)
- b. The BYPASS valve is not automatic. 90 gpm is the Unit 1 pump trip setpoint. A check valve prevents bypass flow via the holding pump piping.
- c. This feature does not exist; however, there is a flow controller that is normally in manual.
- d. The system doesn't isolate, and the 40 gpm setpoint is for the F/D holding pumps to start.

The Unit 2 reactor is in cold shutdown with RHR Loop B in the Shutdown Cooling (SDC) mode when reactor water level rapidly decreases to -130.0 inches. Which one of the following correctly describes the operation of the RHR System?

- A. The LPCI Inboard Injection valves automatically open and the operator must wait 5 minutes before throttling flow.
- B. The LPCI Inboard Injection valves automatically close and the operator must wait 5 minutes before manually opening the valve.
- ✓C. The operator must depress the SDC isolation reset pushbuttons on panel 9-3 before the LPCI Inboard Injection valves automatically open.
- D. The operator must manually open the LPCI Inboard Injection valves after resetting the PCIS isolation using the reset switches on panel 9-4.

REF: OPL171.044, Rev. 8, EO B.16

OPL171.017, Rev. 8, Page 21, 33

SOURCE: 1995 BFNP EXAM RO # stem modified to change LPCI injection valves to SDC supply.

Changed answer to "C" and "130" to "-130" stem is confusing why 74-48 help

JUSTIFICATION:

c. SDC reset is only for LPCI injection valves

The following conditions exist during a loss of all A/C power (Onsite and Offsite):

- The high pressure coolant injection (HPCI) system was started in response to a valid actuation signal.
- A valid HPCI isolation signal is subsequently generated.

Which one of the following is the expected result?

- A. The HPCI pump will continue to operate with the mini-flow valve open.
- B. The steam supply inboard isolation Valve 73-2 will close, and the turbine will trip.
- ✓C. The steam supply outboard isolation Valve 73-3 will close, and the turbine will trip.
- D. A full HPCI system isolation will occur, and the turbine will trip.

REF: OPL171.042, Rev. 11, Pages 33 - 37.

SOURCE: 1996 BFNP SRO EXAM #60

changed station blackout verses a loss of all AC power

JUSTIFICATION

- a. The pump turbine will trip on a HPCI isolation.
- b. Valve 73-2 will fail as is upon loss of AC power.
- c. (Correct)
- d. When normal or emergency AC power is available, and there is a valid isolation signal, a full HPCI isolation and turbine trip will occur. Valves 73-2, 73-81, and 73-64 are 480 Volt AC powered.

During a Unit 2 LOCA, the following plant conditions exist:

- Reactor water level is dropping at a rate of 20 inches per minute.
- RPV level is currently at -132 inches.
- RPV pressure is 468 psig.
- Drywell pressure is 2.5 psig.

Which one of the following describes the expected status of the Core Spray System?

- A. The Core Spray System has not initiated.
- ✓B. The Core Spray pumps have started, but the injection valves are CLOSED.
- C. The Core Spray pumps have started, and the injection valves are OPEN, but pump flow is dead headed against the closed check valve.
- D. Core Spray pumps have started and are injecting into the RPV.

REF: OPL171.045, Rev. 8; EO B.2

SOURCE: BANK QUESTION

changed typo -132" initiated \*

JUSTIFICATION

- a. Core Spray initiates at -122"
- b. (Correct)
- c. The inboard injection valve does not open until #450 psig in the RPV
- d. (Same as c.)

Unit 3 is operating at power with Diesel Generator 3A under clearance. A transient occurs resulting in a reactor scram signal and an ATWS. The SLC control switch is taken to the START PUMP B position. Plant conditions are as follows:

Reactor power	10%
480v S/D bd 3A	De-energized (A/C only)
SLC switch	NOR-AFT-START

How will the SLC system respond?

- A. SLC squib valve A fires, no SLC pump starts.
- B. SLC squib valve B fires, no SLC pump starts.
- ✓C. SLC squib valves A and B fire, one SLC pump starts.
- D. SLC squib valve B fires, both SLC pump starts.

REF: OPL171.039, Rev. 9, Page 12

SOURCE: 4/97 BSEP exam RO #9

Changed "a lockout of the BOP bus" to "a turbine trip" Change 480 v S/D bd major changes  
Help

JUSTIFICATION

In the START PUMP B position, normally pump B starts and both squibs fire. Pump B and Squib B power from SD BD 3B which is energized. Squib A is powered from SD BD 3A and will fire when SD BD 3b is energized.

During main turbine stop valve testing, the No. 2 Stop Valve would not close. The Unit Supervisor directs placing the Stop Valve No. 2 input to the Reactor Protection System (RPS) in a tripped condition.

Which one of the following describes the impact of this action on the RPS?

No. 2 Stop Valve provides input to:

- A. only RPS Channel A, and placing the inputs in a tripped condition will cause a half scram.
- B. only RPS Channel B, but placing the inputs in a tripped condition will NOT cause a half scram.
- C. both RPS Channels A and B, and placing the inputs in a tripped condition will cause a full scram.
- ✓D. both RPS Channels A and B, but placing the inputs in a tripped condition will NOT cause a half scram.

REF: ITS LCO 3.3.1.1, Amendment 253

OPL171.028, Rev. 10, Page 13

SOURCE: BANK QUESTION

\*

JUSTIFICATION

a,b,c,d. All 4 TSVs open a pair of contacts at 10% closure, and input RPS Channels A and B.  
No one TSV will cause a half scram.

While walking down the control room panels on a tour, the Unit 2 Unit Supervisor notices the F5 fuse indicator for the TIP channel B Valve Control Monitor is de-energized.

Which one of the following statements correctly describes the information provided by this condition?

- A. The TIP shear valve will not fire.
- B. The TIP ball valve will not open when the TIP is out of the shield.
- C. The TIP channel will not respond to a automatic scan.
- ✓D. The TIP channel will not respond to a containment isolation signal.

REF: OPL171.023, Rev. 3, EO B.3

SOURCE: BANK QUESTION

help ? blown fuse removes power from isolation relays

JUSTIFICATION

- a. There is a Squib monitor for this.
- b. There are other indicating lights for the ball valve.
- c. There is a scan light.

A traversing in-core probe (TIP) trace is being performed on Unit 2. With the probe in core, a spurious Group 8 isolation occurs.

Which one of the following describes how the TIP system responds to the isolation signal?

- A. No response; the TIP system only responds to a Group 2 isolation signal.
- ✓B. The TIP drive withdraws at fast speed and the ball valve closes once the probe has withdrawn to the shield chamber.
- C. The TIP drive withdraws at slow speed until the core bottom is cleared, then shifts to fast speed, withdraws from the core and the ball valve closes when the probe has withdrawn to the indexer.
- D. The TIP drive withdraws at fast speed and if the probe is not in the shield within 30 seconds, the shear valve fires to cut the cable and seal the tube.

REF: OPL171.023

SOURCE: MODIFIED QUESTION

\*

JUSTIFICATION

- a. The same signals trip the Group 2 (RWCU) isolation.
- b. (Correct)
- c. Slow speed is used for scanning the core. The implication of the distractor is that the TIP only moves in slow speed when in the core, which is not so.
- d. The shear valve fires manually with a key-lock switch. That option is open to the operator, but there is no 30-second time constraint.

A unit 3 IRM channel is set to range 5 and reading 60. Which one of the following is correct if the IRM range selector switch is turned to range 6?

- A. A different preamplifier circuit is put into service and the reading should be about 6.
- B. A different preamplifier circuit is put into service and the reading should be about 19.
- C. The same preamplifier circuit remains in service and the reading should be about 6.
- ✓D. The same preamplifier circuit remains in service and the reading should be about 19.

REF: OPL171.020, Rev. 5, Page 12

changed answer from a to d \*

JUSTIFICATION

Readings vary by a factor of the square root of 10 from one channel to the next. The different pre-amplifiers are put into service between channels 6 and 7.

41. 215003K1.06 001/ ROT2G1/ SROT2G2/ 3.9/4.0/ C/A/ MODIFIED/ BF00301/ BOTH/ 46

A reactor startup is in progress on Unit 3 with reactor power at 20%. APRM 1 is bypassed due to failing high. Then, IRM A fails high.

Which one of the following describes the response of the RPS to the IRM upscale trip?

- A. No RPS trip action
- B. A rod block
- C. A half scram
- D. A full scram

REF: OPL171.020, Rev. 5

Learning Objective B.7

MODIFIED QUESTION

\*

JUSTIFICATION

b,c,d. The candidate needs to demonstrate knowledge of companion APRM/IRMs and the effects of bypassing one companion. The distractors were designed to do that.

42. 215005K6.01 001/ ROT2G1/ SROT2G1/ 3.7/3.8/ C/A/ BANK/ BF00301/ BOTH/ 48

Unit 2 is operating at 100% power, when a loss of RPS B power occurs.

Which one of the following describes the type of fault detected for BOTH the RBM and APRM channels?

- A. A critical fault is generated in both the RBM channels, and in all of the APRM channels.
- B. A non-critical fault is generated in both the RBM channels, and in all of the APRM channels.
- C. A critical fault is generated in RBM Channel B, and in APRM Channels 2 and 4.
- D. A critical fault is generated in RBM Channel B, and non-critical faults are generated in all of the APRM channels.

REF: OPL171.148, Rev. 2, Page 67 and 10

SOURCE: BANK QUESTION

help verify on simulator

JUSTIFICATION

- a. RBM Channel A is unaffected, as are the APRMs.
- b. A critical fault is generated in RBM Channel B.
- c. None of the APRM channels have a critical fault.
- d. (Correct)

Which one of the following describes a characteristic of a fill oil leak from a Rosemount transmitter?

- A. The instrument readings repeatedly drift in both directions over a period of time.
- B. The instrument exhibits an inability to follow plant transients over a period of time.
- C. The instrument responds normally until the isolating diaphragm contacts the convolution plate, when it fails to function properly.
- ✓D. The instrument responds more slowly until the isolating diaphragm contacts the convolution plate, when it fails to function properly.

\*REF: Reactor Vessel Process Instrumentation, OPL171.003, Rev. 11, pg. 18

Learning Objective V.B.2

NRC Bulletin 90-01 and NRC Info Notice 89-42

SOURCE: 1995 BFNP SRO EXAM, Question #1, some distractors changed  
changed obj reference JMP

JUSTIFICATION

- a. A sustained drift in the same direction is detectable over a period of time.
- b. (Same as b)
- c. The instrument exhibits slowed response to, or inability to follow planned plant transients.
- d. (Correct)

*"B" may be correct*

The following Unit 2 plant conditions are given:

Reactor power is 65%

Suppression Pool temperature is 78 degrees

Suppression Pool temperature is increasing by 2 degrees every 12 minutes

Suppression Pool cooling is in service providing maximum cooling

The time is 12:00 noon.

2-SR-3.5.3.3, RCIC SYSTEM RATED FLOW AT NORMAL OPERATING PRESSURE is in progress.

Which one of the following is the latest time the test may be conducted before Technical Specifications limits would be exceeded?

- A. 1:42 pm
- ✓B. 2:42 pm
- C. 3:12 pm
- D. 5:24 pm

REF: TS 3.6.2.1, Amendment 253

2-SR-3.5.3.3, Rev. 0002, Para 3.3

SOURCE: NEW QUESTION

\*Good question A will be selected JMP

JUSTIFICATION

- a. Based on the 95EF limit applicable when no testing is going on.
- b. (Correct)  $105 - 78 \div 2 \times 12 = 162$  min or 2 hrs; 42 min.
- c. Based on the 110 degrees limit when in IRM Range 7.
- d. Based on 105 degrees limit, but forgot to divide by 2.

45. 218000K2.01 001/ ROT2G1/ SROT2G1/ 3.1/3.3/ MEMORY/ NEW/ BF00301/ BOTH/ 51

Which one of the following would occur if power is lost to 250VDC RMOV Board 3B?

- A. The ADS logic will not operate after automatic transfer to the alternate power supply.
- B. The ADS logic will not operate, however, TWO of the six ADS valves can be operated manually.
- ✓C. The ADS logic will not operate, however, FOUR of the six ADS valves can be operated manually
- D. The ADS logic will not operate, however, the SIX ADS valves can be operated manually.

REF: OPL171.043, Rev. 7, Pages 11 and 16

SOURCE: NEW QUESTION

JMP

JUSTIFICATION

- a. Board 3B does not have an automatic transfer to the alternate power supply
- b. Two ADS valves are powered from 3B
- d. Two of the six ADS valves lose power with no alternate. Thus only four are left that will function manually.

46. 223002K3.01 001/ ROT2G1/ SROT2G1/ 3.7/3.7/ MEMORY/ NEW/ BF00301/ BOTH/ 53

Which one of the following gives the two PCIS groups NOT affected by RPV water level?

- A. Groups 1 and 4
- ✓B. Groups 4 and 5
- C. Groups 5 and 6
- D. Groups 6 and 8

REF: OPL171.017, Rev. 8, Page 15

SOURCE: NEW QUESTION

JMP

JUSTIFICATION

This question was designed to challenge the candidate's knowledge of what systems are in each group, and to either figure out or remember that Groups 4 and 5 (HPCI and RCIC), must not isolate when there is a water inventory problem. Groups 1,2,3,6,&8 all isolate on RPV low levels.

Given the following conditions:

RPV level -190 inches  
RPV Pressure 920 psig  
Drywell pressure 2.95 psig  
A valid LPCI initiation signal is present

Which one of the following are required to be completed in conjunction with **ONLY** placing the RHR Containment Spray select switch XS-74-1-121/129 in Select to open the Containment Spray valves?

- ✓A. Raise RPV level to -180 inches only.
- B. Reduce drywell pressure to 1.6 psig only.
- C. Raise RPV level >-120" AND reset the LPCI initiation signal.
- D. Raise RPV level to >-120 inch reactor level AND reduce drywell pressure to 1.6 psig.

REF: OPL171.044, Rev. 8, Page 34/36, Sections m.(4) / o.(4).  
1996 BFNP RO EXAM #65 modified to give plant conditions

HELP significant work required change to the select switch being operated JMP

JUSTIFICATION

- a.& d. RPV level interlock is bypassed with keylock
- c. LPCI initiation signal is bypassed

A trip of the 480 V Shutdown Board 1A will have which of the following effects on the spent fuel pool system?

- ✓A. Trips Fuel Pool Circulating Pump 1A.
- B. Trips Fuel Pool Circulating Pump 1B.
- C. Isolates the fuel pool water flow to the fuel pool heat exchanger.
- D. Isolates the RBCCW to the fuel pool heat exchangers.

NEW - OPL171.052 003 Rev 5 Obj. V.B.7

Solution:

- A. Correct - Obj. V.B.7.
  - B. Pump 1B powered from 480 V Shutdown Board 1B (Similar for Unit 2 & 3)
  - C. Trips only one pump, does not isolate flow to the heat exchanger.
  - D. Does not effect the Shell side - reactor building closed cooling water (RBCCW)
- JMP

Both MSR/V vacuum breakers (the 10 inch and the 2 1/2 inch) on each relief line have failed closed. Some water from the suppression pool was siphoned into the relief line upon completion of blowdown when the steam in the relief line condensed.

What are the potential consequences of future MSR/V operation?

- A. Insufficient flow through the relief line.
- B. Uneven heating of the suppression pool.
- C. Direct pressurization of the drywell air space.
- ✓D. Overpressurize the relief line.

REF: OPL171.009, Rev. 6, Pg. 13 Obj VB5 VC2 VC3

SOURCE: new

Changed DW Vac Breakers to MSR/V Vac bkr, failed Vac bkr closed, future msrv operation.

JMP

JUSTIFICATION

- a. There would be no significant effect on the flow
- b. This would occur if the relief valves were not used in a prescribed pattern
- c. This could only occur if the vacuum breaker fails open
- d. (correct) Due to the presence of moisture in the line.

The following plant conditions exist:

- The reactor is operating at 100% power and 1000 psig.
- A turbine control valve malfunction resulted in reactor safety relief valve (SRV) 1-4 lifting and failing to reseal.

Which one of the following SRV tailpipe temperatures would you expect to see on the SRV that failed to close? (References attached)

- A. 212 degrees Fahrenheit
- ✓B. 290 degrees Fahrenheit
- C. 345 degrees Fahrenheit
- D. 545 degrees Fahrenheit

REF: Steam Tables or Mollier Diagram (INCLUDE WITH EXAM AS ATTACHMENT)

SOURCE: 1996 BFNP RO EXAM #99

check for training coverage JMP

JUSTIFICATION

- a. Saturation temperature for steam at tailpipe pressure (atmospheric).
- b. (Correct) This is a throttling process and is therefore isoenthalpic.
- c. 340 degrees Fahrenheit would be incorrectly determined if the candidate considered the process to be isoenthalpic to the saturation line, then followed the constant superheat line to atmospheric pressure.
- d. Saturation temperature for reactor pressure.

*THE ANSWER ON THE 1996 EXAM WAS GIVEN AS 370 DEGREES.*

The following conditions exist on Unit 2:

Turbine Steam Throttle Press: 990 psig  
Pressure setpoint: 970 psig  
Load Limit: 100%  
Load Setpoint: 100%

Which one of the following describes the EHC Pressure Regulating System response, and the effect on RPV pressure, if the turbine steam throttle pressure transmitter input to Pressure Regulator A failed upscale to 1100 psig?

- A. Pressure Regulator B takes over; RPV pressure increases.
- B. Pressure Regulator B takes over; RPV pressure decreases.
- C. Pressure Regulator A remains in control; RPV pressure increases.
- ✓D. Pressure Regulator A remains in control; RPV pressure decreases.

REF: OPL171.014, Rev. 5, Pages 13-15

SOURCE: BANK QUESTION

JMP changed based on PUR plant values 920 = 970 950 = 990 failed to 1100

JUSTIFICATION

- a. P.R. B won't take over when there is a failure causing P.R. A, which is normally the in-service regulator, to put out a TCV open signal.
- b. P.R. B doesn't take over, but pressure will decrease until the MSIVs close on low steamline pressure.
- c. P.R. A remains in control, but RPV pressure drops off as the P.R. sends out a TCV open signal in error.
- d. (Correct)

52. 256000K5.10 001/ ROT2G2/ SROT2G3/ 2.8/2.8/ MEMORY/ BANK/ BF00301/ BOTH/ 76

Which one of the following states the reason why the condensate pump header pressure should be between 100 and 150 psig during a reactor startup?

- A. To minimize thrust on the condensate pump motor bearings.
- ✓B. To ensure adequate condensate flow for the steam jet air ejectors.
- C. To ensure adequate flow through the condensate demineralizers.
- D. To maximize condensate pump efficiency.

REF: OPL171.011, Rev. 6

SOURCE: BANK QUESTION

REF info JMP

JUSTIFICATION

- a. Makes sense; however, this is not the reason.
- b. (Correct) The Unit 3 SJAE will shut down at <60 psig condensate incoming pressure.
- c. The condensate demins will always get whatever the feedwater demand is for the existing reactor power.
- d.

Theoretically, the pumps will draw less current at higher pressure, but at the same time, more water is being bypassed around the wear rings, thus it may be a wash. This is not the reason.

53. 259001A1.02 001/ ROT2G1/ SROT2G2/ 3.2/3.3/ MEMORY/ BANK/ BF00301/ BOTH/ 56

Which one of the following is an acceptable method for reducing thermal duty on RPV feedwater nozzles during low power and/or hot standby operation?

- A. Minimize reactor power.
- B. Increase reactor pressure.
- ✓C. Maximize RWCU flow.
- D. Reduce CRD flow.

REF: OPL171.026, Rev. 7, Page 36

2-OI-3, Rev. 0071, Page 9

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

- a. OI-3 suggests minimizing time at low power, not power level.
- b. OI-3 suggests reducing reactor pressure, or increasing power.
- c. (Correct) Warm RWCU return mixes with cooler feedwater.
- d. The only CRD flow path that would help is normally isolated anyway.

A full scram from 100% power occurred on Unit 2 as a result of a fault in the main turbine EHC system. After the SCRAM, the following conditions exist: (Assume no operator actions have occurred)

All three Reactor Feed Pumps (RFPs) are in AUTO  
Master Level Controller is in AUTO  
Reactor water level is at 10 inches and rising  
Scram Response logic is not inhibited

Which one of the following describes the Reactor Feed System response to this situation?

- A. RFPs A and B are available for AUTO or MANUAL mode of operation and may be taken to 5600 rpm.
- B. RFPs A and B are set at 600 rpm, and cannot be raised to >600 rpm until the Scram Response logic is reset.
- C. RFPs A and B are available for MANUAL mode only and will be limited to 3900 rpm until the Scram Response logic is reset.
- D. RFPs A and B are available for AUTO or MANUAL mode of operation but are limited to 3900 rpm until the Scram Response logic is reset.

REF: OPL171.012, Rev. 7, Page 26

SOURCE: BANK QUESTION

5050 is an operational limit JMP change 5600 to 5050?

JUSTIFICATION

- a. (Correct)
- b. A&B get set by the algorithm at 600 rpm (0% output), but they can be manually rolled up to 5600 rpm.
- c. RFP C gets set by the algorithm at a demand limit of 3900 rpm.
- d. A&B are available in either mode, but the manual speed limit is 5600, and not to be confused with the 3900 rpm demand limit set on RFP C.

Unit 2 and 3 are operating normally and are tied to the grid. Which one of the following would occur if a DG control switch was taken to start and the output breaker was closed? ( Assume the diesel generator speed setpoint is higher than grid frequency and no other operator actions were performed)

- A. The speed regulator will keep lowering the fuel supply to the diesel in order to try and lower grid/DG output voltage to the governor's setpoint. The DG will trip on under voltage.
- B. The zero droop governor will keep advancing the fuel supply to the diesel in order to try and raise grid/DG output frequency to the governor's setpoint. This will cause the DG to overspeed.
- ✓C. The zero droop governor will keep advancing the fuel supply to the diesel in order to try and raise grid/DG output frequency to the governor's setpoint. This will cause the diesel to overload.
- D. The speed regulator will keep lowering the fuel supply to the diesel in order to try and lower grid/DG output frequency to the governor's setpoint. This will cause the DG to trip on reverse current.

REF: OPL171.038, Rev. 10, Page 30

SOURCE: NEW QUESTION

JMP do we want to say no other actions performed, PWS or single unit

JUSTIFICATION

Explanation:

The speed regulator senses output frequency, but now the generator output frequency is fixed by the other loads on the grid. If the diesel speed setpoint is higher than grid frequency, the zero droop governor will keep advancing the fuel supply to the diesel in order to try and raise grid/DG output frequency to the governor's setpoint. This will cause the diesel to overload. (495 amps.)

On Unit 2, the operator is attempting a manual fast transfer of the 4kV Shutdown Board C normal power supply to the first alternate power supply. The following conditions are in effect:

- The Emergency Control Transfer Switch (ECTS) is in NORMAL.
- The Shutdown Board C AUTO TO MANUAL TRIP pushbutton was depressed, and the amber light extinguished.
- The alternate breaker synchronizing selector switch is in the OFF position.
- The operator is holding the alternate power supply breaker control switch in the CLOSED position.

Which one of the following describes the plant equipment response when the operator next trips the normal supply breaker?

- A. A fast transfer to the alternate supply occurs.
- ✓B. A slow transfer to the alternate supply occurs.
- C. The alternate breaker trips and Shutdown Board C is locked out.
- D. The alternate breaker trips and Emergency Diesel Generator C starts and ties to Shutdown Board C.

REF: OPL171.036, Rev. 4, Page 18

0-OI-57A, Rev. 0063, Para 8.1

SOURCE: MODIFIED QUESTION

JMP

JUSTIFICATION

- a. A fast transfer cannot happen because the synch switch was off.
- b. (Correct)
- c. The alternate breaker is interlocked with the normal breaker. As soon as the normal breaker opened, the alternate breaker received a signal to close.
- d. Same as c. with or without the EDG.

Diesel Generator 3A is synchronized to 4KV Shut Down Board 3A. The instrumentation readings for the diesel generator are as follows:

voltage: 4160 VAC  
frequency = 59.8  
current = 340 amps  
vars = 1600 Kvars  
watts = 2585 KW

What actions are required if the diesel is expected to be operated for an extended period?

- A. The operator must take the voltage regulator control switch to raise to avoid excessive stator currents.
- B. The operator must take the voltage regulator control switch to lower to avoid excessive stator currents.
- ✓C. The operator must take the governor control switch to raise to avoid excessive field current.
- D. The operator must take the governor control switch to lower to avoid excessive field current.

REF: OI-82

OPL171.038 Rev. 9, page 31

Exam bank question OPL171.038 003

SOURCE: NEW QUESTION (MEE)

ATTACHMENT: Need 3-OI-82, Illustration 1 for exam.

JMP

Which one of the following describes the response of the Main Steam Line Radiation Monitoring System when a level of 3 times normal full power background radiation is reached?

- A. The system will trip the mechanical condenser vacuum pump and close the condenser vacuum pump discharge valves.
- B. The system will trip the mechanical condenser vacuum pump, close the condenser vacuum pump suction valves, scram the reactor, and initiate a PCIS Group 1 isolation.
- ✓C. The system will trip the mechanical condenser vacuum pump and close the condenser vacuum pump suction valves.
- D. The system will trip the mechanical condenser vacuum pump, close the condenser vacuum pump discharge valves, scram the reactor, and initiate a PCIS Group 1 isolation.

REF: OPL171.033, Rev. 7, Page 14

SOURCE: new

JMP

JUSTIFICATION

- a. Closes suction valves
- b. DCN deleted the Group 1 isolation and scram.
- c. Correct
- d. DCN deleted the Group 1 isolation and scram. Closes suction valves

The 3B Raw Service Water (RSW) pump has automatically started to increase level in the RSW storage tanks. Subsequently, Fire Pump A receives an automatic start signal.

Which one of the following describes the response of the RSW storage tank isolation valves and the RSW pump to this situation?

- A. The 3B RSW pump immediately trips. The RSW storage tank isolation valves CLOSE but will automatically REOPEN when the fire pump stops. The 1A RSW pump will automatically start if the tank level demand signal is still present.
- ✓B. The 3B RSW pump immediately trips. The RSW storage tank isolation valves CLOSE. When the fire pump stops, one of the isolation valves automatically REOPENS; however, the backup isolation valve must be manually REOPENED. The 1A RSW pump can then automatically start if the tank level demand signal is still present.
- C. The 3B RSW pump continues running in support of the fire pump. The RSW storage tank isolation valves CLOSE, and will automatically REOPEN when the fire pump stops. When the tank is filled, the 3B RSW pump stops.
- D. The 3B RSW pump continues running in support of the fire pump. The RSW storage tank isolation valves CLOSE. When the fire pump stops, the 3B RSW pump stops. Both tank isolation valves remain CLOSED until manually reopened, and normal tank level control will then resume.

REF: OPL171.049, Rev. 9, Page 42

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

- a. One valve, the backup, does not open.
- b. (Correct)
- c. With a mini-flow bypass, this would work.
- d.

This distractor throws in some doubt as to whether the tank isolation valves are in series or parallel.

A small break LOCA on Unit 2 results in the following plant conditions:

- Reactor water level 12 inches above instrument zero.
- Drywell pressure 2.0 psig.
- Ventilation radiation:
  - Reactor building 68 mR/hr.
  - Refueling Zone 35 mR/hr.
  - Air inlets to Control Room 200 cpm above background.

Which one of the following statements describes the expected status of the control room ventilation system under the above conditions?

- A. The normal ventilation system is operating. The control room emergency ventilation (CREV) system is supplying filtered air from the control bay.
- ✓B. The normal ventilation system is supplying air to the control room from the control bay supply fans.
- C. The CREV system is operating, supplying filtered outside air. The normal ventilation system is isolated.
- D. The CREV system is operating, supplying filtered outside air. The normal ventilation system is NOT isolated.

REF: OPL171.067, Rev. 7, Page 23

MODIFIED QUESTION

JMP

JUSTIFICATION

- a. The CREV doesn't take fresh air from the control bay, whether actuated or not.
- b. (Correct) None of the initiation trip setpoints were reached.
- c. If initiated, this would be the status.
- d. This is the status when the CREV is started from the control room.

The following plant conditions exist:

- Reactor mode switch:    STARTUP/HOT STANDBY
- Main turbine:           Shell warming
- Feedwater lineup:       RFP A maintaining level in single element

Which one of the following statements describes the expected sequence of actions as a condensate system leak causes condenser vacuum to decrease from 24 inches Hg Vacuum to atmospheric pressure?

- ✓A. The Main turbine trips, then later, the RFP turbine trips and the main turbine bypass valves close at the same time.
- B. The RFP turbine trips, then later, the turbine bypass valves close, followed by a reactor scram on low condenser vacuum.
- C. The RFP turbine trips and the main turbine bypass valves close at the same time, then later, the main turbine trips
- D. Main turbine trips and the reactor scrams in response to the turbine trip, then later, the RFP turbine trips and main turbine bypass valves close at the same time.

REF: 2AOI473, Rev. 0010, Section 3.0

SOURCE: BANK QUESTION

JMP could someone argue C

JUSTIFICATION

- a.     (Correct)
- b.     There is no reactor scram on low main condenser vacuum.
- c.     A true statement at 7" Hg Vac; however, this is preceded by a main turbine trip at 21" Hg Vac.
- d.     The reactor won't trip on a turbine trip below 30% RTP.

An accident has occurred concurrent with a partial loss of AC power on Unit 2 resulting in the following indications:

Drywell pressure	2.1 psig
RPV	-135 inches
Reactor pressure	490 psig

The diesel operator incorrectly diagnoses a loss of lube oil and initiates an emergency stop at panel 9-23. Which one of the following is required to reset the Diesel Generator Auto Start Lockout?

- A. Both generator lockout relays (86 relays) AND the protective relay logic (74) must be manually reset.
- B. The core spray initiation signal seal-ins on Panel 9-3 must be reset.
- C. Both the core spray initiation signal seal-ins on Panel 9-3 must be reset and the DG control switch must be taken to RESET.
- ✓D. The DG control switch must be taken to RESET.

REF: OPL171.038, Rev. 9, Page 26

SOURCE: NEW QUESTION

JMP

JUSTIFICATION

- A. Required for loss of DC control power.
- B. Raising the water level to greater than -122 allows manual reset of the core spray logic.
- C. Raising the water level to greater than -122 allows manual reset of the core spray logic.
- D. A lockout generated by a stop signal with a CASx or PASx locked in will automatically reset when the CASx and PASx signals clear and the seal-ins are reset. (In this case the water level) The lockout from an emergency stop of the DG from Panel 9-23 can only be reset by manually taking the DG control switch to reset.

The following plant conditions exist:

- The plant is operating at 100% power.
- A loss of RPS 'B' power occurs.

Which one of the following isolation valve groups will close?

- A. Group 1 Isolation Valves, Inboard Only
- ✓B. Group 2 Isolation Valves, Outboard only
- C. Group 2 Isolation Valves, Inboard and Outboard
- D. Group 3 Isolation Valves, Inboard and Outboard

REF: 2AOI991, Loss of Power to One RPS Bus, Rev 16, page 2 of 6, section 3.0  
2-OI-99, RPS, Rev. 39, Para 3.11

SOURCE: 1996 BFNP EXAM - changed to RPS bus B loss

JMP

JUSTIFICATION

- a. Only the half-trip logic deenergizes in PCIS Group 1.
- c. inboard close on loss of a
- d. outboard only close on loss of B

A reactor startup is in progress and reactor power is on IRM Range 7, when the operator observes the following instrument failures:

- SRM Channels A and C fail downscale.
- IRM Channels A, C, and E fail downscale.

Which one of the following power supplies would have to be lost to cause such failures?

- A. 24 VDC Power Distribution Panel
- B. 48 VDC Power Distribution Panel
- C. 125 VDC Power Distribution Panel
- D. 120 VAC Instrument and Control Power Distribution Panel

REF: OPL171.037, Rev 7, pg 16, EO B9

SOURCE: 1995 BFNP RO EXAM #58, new distractor b

JMP

JUSTIFICATION

- a. (Correct)
- b. Provides power for annunciators and communications. This is different than the 48 VDC center-tapped battery used for nuclear instruments.
- c. 125 VDC power is dedicated for the EDGs.
- d. 125 VAC I&C power supplies the +/-24 VDC battery chargers; however, the NIs would not go downscale until about 3 hours when the batteries discharged. The operators would be forewarned if 120 VAC was lost.

Given the following plant conditions:

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

Which one of the following describes the response of the reactor if a main turbine trip occurs?

- A. Reactor immediately scrams on turbine stop valve 10% closure.
- ✓B. Reactor scrams on high reactor pressure.
- C. Reactor continues to operate at 38% power.
- D. Reactor continues to operate and power decreases to 30%.

REF: OPL171.028, Rev. 10, Pg. 26

FSAR Section 11.5.3

SOURCE: 1995 BFNP SRO EXAM #48 modified to remove initial condition of bypass ON changed answer to b due to first stage pressure is seeing 23% so TSV scram is bypassed

**JUSTIFICATION**

- b. This would occur were if the bypass in effect.
- c. The turbine bypasses do not have sufficient capacity to handle 38% power. This choice is also distracting because turbine runback occurs at >40% power mismatch.
- d. 30% is the point at which the bypass normally automatically comes into effect . The turbine bypasses could handle this power level, but the reactor was producing 38% and reactor power could not be reduced quickly enough to prevent the pressure transient.

Unit 3 is operating at 100% power.

Which one of the following combinations of events will **ONLY** initiate a half scram signal?

- A. Both MSIVs in steam lines "B" and "C" drift to less than 90% open.
- B. Both MSIVs in steam lines "A" and "D" drift to less than 90% open.
- ✓C. PRMN voter #1 to test X relay
- D. APRMs 3 and 4 trip on hi-hi flux.

REF: OPL171.028, Rev 12,

SOURCE: BANK QUESTION

JMP PRNMS changed this logic Is "D" a valid distractor

JUSTIFICATION

- a. Isolating steam lines "B" and "C" does not cause a halfscram.
- b. Isolating steam lines "A" and "D" does not cause a halfscram.
- c. (Correct) One voter to test X or Y relay will cause an 1/2 scram
- d. APRMs 3 and 4 will cause a full scram

Unit 2 is operating at 100 % power. Reactor pressure is being controlled by Pressure Regulator A.

If Pressure Regulator A fails down scale, which one of the following lists of symptoms is likely to occur? (Assume all systems respond as designed and no operator action.)

- A. Reactor pressure will increase, reactor thermal power will increase, and generator output will increase.
- ✓B. Reactor pressure will increase, reactor thermal power will increase, but generator output will decrease.
- C. Reactor pressure will decrease, reactor thermal power will decrease, and generator output will decrease.
- D. Reactor pressure will decrease, reactor thermal power will decrease, but generator output will increase.

REF: OPL171.014, Rev. 5

2-AOI-47-2, Rev. 0010, Para. 2.0

SOURCE; NEW QUESTION

JMP

JUSTIFICATION

- a. Generator power will decrease as the CVs throttle down in response to the pressure regulator sensing low pressure.
- b. (Correct)
- c. This happens if either pressure regulator fails upscale.
- d. If Rx power and pressure decreased due to an opening of the CVs, generator output would increase...for a while.

The following plant conditions exist:

- The reactor has scrammed from 100% power.
- HPCI and RCIC initiated due to a drop in reactor vessel level.

Which one of the following would result in a RCIC turbine trip and the Trip Throttle Valve, FCV 71-9, remaining open? (Assume no operator action.)

- A. Electrical overspeed.
- B. High Turbine exhaust pressure.
- C. Manual Trip.
- ✓D. High Reactor Vessel Water Level.

REF: OPL171.040, Rev. 14, Page 13.

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

- a. Electrical overspeed trips the throttle valve, but can be reset from the control room.
- b. High exhaust pressure is sensed by a pressure switch which electrically trips the throttle valve.
- c. Manual trip trips the throttle valve.
- d. (correct) The steam supply valve FCV-71-8 isolate on high RPV level.

Following a reactor feed pump trip from 100% thermal power, which one of the following reactor recirculation runback circuits seals in and must be manually reset?

- ✓A. 75% runback.
- B. Core flow runback.
- C. Mid power runback.
- D. Upper power runback.

REF: OPL171.007, Rev. 18, Page 30-37 Obj. V.B.17  
Obj.V.C.6

**JMP**

SOURCE: NEW

JUSTIFICATION

A. (Correct) will initiate an automatic runback of recirc pump speed if any individual RFP flow is < 19% AND RPV water level drops to the low level alarm setpoint (+27") The purpose of this limiter is to automatically reduce reactor power to a value within the capacity of the remaining feedwater pumps

B. is enabled (blue light lit) when total core flow is greater than 58%(approx. 60 Mlbm/hr). When manually initiated, the speed setpoint will lower until total core flow is » 58% or until rpm lowers to 575. The runback can be stopped when it is in progress by depressing the pushbutton a second time, or if an automatic runback condition occurs, the manual runback will stop./

C. is enabled (blue light lit) when total steam flow is greater than ≈10.9 Mlbm/hr (≈78.5%). When manually initiated, the speed setpoint will lower until total steam flow is less than the setpoint or until rpm lowers to 575. The runback can be stopped when it is in progress by depressing the pushbutton a second time, or if an automatic runback condition occurs, the manual runback will stop.

D. is enabled (blue light lit) when total steam flow is greater than ≈ 12.7 Mlbm/hr(≈ 90%). The steam flow signal is received from the Feedwater Level Control System. When manually initiated, the speed setpoint will lower until total steam flow is less than the setpoint or until rpm lowers to 700. The runback can be stopped when it is in progress by depressing the pushbutton a second time, or if an automatic runback condition occurs, the manual runback will stop

During a LOCA on Unit 3, it is determined that the drywell is in the action required region of the drywell spray initiation limit curve.

Which one of the following describes the proper use of drywell sprays in this condition?

Drywell sprays must:

- A. be secured, if currently in use, to prevent exceeding the drywell/suppression chamber differential pressure limits.
- B. remain in service, if currently in use, until drywell/suppression chamber differential pressure reaches -0.5 psid.
- C. NOT be placed in service, if NOT currently in use, to prevent dropping below the drywell high pressure scram setpoint. If in use, drywell sprays may remain in use.
- ✓D. NOT be placed in service, if NOT currently in use, to prevent exceeding drywell/suppression chamber differential pressure limits. If in use, drywell sprays may remain in use.

REF: EOI Program Manual, EOIPM Section 2-VID, Rev 2, Drywell Spray Worksheet 3, page 2 of 11, section 1.1 and page 11 of 11, Figure 10.2 (DWSIL Curve)  
2-EOI-2 Flowchart, Rev. 7

SOURCE: 1996 SRO EXAM #63

Change "UNSAFE" TO "ACTION REQUIRED" JMP

JUSTIFICATION

- a. If the candidate does not understand that the DWSIL curve is an initiation limit, this becomes a plausible distractor.
- b. 0.5 psid is a TS operating limit for the vacuum breakers implying a limit of 0.5 psid between the drywell and torus.
- c. The drywell high pressure scram setpoint is an interlock associated with initiating drywell/torus spray, but is not of concern during a LOCA with drywell pressure at 12 psig and increasing.
- d. (Correct)

Following a LOCA, the unit operator (board) notices that drywell pressure peaked at 52 psig and drywell temperature peaked at 290 degrees.

Which one of the following describes the conclusions that can be made from this information?

- A. Both drywell design pressure and temperature were exceeded.
- B. Only drywell design pressure was exceeded.
- ✓C. Only drywell design temperature was exceeded.
- D. Neither the drywell design pressure nor temperature were exceeded.

REF: OPL171.016, Rev. 10, Page 13; Enabling Objective B.2.

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

This question challenges the candidate's ability to remember when and if the drywell was outside of its design pressure and temperature, given the actuals. The choices are self-explanatory.

Following a LOCA the following Containment characteristics exist.

Steam is condensing in the drywell and drywell pressure is steadily lowering and is approaching the external design pressure. Which one of the following has caused these conditions?

- A. CS System Suction valve from CST failed open with the suction MOV from Torus open.
- B. CS System Suction valve from CST failed open with the CS test valve open.
- C. The torus-drywell vacuum breakers have failed open.
- ✓D. The torus-drywell vacuum breakers have failed closed.

REF: 2-AOI-1-1, Rev. 0021, OPL171.016, Rev. 11, Page 28,29 & 19

SOURCE: NEW

JUSTIFICATION

- A. This will only add water to the suppression pool (obj V.B.12)
- B. This will add water to the suppression pool
- C. Steam flows from drywell to torus through vacuum breakers, equalizing pressure between the two immediately. Steam is not forced through the water of the suppression pool, so now it will operate only as a surface condenser. As a result, drywell pressure will probably exceed the design pressure. (Obj V.B.6 and V.C.5)
- D. Correct answer Steam in drywell will condense and drywell pressure will lower. With vacuum breakers failed shut, pressure cannot equalize between the suppression pool and the drywell. With this condition drywell pressure may lower such that external design pressure is reached. (Obj V.B.6 and V.C.5)

The following conditions exist:

- Reactor power is 90%.
- A control rod initially at position 24 begins to drift out.

Per 2-AOI-85-6, which one of the following is the required IMMEDIATE action?

- ✓A. Select and insert the control rod to position 24.
- B. Insert and maintain the control rod at position 00.
- C. Reduce core flow to prevent a power increase.
- D. Manually scram the reactor.

REF: 2-AOI-85-6, Rev. 13, Para. 4.1

SOURCE: 1996 BFNP SRO EXAM #84

JMP

JUSTIFICATION

- a. (Correct)
- b. Subsequent action if rod will not latch but responds to EMERG ROD IN signal, and persists drifting out.
- c. Subsequent action if the rod does not respond to INSERT signal.
- d. Subsequent action if power cannot be satisfactorily controlled with core flow.

Unit 2 is operating at 100% power. The Unit Operator notes that three turbine stop valves have drifted to 80% open. No rod movement has occurred. You observe that the individual blue lights for each control rod on the full core display are illuminated. Also, the eight scram solenoid group indicating lights are extinguished.

Which one of the following describes the status of the RPS?

- A. Both scram pilot valves have failed to open on all HCUs.
- B. Only one RPS bus has deenergized.
- C. Scram inlet and outlet valves have failed to open on all HCUs.
- ✓D. A hydraulic lock has occurred on the scram discharge volume.

REF: OPL171.005, Rev. 8, Page 25, Objective 16

OPL171.028, Rev. 7, Page 10

SOURCE: BANK QUESTION

JUSTIFICATION

- a.c. The pilots had to open, because the scram inlet and outlet valves are open as indicated by the blue lights.
- b. All eight RPS lights are out, therefore both busses are de-energized.
- d. (Correct)

Unit 3 is operating at full power with 3A and 3B RBCCW pumps running. 3B RBCCW pump trips due to an operator error. Discharge header pressure drops to 60 psig before the pump is restarted.

Which one of the following describes the response of FCV-70-48 (non-essential equipment loop Isolation valve) to the above condition?

- A. FCV-70-48 will close and isolate the non-essential equipment loop. Operator action will be required to reopen the valve, which can ONLY be operated from the MCR.
- B. FCV-70-48 will close and isolate the non-essential equipment loop. Operator action will be required to reopen the valve, which can ONLY be operated locally.
- C. FCV-70-48 will close and isolate the non-essential equipment loop. Operator action will be required to reopen the valve from the MCR or locally.
- ✓D. FCV-70-48 will not close and the non-essential equipment loop will not isolate.

REF: OPL171.047, Rev. 11, page 11 of 31 objective V.B.4

SOURCE: NEW QUESTION

JMP changed supply header pressure to discharge header

JUSTIFICATION

- a. The valve will not close. Operator action is only required after automatic closure
- b. The valve will not close. Operator action is only required after automatic closure
- c. The valve will not close. Operator action is only required after automatic closure
- d. (correct) The header pressure does not reach the setpoint for non-essential loop isolation.

Which one of the following correctly describes the power supplies to the motors for Control Air Compressors "A" through "D"?

- A. "A" and "B" are fed from 480V Common Board #1, and "C" and "D" from 480V Shutdown Boards 1B and 2B respectively.
- B. "A" and "D" are fed from 480V Common Board #1, and "B" and "C" from 480V Shutdown Boards 1B and 2B respectively.
- C. "A" is fed from 480V Shutdown Board 2A, "B" from 480V Common Board #3, "C" from 480V Shutdown Board 1A, and "D" from 480V Shutdown Board 2B.
- ✓D. "A" is fed from 480V Shutdown Board 1A, "D" from 480V Shutdown Board 2A, and "B" and "C" from 480V Common Board #1.

REF: OPL171.054, Rev. 6, OE V.B.1.

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

The distractors are set up with an assortment of possible power sources that are incorrect. The objective is to discriminate between those candidates who know the correct power sources and those who do not.

During calibration of Unit 2 temperature switches on the RWCU System, 2-TIS-69-11A (NonRegenerative Heat Exchanger outlet temperature switch) was inadvertently actuated.

Which one of the following will be the response of the RWCU System?

- A. The system will isolate; the RWCU pumps will remain running for 30 seconds and then trip on low flow.
- B. The system will isolate; the RWCU pumps will receive a trip signal on NRHX outlet temperature >140 degrees.
- ✓C. The system will isolate; the pumps will trip upon isolation valve closure.
- D. The system will isolate; the pumps will trip on low flow (following a 7 second time delay).

REF: OPL171.013, Rev. 8; 2-AOI-64-2a, Rev. 0017

SOURCE: BANK QUESTION

JUSTIFICATION

- a. The pumps would trip in 30 seconds were it not for the closure interlock between the pumps and FCVs 69-1, 2, and 12.
- b. There is only a Group 3 isolation initiated by the pressure switch at >140°F.
- c. (Correct)
- d. TDCN 40287 changed the 7 second time delay to 30 seconds for Unit 2 only.

NOTE: NOT SURE IF THIS K/A FITS?

Unit 2 is in Cold Shutdown for a short mid-cycle outage, when a complete loss of Shutdown Cooling occurs. Plant conditions are as follows:

- Reactor Recirculation pumps are out of service
- Reactor recirculation suction temperature is 140 degrees and slowly decreasing
- Shutdown cooling flow cannot be re-established in a timely manner

The Shift Manager has directed that RPV level be adjusted.

Which one of the following is the appropriate action and the basis for this action?

- A. Verify level is 60 inches to aid in heat removal by injecting cold water.
- B. Verify level is 80 inches, to provide natural circulation cooling for the reactor.
- C. Verify level is 60 inches, to increase core submergence thereby preventing or minimizing localized fuel channel boiling.
- ✓D. Verify level is 80 inches, to reduce stratification so that more representative temperatures can be obtained to assess bulk reactor coolant temperature.

REF: 2-AOI-74-1, Rev. 0021, LOSS OF SDC, pg 6

SOURCE: MODIFIED QUESTION

we would be at 70-90 inches modified choices to read verify vice raise JMP

JUSTIFICATION

- a. 60 inches is not appropriate per the AOP, though there may be some cooling with stratification.
- b. Though 80 inches facilitates natural circulation, there is not a heat sink that facilitates cooling during a short mid-cycle outage.
- c. 60 is an old number, and it was for the purpose of obtaining better temperatures.
- d. (Correct)

Operators are moving fuel assemblies within the RPV. Water level is 23½ feet above the top of the RPV flange.

Which one of the following describes the basis for a minimum RPV water level requirement during fuel handling operations according to ITS 3.9.6?

- ✓A. Sufficient water is necessary to retain iodine fission product activity in the water in the event of a fuel handling accident.
- B. An adequate water shield thickness is necessary to protect refueling personnel from excessive radiation exposure as they perform the refueling process.
- C. To keep the vessel cavity walls and other contaminated surfaces wet and under water as much as possible during the refueling process to minimize airborne contamination.
- D. To provide radiation protection to refueling personnel in the event of an inadvertent criticality event while moving fuel assemblies and control rods.

REF: BFN Unit 2 Basis B 3.9.6, Rev. 0  
BFN ITS LCO 3.9.6, Amendment No. 253

SOURCE: NEW QUESTION

JMP

JUSTIFICATION

a. (Correct)

b,c,d. While the other three choices are true statements, they are not the basis of the 22-foot requirement.

Which one of the following describes the basis for the Drywell Spray Initiation Limit Curve?

- A. To prevent unstable steam condensation in the MSR/V tailpipes from exerting excessive cyclic hydraulic loads on suppression pool structure.
- ✓B. To ensure that the torus to drywell delta P limit is maintained.
- C. To prevent chugging in the drywell to torus downcomers from exerting excessive cyclic hydraulic loads on the suppression pool structure.
- D. To ensure adequate noncondensibles remain in the drywell to prevent the torus to drywell vacuum breakers from opening during drywell steam condensation.

REF: EOI PM, Section 0-VD, Rev 0, p.75 of 244

SOURCE: BANK QUESTION

changed torus to RB vac bkr to DW to torus vac bkr JMP

JUSTIFICATION

- a. Conceivably, the colder water spraying on the MSR/V discharge piping could cause a water hammer effect due to steam condensing. The MSR/V vacuum breakers would have to fail closed for this to credibly happen.
- b. (Correct)
- c. Some chugging could occur in the downcomers; however, the short length and volumetric capacity prevent this from being a concern.
- d. The partial pressure of noncondensibles in the drywell is considered in the derivation of the DSIL curve, but is not germane to this question.

During a plant transient on Unit 2, a Group I isolation is caused by high temperature. Five control rods fail to insert. Suppression pool level is 12 feet and suppression pool temperature is 94 degrees.

Which one of the following identifies the systems available to help maintain pressure below 1073 psig?

- A. HPCI and RCIC.
- ✓B. RCIC and RWCU.
- C. RWCU and MSL drains.
- D. MSL drains and HPCI.

REF: OPL171.202, Rev. 4, Pg. 9; Obj. V.B.8

OPL171.203, Rev. 3, Pg. 13

EOIPM Section 0-V-C, Page 43 of 127

EOIPM Section 0-V-D, Page 101 of 244

SOURCE: BANK QUESTION

JMP changed radiation to temperature as cause for isolation AND 1043 TO 1073

JUSTIFICATION

- a. HPCI is unavailable because SP level is below the exhaust pipe (12.75').
- b. (Correct)
- c. With the knowledge that a Group I isolation is in effect, the operator should know that this is an MSIV isolation, and as such, the MSL drains are isolated.
- d. Neither HPCI nor the MSL drains are available as discussed above.

82. 295026EK3.04 001/ ROT1G2/ SROT1G1/ 3.7/4.1/ MEMORY/ BANK/ BF00301/ BOTH/ 28

Unit 3 is in an ATWS condition and EOI-2 (Primary Containment Control) has been entered.

Which one of the following describes the reason for injecting SLC prior to suppression pool temperature exceeding 110 degrees?

- A. To ensure that "power chugging" does not occur within the reactor vessel during subsequent use of the MSRVs.
- B. To ensure that hot shutdown boron weight is adequate to maintain the reactor subcritical under all hot shutdown conditions.
- ✓C. To ensure the reactor is subcritical prior to leaving the safe area of the heat capacity temperature limit curve.
- D. To ensure the reactor is subcritical prior to leaving the safe area of the pressure suppression pressure curve.

REF: EOIPM Section 0-V-D, Rev. 0, Page 87 of 244

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

The purpose of this question is to ensure the operators understand that the heat capacity temperature limit may be exceeded if the reactor is allowed to remain critical with the suppression pool average temperature at or above 110 degrees.

83. 295028EA2.03 001/ ROT1G2/ SROT1G2/ 3.7/3.9/ MEMORY/ BANK/ BF00301/ BOTH/ 118

Unit 2 has just experienced a small LOCA. Drywell pressure is 3 psig and increasing. Reactor pressure is 800 psig and steady. The increasing drywell temperature causes the most reliability concerns for which one of the following level instruments?

- A. Emergency Range indicators.
- B. Normal Range indicators.
- C. Post Accident indicators.
- ✓D. Shutdown Flood-up indicator.

REF: EOIPM Section IIB, Rev. 2, Operator Cautions, page 4

OPL171.003, Rev. 12

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

- a,b,c. These three instruments do not have a specified minimum indicated level associated with maximum DW run temperatures. See EOP Caution #1.
- d. (Correct)

During an accident on Unit 2, suppression pool water level reaches 18 feet and continues to increase. Reactor pressure is 300 psig and decreasing.

Which one of the following containment components will NOT properly function at this point?

- A. Normal control room suppression pool level instrumentation.
- ✓B. Suppression Chamber-to-Drywell vacuum breakers.
- C. Suppression chamber spray nozzles.
- D. MSRV tail pipes and/or supports.

REF: EOI PM, SEC 0-V-D, Rev. 0, pg 111

OPL171.203, Rev 3, pg 13, EO B7.b

SOURCE: 1995 BFNP RO EXAM #73, new distractor d  
check eoi handout\*

JUSTIFICATION

- a. Ceases to function at 20 ft.
- b. Correct (Ceases to function at 18 ft)
- c. Ceases to function at 26 ft.
- d. Ceases to function at 20 ft. per Curve 4

Which one of the following is the MINIMUM suppression pool level at which the drywell-to-torus downcomers will be covered?

- A. 9.75 feet.
- B. 10.75 feet.
- ✓C. 11.75 feet.
- D. 12.75 feet.

REF: EOI Program Manual, Section 0VD, Rev. 0, page 105, and Section 3-IV, Rev. 4, Curve 7.

OPL171.203, Rev. 3, Page 13.

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

- a. This is the level at which HPCI turbine exhaust is uncovered.
- b. No significance to this number.
- c. (Correct) See Curve 7.
- d. No significance to this number.

During an ATWS, conditions develop which require Emergency Depressurization.

Which one of the following describes the minimum number of Main Safety Relief Valves (MSRVs) required for Emergency Depressurization, and the basis for this number?

- A. 6 ADS MSRVs, to reliably depressurize the reactor vessel as rapidly as possible, and to uniformly distribute the heat load to the suppression pool.
- B. 6 MSRVs, which, if opened, will remove all decay heat from the core at a pressure sufficiently low that ECCS with the lowest head will be capable of making up for MSRV steam flow.
- C. 4 ADS MSRVs, the least number of the most reliable MSRVs that correspond to a minimum alternate RPV flooding pressure sufficiently low that ECCS with the lowest head will be capable of making up MSRV steam flow.
- ✓D. 4 MSRVs, which, if opened, will remove all decay heat from the core at a pressure sufficiently low that ECCS with the lowest head will be capable of making up MSRV steam flow.

REF: EOIPM Section 0-V-H, Rev. 0, Page 23 of 40

SOURCE: NEW QUESTION

HELP does this question discriminate a competent operator

JUSTIFICATION

- a. 6 ADS MSRVs are preferred because they are of the best quality and should be more reliable; however, 6 is not the minimum.
- b. 6 MSRVs are the second choice, but are not the minimum.
- c. 4 is the minimum, but not necessarily from ADS.
- d. (Correct)

EOI-3, Secondary Containment control is being executed due to an unisolable RCIC steam line break in the reactor building. EOI-3 requires that EOI-1, RPV Control be entered and executed concurrently before which one of the following occur.

- A. Any area temperature reached the maximum normal operating temperature.
- B. Reactor zone ventilation exhaust reached 72 m<sup>3</sup>/hr.
- ✓C. Any area radiation level reached the maximum safe operating level.
- D. At least two area temperature reached the maximum normal operating temperature.

REF: OPL171.039, Rev. 9, Page 12

SOURCE: BANK QUESTION OPL171.204 010

JMP

The plant is operating at full power. The Reactor Building assistant unit operator reports there is about 6 inches of water accumulating on the floor in the RHR Room, SE area, and it appears to be from floor drains backing up.

Which one of the following is the first action the control room operators should taken in accordance with the EOIs?

- ✓A. Operate all available sump pumps to maintain the sump water level to less than 66 inches.
- B. Enter EOI-1 and scram the reactor before RHR Room water level reaches 20 inches.
- C. Isolate all systems discharging into the RHR Room, except those required for safe shutdown of the reactor.
- D. Initiate a controlled shutdown of the reactor per 2-GOI-10012A.

REF: EOI-1, Rev. 4; EOI-3, Rev. 6  
OPL171.204, Rev. 3, Page 10, EO V-B-3  
EOIPM, Section 0-V-E, Page 37+  
SOURCE: BANK QUESTION

JMP

JUSTIFICATION

- a. (Correct)
- b. This is only applicable if a primary system is discharging into the room and they cannot keep the room water level below 20 inches.
- c. By procedure, the operators are required to establish that they cannot keep the sump level below 66 inches.
- d. By procedure, the operators are required to determine that a primary system is not discharging into the area, and two pump rooms cannot be maintained below 20 inches water level.

The following conditions exist:

An ATWS has occurred.  
Reactor water level is being lowered in accordance with C-5, Level/Power Control.  
SLC has been initiated.

Which one of the following conditions would require RPV level to be restored to normal?

- ✓A. SLC Tank level drops to 41%.
- B. SLC Tank level drops to 48%.
- C. Reactor power drops below 5%.
- D. All MSRVs remain closed with drywell pressure below 2.4 psig.

REF: C5, Rev. 7, Step, C5-17

SOURCE: 1996 BFNP RO EXAM #84

2c5 to C5 CHANGED VALUES OF SLC TANK LEVEL DUE TO REV. CHANGED ANSWER  
AND REF JMP

JUSTIFICATION

- a. CORRECT
- b. 43% is the SLC tank level at which C-5 restores water level.
- c. 5% power and above is one criterion to initiate SLC.
- d. If all MSRVs remain closed and drywell pressure is below 2.4 psig, one criterion is satisfied to get to the point of restoring level.

Given the following switch positions for the control air compressors.

- A - second lead
- B - third lead
- C- standby
- D- standby
- G-lead

- A loss of Common Board 1 occurs
- A small system leak causes control air pressure to drop to drop to 94 psig

Which one of the following describes all of expected control air compressors expected to be in operation?

- A. G will be running at full load. A will be running at half load
- B. G will be running at full load. B will be running at half load.
- C. A and G will be running at full load. C will be running at half load.
- ✓D. A, and G will be running at full load. D will be running at half load.

REF: OPL171.054, Rev. 6.

SOURCE: MODIFIED QUESTION

JMP

JUSTIFICATION

B and C are powered from #1 Common Board

First pump comes on at half load at 97.5

First pump goes to full load at 96

Second pump goes to half load at 94.5

Due to an accident condition, the following plant parameters exist:

- Drywell Hydrogen 5.4%
- Drywell Oxygen 6.0%
- Suppression Chamber Hydrogen 4.0%
- Suppression Chamber Oxygen 5.5%
- Suppression Pool Level 17 feet
- Drywell temperature 250 degrees
- Drywell Pressure 18 psig
- RPV Level +30 inches
- Torus and Drywell Sprays are in service

Which one of the following actions is required?  
(Reference attached)

- A. Perform Appendix 9 to determine and monitor Suppression Pool water level.
- B. Stop Drywell Sprays.
- ✓C. Perform Appendix 14A, Nitrogen Make-up, to control containment hydrogen and oxygen levels.
- D. Perform Emergency Depressurization.

REF: OPL171.203, Rev. 3, Page 15. Obj. V.B.14

Dwg. 2-EOI-2, Rev. 4, Page 2 of 2.

EOIPM Section 0-V-D, PC/H, Rev. 0

SOURCE: BANK QUESTION

REPLACE JMP

JUSTIFICATION

a.EOI-2 initiates CAD to the DW only.

b.EOI-2 initiates CAD to the DW only and sprays the SP.

c.(Correct)

d.Emergency Depress is an incorrect option under the existing conditions, per EOI-2.

NOTE; NOT EXACTLY SURE WHAT THE SUPPLIED REFERENCES SHOULD BE?

92. G2.1.1 001/ ROT3/ SROT3/ 3.7/3.8/ MEMORY/ NEW/ BF00301/ BOTH/ 145

Which one of the following positions represents the minimum level of approval required to make a currently approved operator aid permanent?

- A. Site Engineering Labeling Coordinator.
- B. Shift Manager.
- ✓C. Operations Superintendent.
- D. Plant Manager.

REF: SSP-12.53, Revision 17, Section 3.10.2, page 11 of 38

SOURCE: NEW QUESTION

JMP IS THIS DISCRIMINATING A COMPETENT OPERATOR

- A. requires coordination of labeling, but not approval
- B. Can approve the aid, but not make it permanent.
- C. Correct
- D. This is not the minimum level

93. G2.1.29 001/ ROT3/ SROT3/ 3.4/3.3/ MEMORY/ BANK/ BF00301/ BOTH/ 92

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

- A. Remove the locking device, carefully close the valve counting the number of turns, then reopen the valve the same number of turns. Reapply a locking device to the valve and record the as left position.
- B. Place "NA" in the verification signature space for this valve. Locked and/or throttled valves cannot be independently verified without disturbing the position.
- C. Since the valve is already locked, the valve may be assumed to be throttled in the correct position. The verification may be signed off as complete.
- ✓D. Independent verification of this valve cannot be performed. Second party verification must be performed during initial valve positioning.

REF: OPL171.071, Rev. 10, EO B.20

SPP-10.3, Rev. 0, Para 3.3.1.E

SOURCE: BANK QUESTION

JMP Changed the reference

JUSTIFICATION

- a. Incorrect because the action becomes an initial positioning again.
- b. "NA" is contrary to the SSP. Second party verification is required.
- c. Verification by assumption is incorrect.
- d. (Correct)

Unit 2 is in a refueling outage and RHR Pump 2A is tagged to replace the pump seal. Electrical Maintenance has determined that the motor must be replaced on the pump minimum flow valve which is part of the RHR Pump 2A clearance boundary.

Which one of the following statements describes how this additional work affects the clearance boundary?

- A. The valve operator must have a collar installed to prevent motion before the clearance boundary can be modified.
- B. The Shift Manager Representative can modify the clearance boundary with concurrence from the Maintenance Shift Supervisor.
- C. All work under the clearance must be stopped while the clearance is modified and reissued.
- ✓D. An operator must be assigned to independently verify component positioning and tag replacement.

REF: OPL171.086, Rev. 8, Page 9

SSP-12.3, Rev. 26, Para 3.2.5.(9)

SOURCE: BANK QUESTION

Help\*

JUSTIFICATION

- a. Not a requirement of SSP-12.3
- b. The SMR reviews and approves proposed changes, but cannot unilaterally modify the clearance with or without the Maint. Supv. concurrence. The process must be followed.
- c. Work can continue in unaffected areas of the existing clearance.
- d. (Correct)

95. G2.2.3 001/ ROT3/ SROT3/ 3.1/3.3/ MEMORY/ NEW/ BF00301/ BOTH/ 93

Which one of the following choices correctly describes the response of the Unit 2 and Unit 3 reactor recirculation pump (RRP) speed control to an increase in core differential pressure?

- ✓A. Both Unit 2 RRP and Unit 3 will automatically reposition the scoop tube to bring speed back to the setpoint.
- B. Unit 2 will automatically reposition the scoop tube to bring speed back to the setpoint but on Unit 3 the RRP speed must be manually adjusted by the operator.
- C. On Unit 2 the RRP speed must be manually adjusted by the operator but Unit 3 will automatically reposition the scoop tube to bring speed back to the setpoint.
- D. Both Unit 2 and Unit 3 must be manually adjusted by the operator to bring speed back to the setpoint.

REF: OPL171.007, Rev. 15, Page 36

OPL171R007, Rev. 0, Page 11

SOURCE: NEW QUESTION

replace question\*

JUSTIFICATION

Unit 2 and 3 speed feedback are enabled.

96. G2.2.30 001/ ROT3/ SROT3/ 3.5/3.3/ C/A/ BANK/ BF00301/ BOTH/ 96

While off-loading fuel bundles from the reactor, fuel pool level begins to decrease uncontrollably.

Which one of the following describes a method available from the control room to add water to the fuel pool?

- A. Align fuel pool cooling and cleanup heat exchanger RBCCW supply to the fuel pool to maintain level.
- ✓B. Start a condensate pump and inject to the reactor vessel to maintain fuel pool level.
- C. Open emergency makeup supply valve from EECW 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.

REF: 2-AOI-78-1, Rev 0014, Para 4.2.2.3

2-ARP-9-4C, Rev. 0012, Page 2.

2-OI-78, Rev. 0040, Page 38

SOURCE: BANK QUESTION

JMP

JUSTIFICATION

a,c,d. These options are partially done from outside the control room.

b.

(Correct) Since the fuel pool to RPV gates are open, this is the simplest method, and can be done from the control room.

Given the following conditions at a work site.

Airborne activity: 3 DAC

Radiation level: 40 mr/hr

Radiation level with shielding: 10 mr/hr

Time to place shielding: 15 minutes

Time to conduct task with respirator: 1 hour

Time to conduct task without respirator: 30 minutes

Assume the following:

- the airborne dose with a respirator will be zero.
- a dose rate of 40 mr/hr will be received while placing the shielding.
- all tasks will be performed by one worker.
- shielding can be placed in 15 minutes with or without a respirator.

Which one of the following would result in the lowest whole body dose?

- A. Place shielding while wearing respirator and conduct task with respirator.
- ✓B. Place shielding while wearing respirator and conduct task without respirator.
- C. Conduct task with respirator and without shielding.
- D. Conduct task without respirator or shielding.

REF: 10 CFR 20

SOURCE: NEW QUESTION

HELP\*

JUSTIFICATION

$3 \text{ DAC} \times 2.5 \text{ mr/DAC} \times 0.5 \text{ hours} = 3.75 \text{ mr}$

- a. 10 mr placing shielding, 10 mr conducting task, zero airborne = 20 mr
- b. 10 mr placing shielding, 5 mr conducting task, 3.75 mr airborne = 18.75 mr
- c. 40 mr conducting task, zero airborne = 40 mr
- d. 20 mr conducting task, 3.75 mr airborne = 23.75 mr

Unit 2 startup is in progress with the reactor at 920 psig and 6% power. The Reactor Mode Switch is in STARTUP. Primary containment is being inerted with the purge filter fan in service.

Which one of the following statements is correct concerning inerting in this plant condition?

- A. Turning the purge filter fan off will automatically close the drywell and suppression chamber exhaust valves.
- ✓B. Placing the Reactor Mode Switch in RUN will automatically close all valves required for inerting with the purge filter fan unless Bypass switches are placed in BYPASS on panel 9-3.
- C. Placing the Reactor Mode Switch in RUN will give a Group 6 PCIS unless Bypass switches are placed in BYPASS on panel 9-3.
- D. Placing the Reactor Mode Switch in RUN will automatically close the drywell and suppression chamber exhaust isolation valves unless the Drywell/Suppression Chamber Train A/B Vent keylock switches are positioned to DRYWELL.

REF: OPL171.032, Rev. 7.

SOURCE: BANK QUESTION

JMP

EOI-1, RPV Control, is being executed following a scram due to a turbine trip at high power. During the initial phase of the transient, one of the SRV's stuck open. Suppression pool temperature has now (approximately 7 minutes after the turbine trip) reached 96 degrees.

Which one of the following states the Unit Supervisor's procedural response to this condition?

- A. Re-enter EOI-1 at the beginning.
- B. Re-enter EOI-1 at the beginning and simultaneously enter EOI-2.
- ✓C. Continue in EOI-1 and simultaneously enter EOI-2.
- D. Continue in EOI-1.

REF: OPL171.201, Rev. 4, EO B.4

SOURCE: BANK QUESTION

JMP TYPOS EOI1 TO EOI-1

JUSTIFICATION

- a. EOI-1 doesn't direct the operator to reenter EOI-1.
- b. Same as (a) except entering EOI-2 is correct at SP temp >95 degrees.
- c. (Correct)
- d. Continuing in EOI-1 is correct; however EOI-2 must be entered.

During a plant startup on Unit 3, reactor power was passing through 80% RTP when there was a loss of power to the control room annunciators. Thirty minutes have passed, and power has not yet been restored. SPDS and ICS are available.

Which one of the following describes the required control room operators' response?

- A. Commence a reactor shutdown, dispatch personnel for local monitoring of equipment.
- B. Scram the reactor manually, dispatch personnel to monitor and manipulate plant equipment in response to the scram.
- ✓C. Suspend the power ascension and avoid any system manipulation, dispatch personnel for local monitoring of equipment.
- D. Expedite maintenance activities to restore power while slowly continuing the ascension to full power, monitor equipment with SPDS and ICS.

REF: 0-AOI-57-8, Rev. 0007, 4.2 (Caution)

EPIP-1, Rev. 21, Section 8.0

SOURCE: NEW QUESTION

JMP

JUSTIFICATION

- a. d. The AOI requires avoidance of system manipulation
- b. Scramming the reactor places the plant in a major transient, which should be avoided
- c. (Correct)

**ENCLOSURE 3**

Test Name: SRO.TST

Test Date: Thursday, June 29, 2000

Question ID		Type	Pts	Answer(s)									
				0	1	2	3	4	5	6	7	8	9
1: 1	202002A1.05	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 2	215004A2.02	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 3	234000A3.02	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 4	261000K6.01	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 5	262001G2.1.1	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 6	295003AA1.01	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 7	295014G2.1.7	002 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 8	295016AA2.06	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 9	295017AA1.03	001 MC-SR	1	<i>ms</i> A	B	C	D	A	B	C	D	A	B
1: 10	295023AA1.05	001 MC-SR	1	<i>Boily</i> C	D	A	B	C	D	A	B	C	D
1: 11	295028EK1.01	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 12	295031EA1.08	002 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 13	295031EK2.01	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 14	295033G2.3.10	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 15	295038EK1.02	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 16	500000EK1.01	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 17	600000AA2.15	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 18	G2.1.10	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 19	G2.1.26	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 20	G2.1.6	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 21	G2.3.11	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 22	G2.4.1	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 23	G2.4.18	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 24	G2.4.30	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 25	G2.4.44	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 26	OPL171.148	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 27	201001K3.03	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 28	201006A1.02	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 29	202001K6.01	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 30	202002A4.09	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 31	203000K4.06	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 32	204000A3.04	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 33	205000K6.04	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 34	206000K2.01	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 35	209001K4.08	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 36	211000K2.02	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 37	212000K6.05	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 38	215001G2.1.32	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 39	215001K4.01	002 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 40	215003A4.03	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 41	215003K1.06	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 42	215005K6.01	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 43	216000G2.1.28	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 44	217000A2.19	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 45	218000K2.01	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D

Test Name: SRO.TST

Test Date: Thursday, June 29, 2000

Question ID	Type	Pts	Answer(s)									
			0	1	2	3	4	5	6	7	8	9
1: 46 223002K3.01	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 47 226001A4.03	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 48 233000A3.02	001 MC-SR	1	<i>Don't</i> A	B	C	D	A	B	C	D	A	B
1: 49 239002K4.03	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 50 239002K5.04	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 51 241000K3.02	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 52 256000K5.10	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 53 259001A1.02	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 54 259002A3.06	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 55 262001K1.01	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 56 262001K4.03	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
<del>1: 57 264000G2.1.32</del>	<del>001 MC-SR</del>	<del>1</del>	<del>C</del>	<del>D</del>	<del>A</del>	<del>B</del>	<del>C</del>	<del>D</del>	<del>A</del>	<del>B</del>	<del>C</del>	<del>D</del>
1: 58 272000K3.04	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 59 286000A1.05	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 60 290003K1.01	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 61 295002AA1.06	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 62 295003AK2.02	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 63 295003AK3.06	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 64 295004AK2.03	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 65 295005AA2.05	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 66 295006AA2.06	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 67 295007AK2.02	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 68 295008AK2.06	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 69 295009AK3.01	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 70 295010AK2.02	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 71 295012AA2.01	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 72 295013AA1.02	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 73 295014AA1.03	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 74 295015AK2.01	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 75 295018AK3.01	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 76 295019AA1.03	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 77 295020G2.4.4	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 78 295021AK2.01	001 MC-SR	1	<i>Don't</i> D	A	B	C	D	A	B	C	D	A
1: 79 295023AA2.02	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 80 295024EK1.01	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 81 295025EA1.05	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 82 295026EK3.04	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 83 295028EA2.03	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 84 295029EK2.05	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 85 295030EK1.01	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 86 295031EK3.05	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 87 295032G2.4.4	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 88 295036EK3.03	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 89 295037G2.4.6	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 90 300000K2.01	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A

Test Name: RO.TST

Test Date: Thursday, June 29, 2000

		Question ID	Type	Pts	Answer(s)										
					0	1	2	3	4	5	6	7	8	9	
1:	1	201002A2.04	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	2	201003K4.02	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	3	202002K3.05	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	4	206000A4.01	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	5	211000A3.05	001	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	6	219000A4.14	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	7	223001A1.02	001	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	8	223001K1.04	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	9	223002A1.02	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	10	230000A1.03	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	11	245000K4.09	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	12	261000A2.13	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	13	262002K3.01	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	14	263000K2.01	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	15	271000G2.1.7	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	16	288000A3.01	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	17	295001G2.4.11	001	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	18	295009G2.1.31	001	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	19	295022AA2.02	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	20	295034EK3.01	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	21	600000AK3.04	001	MC-SR	1	G	D	A	B	C	D	A	B	C	D
1:	22	G2.1.20	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	23	G2.2.22	001	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	24	G2.3.1	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	25	G2.4.49	001	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	26	0PL171.148	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	27	201001K3.03	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	28	201006A1.02	001	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	29	202001K6.01	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	30	202002A4.09	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	31	203000K4.06	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	32	204000A3.04	001	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	33	205000K6.04	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	34	206000K2.01	001	MC-SR	1	G	D	A	B	C	D	A	B	C	D
1:	35	209001K4.08	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	36	211000K2.02	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D
1:	37	212000K6.05	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	38	215001G2.1.32	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	39	215001K4.01	002	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	40	215003A4.03	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	41	215003K1.06	001	MC-SR	1	A	B	C	D	A	B	C	D	A	B
1:	42	215005K6.01	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	43	216000G2.1.28	001	MC-SR	1	D	A	B	C	D	A	B	C	D	A
1:	44	217000A2.19	001	MC-SR	1	B	C	D	A	B	C	D	A	B	C
1:	45	218000K2.01	001	MC-SR	1	C	D	A	B	C	D	A	B	C	D

Test Name: RO.TST

Test Date: Thursday, June 29, 2000

Question ID		Type	Pts	Answer(s)									
				0	1	2	3	4	5	6	7	8	9
1: 46	223002K3.01	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 47	226001A4.03	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 48	233000A3.02	001 MC-SR	1	<sup>no</sup> <del>B</del> A	B	C	D	A	B	C	D	A	B
1: 49	239002K4.03	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 50	239002K5.04	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 51	241000K3.02	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 52	256000K5.10	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 53	259001A1.02	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 54	259002A3.06	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 55	262001K1.01	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 56	262001K4.03	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 57	<del>264000G2.1.32 Deleted Ass</del>	<del>001 MC-SR</del>	<del>1</del>	<del>C</del>	<del>D</del>	<del>A</del>	<del>B</del>	<del>C</del>	<del>D</del>	<del>A</del>	<del>B</del>	<del>C</del>	<del>D</del>
1: 58	272000K3.04	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 59	286000A1.05	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 60	290003K1.01	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 61	295002AA1.06	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 62	295003AK2.02	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 63	295003AK3.06	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 64	295004AK2.03	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 65	295005AA2.05	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 66	295006AA2.06	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 67	295007AK2.02	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 68	295008AK2.06	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 69	295009AK3.01	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 70	295010AK2.02	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 71	295012AA2.01	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 72	295013AA1.02	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 73	295014AA1.03	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 74	295015AK2.01	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 75	295018AK3.01	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 76	295019AA1.03	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 77	295020G2.4.4	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 78	295021AK2.01	001 MC-SR	1	<del>B</del> D	A	B	C	D	A	B	C	D	A
1: 79	295023AA2.02	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 80	295024EK1.01	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 81	295025EA1.05	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 82	295026EK3.04	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 83	295028EA2.03	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 84	295029EK2.05	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 85	295030EK1.01	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 86	295031EK3.05	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 87	295032G2.4.4	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 88	295036EK3.03	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 89	295037G2.4.6	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 90	300000K2.01	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A

Test Name: ROTST

Test Date: Thursday, June 29, 2000

Question ID	Type	Pts	Answer(s)									
			0	1	2	3	4	5	6	7	8	9
1: 91 500000EA2.03	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 92 G2.1.1	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 93 G2.1.29	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 94 G2.2.13	001 MC-SR	1	D	A	B	C	D	A	B	C	D	A
1: 95 G2.2.3	001 MC-SR	1	A	B	C	D	A	B	C	D	A	B
1: 96 G2.2.30	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 97 G2.3.10	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 98 G2.3.9	001 MC-SR	1	B	C	D	A	B	C	D	A	B	C
1: 99 G2.4.14	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D
1: 100 G2.4.32	001 MC-SR	1	C	D	A	B	C	D	A	B	C	D

**ENCLOSURE 4**

RO and SRO question # 48 (233000A3.02 001)

Accept 2 correct answers.

“A” is correct as stated in the answer key.

“D” is also correct based on the following information:

Along with powering Fuel Pool Cooling pump 1A (answer “A”), the 480V Shutdown Board 1A also powers RBCCW pump 1A. Loss of RBCCW pump 1A would result in low pressure in the RBCCW system resulting in closure of the 1-FCV-70-48 valve which would isolate the non-essential RBCCW flow path. The Fuel Pool Cooling heat exchangers are located on the non-essential flow path and thus RBCCW would be isolated to the Fuel Pool heat exchangers. (1-FCV-70-48 would not lose power as a result of the loss of 480V Shutdown Board 1A as the valve is fed from the 480V Shutdown Board 1B via the 480V Reactor MOV Board 1B.) These actions are unaffected by Unit 1’s current status (shutdown with fuel removed from the RPV) and the actions described would occur.

Reference OPL171.047 Revision 7, Pages 8,9,11, and TP-2 (attached)

Given the following conditions:

RPV level -190 inches  
RPV Pressure 920 psig  
Drywell pressure 2.95 psig  
A valid LPCI initiation signal is present

Which one of the following are required to be completed in conjunction with **ONLY** placing the RHR Containment Spray select switch XS-74-1-121/129 in Select to open the Containment Spray valves?

- A. Raise RPV level to -180 inches only.
- B. Reduce drywell pressure to 1.6 psig only.
- C. Raise RPV level >-120" AND reset the LPCI initiation signal.
- D. Raise RPV level to >-120 inch reactor level AND reduce drywell pressure to 1.6 psig.

REF: OPL171.044, Rev. 8, Page 34/36, Sections m.(4) / o.(4).  
1996 BFNP RO EXAM #65 modified to give plant conditions

HELP significant work required change to the select switch being operated JMP

JUSTIFICATION

- a.& d. RPV level interlock is bypassed with keylock
- c. LPCI initiation signal is bypassed

A trip of the 480 V Shutdown Board 1A will have which of the following effects on the spent fuel pool system?

- A. Trips Fuel Pool Circulating Pump 1A.
- B. Trips Fuel Pool Circulating Pump 1B.
- C. Isolates the fuel pool water flow to the fuel pool heat exchanger.
- D. Isolates the RBCCW to the fuel pool heat exchangers.

NEW - OPL171.052 003 Rev 5 Obj. V.B.7

Solution:

- A. Correct - Obj. V.B.7.
- B. Pump 1B powered from 480 V Shutdown Board 1B (Similar for Unit 2 & 3)
- C. Trips only one pump, does not isolate flow to the heat exchanger.
- D. Does not effect the Shell side - reactor building closed cooling water (RBCCW)

JMP

INSTRUCTOR  
NOTES

- f. A surge tank is located above the highest point in system. It allows for water expansion within the system and the addition of make up water.

**B. Component Description**

TP-1

**1. RBCCW Pumps**

- a. Each of these horizontal, centrifugal pumps is rated at 1700 gpm. Each provides 50% of the required cooling flow for a unit's loads. Each A and B pump is powered from its unit 480V Shutdown Board, A or B, respectively. The spare pump, 1C, is supplied from 480V Shutdown Board 1B. The spare pump is aligned to be immediately available for Unit 2 use.
- b. No minimum flow line is provided.
- (1) The system is filled with clean demineralized water with sufficient valves open in the system to ensure minimum flow through the pumps, to prevent them from overheating.
- (2) Since the system is filled when the pumps are started, there is sufficient system flow resistance to prevent pump run-out.
- c. Pump and heat exchanger combinations
- (1) An equal number of pumps and heat exchangers is normally used.
- (2) Reason: Two pumps and one heat exchanger would exceed the capacity of the heat exchanger, causing excessive vibration.
- (3) Proper system flow operation is assured by monitoring the system DP (pump discharge minus pump suction).

Done shiftly

INSTRUCTOR  
NOTES

## 2. RBCCW Heat Loads

TP-2

## a. Essential loop loads

Obj. V.B.2

- (1) Drywell control air compressors (2)
- (2) Drywell atmospheric coolers (10)
- (3) Reactor recirculation pump motor coolers (2)
- (4) Reactor recirculation pump seal coolers (2)
- (5) Drywell equipment drain sump heat exchanger (1)

## b. Non-essential loop loads

Obj. V.B.3

- (1) Reactor Building equipment drain sump heat exchanger (1)
- (2) Reactor water cleanup pump seal water coolers and bearing oil coolers (2)
- (3) Nonregenerative heat exchangers (2)
- (4) Fuel pool cooling heat exchangers (2)
- (5) Reactor recirculation pump sample discharge cooler (1)

## 3. RBCCW Heat Exchangers

- a. These provide the means for heat removal from RBCCW by RCW with Emergency Equipment Cooling Water (EECW) as a backup.
- b. They are counter-flow type, 50% capacity each.
  - (1) RBCCW flow makes one pass through the shell side.
  - (2) RCW makes one pass through the tube side.
  - (3) RBCCW flow is in the opposite direction to RCW flow.

INSTRUCTOR  
NOTES

- (2) These MOVs are interlocked to permit alignment of the spare pump to only one unit at a time, to prevent cross-tying of the Unit RBCCW Systems.
  
- b. FCV-70-48 controls the RBCCW supply to the non-essential equipment loop.
  - (1) It automatically closes on:
    - (a) Loss of normal AC power with any U1/2 diesel generator tied to a U1/2 4kV shutdown board as a sole source, in conjunction with an accident signal; i.e., initiation of U1/2 480V Load Shed Logic. Unit 1 accident signal input has been disabled by lifting leads per DCN H2735A.
    - (b) Low RBCCW supply header pressure of 57 psig.
  - (2) The 48 valve requires operator action to re-open after automatic closure.
  - (3) If the NORMAL/EMERGENCY switch for the 48 valve ACB is in EMERGENCY all automatic closure functions are defeated, and the valve must be operated from the breaker control switch.
  - (4) Each unit's 48 valve is powered from that unit's 480V RMOV Board B.
  
- c. FCV-70-47 controls the RBCCW return flow from the essential equipment loop. There are no automatic closing signals for this valve. Each unit's 47 valve is powered from that unit's 480V RMOV Board B.

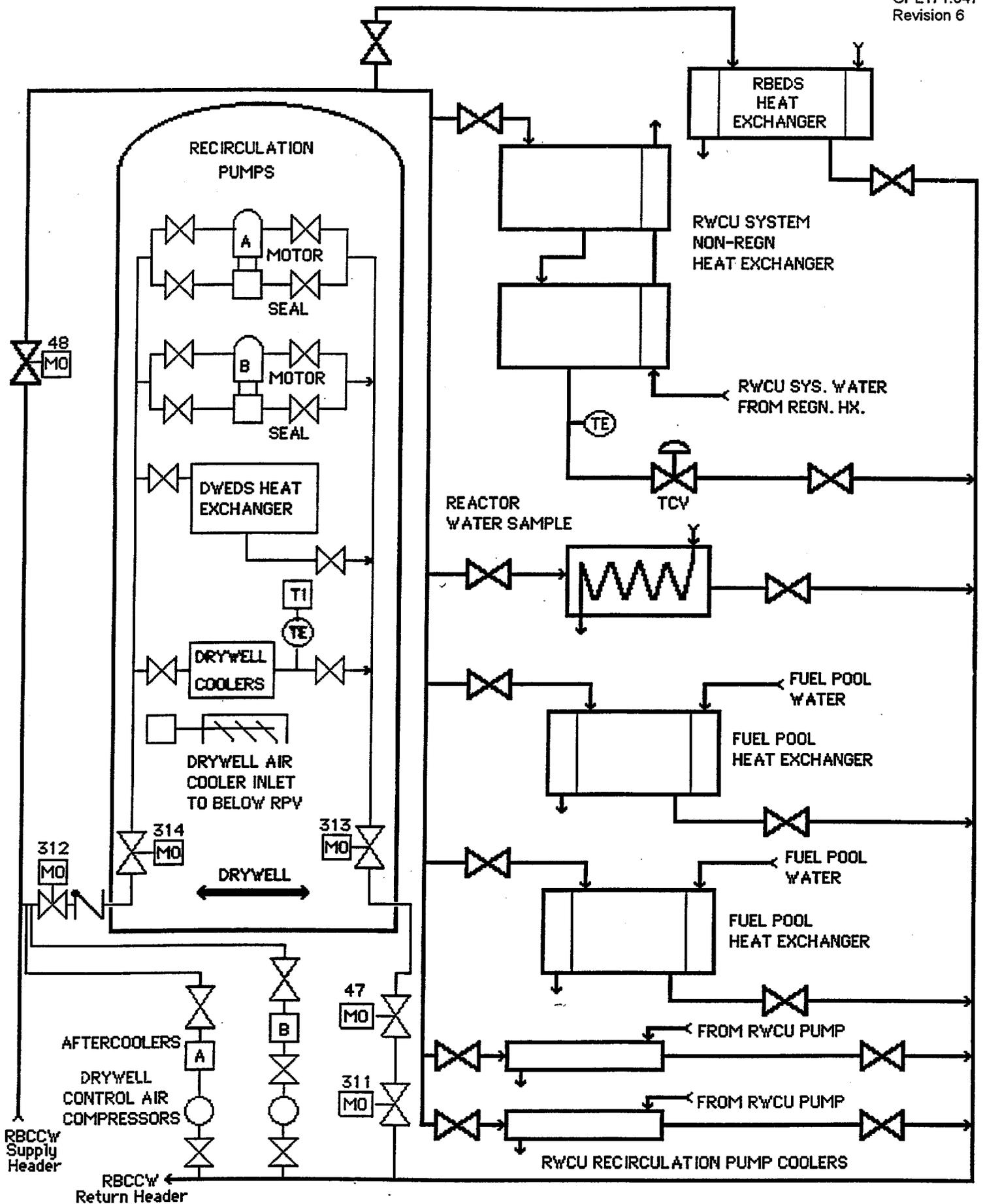
ROTORK valves have open, closed, and mid position. Mid does not indicate a % of valve open or closed.

Obj. V.B.4

Obj. V.C.1

CAS signal 2.45 psig  
DW with 450 psig Rx or  
-122" Level

Unit 3 70-48 closes on  
low pressure as a result  
of the pump trips from  
load shed



TP-2: RBCCW SYSTEM LOADS

RO and SRO question # 78 (295021AK2.01)

Accept both answers

“D” is correct per the answer key

“B” is also correct based on the following information:

Verifying RPV level at 80 inches promotes natural circulation. The water in the core is heated and it rises up through the core and up to the separator then back to the downcomer. This natural circulation causes some of the cool CRD water (~ 80 degrees Fahrenheit at 60 gpm) to be circulated through the core and vessel. If level was not at 80 inches the cooler water would stagnate at the bottom of the vessel and be removed by RWCU without being circulated through the core. Second, when level is at 80 inches there is more metal in contact with the naturally circulating reactor water. More metal exposed to the water will act as a ambient heat sink. Therefore more ambient losses will occur. BFN Tech. Specs include decay heat removal by ambient losses as an alternate cooling method to reduce or maintain temperatures.

Reference Tech. Spec. Bases 3.4.7 A.1,A.2, A.3 page B 3.4-46 (attached)

Unit 2 is in Cold Shutdown for a short mid-cycle outage, when a complete loss of Shutdown Cooling occurs. Plant conditions are as follows:

- Reactor Recirculation pumps are out of service
- Reactor recirculation suction temperature is 140 degrees and slowly decreasing
- Shutdown cooling flow cannot be re-established in a timely manner

The Shift Manager has directed that RPV level be adjusted.

Which one of the following is the appropriate action and the basis for this action?

- A. Verify level is 60 inches to aid in heat removal by injecting cold water.
- B. Verify level is 80 inches, to provide natural circulation cooling for the reactor.
- C. Verify level is 60 inches, to increase core submergence thereby preventing or minimizing localized fuel channel boiling.
- ✓D. Verify level is 80 inches, to reduce stratification so that more representative temperatures can be obtained to assess bulk reactor coolant temperature.

REF: 2-AOI-74-1, Rev. 0021, LOSS OF SDC, pg 6

SOURCE: MODIFIED QUESTION

we would be at 70-90 inches modified choices to read verify vice raise JMP

JUSTIFICATION

- a. 60 inches is not appropriate per the AOP, though there may be some cooling with stratification.
- b. Though 80 inches facilitates natural circulation, there is not a heat sink that facilitates cooling during a short mid-cycle outage.
- c. 60 is an old number, and it was for the purpose of obtaining better temperatures.
- d. (Correct)

**BASES**

---

**ACTIONS**  
(continued)

A.1, A.2, and A.3

With one required RHR shutdown cooling subsystem inoperable for decay heat removal, the inoperable subsystem must be restored to OPERABLE status without delay. In this condition, the remaining OPERABLE subsystem can provide the necessary decay heat removal. The overall reliability is reduced, however, because a single failure in the OPERABLE subsystem could result in reduced RHR shutdown cooling capability. Therefore, an alternate method of decay heat removal must be provided.

With both required RHR shutdown cooling subsystems inoperable, an alternate method of decay heat removal must be provided in addition to that provided for the initial RHR shutdown cooling subsystem inoperability. This re-establishes backup decay heat removal capabilities, similar to the requirements of the LCO. The 1 hour Completion Time is based on the decay heat removal function and the probability of a loss of the available decay heat removal capabilities.

The required cooling capacity of the alternate method should be ensured by verifying (by calculation or demonstration) its capability to maintain or reduce temperature. Decay heat removal by ambient losses can be considered as, or contributing to, the alternate method capability. Alternate methods that can be used include (but are not limited to) the Condensate/Main Steam (feed and bleed) Systems and the adjacent unit(s) RHR SDC pumps and heat exchangers available through the RHR cross tie.

However, due to the potentially reduced reliability of the alternate methods of decay heat removal, it is also required to reduce the reactor coolant temperature to the point where MODE 4 is entered.

(continued)

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RO and SRO Question # 57 ( 264000G2.1.32)

Delete question due to no correct answer

This is a modified BFN HLT exam bank question. The original is attached. The parameters given put the D/G at a power factor greater than 0.8. This is a more desirable condition to be in, however our procedures require a 0.8 power factor. There are no excessive stator or field currents in the conditions given by the question. In order to achieve a power factor of 0.8 one must either raise the voltage regulator setpoint by using the voltage regulator control switch or lower the KW output by using the D/G governor control switch. This would make "A" or "D" correct, however the last portion of these choices (excessive currents) makes "A" and "D" incorrect. "C" is incorrect because changing the governor control switch will not avoid excessive field currents and it will not get the D/G to the desired power factor. "B" is incorrect because it doesn't avoid excessive stator currents and it will not get the D/G to the desired power factor. In general the only thing that would effect field currents is the voltage regulator.

Reference      0-OI-82 page 58 and 85.  
Original question OPL171.038 003

Diesel Generator 3A is synchronized to 4KV Shut Down Board 3A. The instrumentation readings for the diesel generator are as follows:

voltage: 4160 VAC  
frequency = 59.8  
current = 340 amps  
vars = 1600 Kvars  
watts = 2585 KW

What actions are required if the diesel is expected to be operated for an extended period?

- A. The operator must take the voltage regulator control switch to raise to avoid excessive stator currents.
- B. The operator must take the voltage regulator control switch to lower to avoid excessive stator currents.
- ✓C. The operator must take the governor control switch to raise to avoid excessive field current.
- D. The operator must take the governor control switch to lower to avoid excessive field current.

REF: OI-82

OPL171.038 Rev. 9, page 31

Exam bank question OPL171.038 003

SOURCE: NEW QUESTION (MEE)

ATTACHMENT: Need 3-OI-82, Illustration 1 for exam.

JMP

8.1 Parallel with System Operation at Panel 9-23 (Continued)

8.1.9 USE the associated Diesel Generator voltage regulator control switch to match Diesel Generator and System voltages:

Diesel	Instrument Name	Instrument No.	Panel
A	DG A VOLT REGULATOR CONT	0-HS-82-A/2A	0-9-23-7
	GEN SYNC REF VOLTAGE	0-EI-82-AB	
	SYSTEM SYNC REF VOLTAGE	0-EI-211-AB	
B	DG B VOLT REGULATOR CONT	0-HS-82-B/2A	0-9-23-7
	GEN SYNC REF VOLTAGE	0-EI-82-AB	
	SYSTEM SYNC REF VOLTAGE	0-EI-211-AB	
C	DG C VOLT REGULATOR CONT	0-HS-82-C/2A	0-9-23-8
	GEN SYNC REF VOLTAGE	0-EI-82-CD	
	SYSTEM SYNC REF VOLTAGE	0-EI-211-CD	
D	DG D VOLT REGULATOR CONT	0-HS-82-D/2A	0-9-23-8
	GEN SYNC REF VOLTAGE	0-EI-82-CD	
	SYSTEM SYNC REF VOLTAGE	0-EI-211-CD	

8.1.10 **WHEN** the synchroscope needle is approximately 2 minutes on the left hand side of the 12 o'clock position, **THEN**

**PLACE** the associated Diesel Generator breaker handswitch in CLOSE:

Diesel	Handswitch Name	Handswitch No.	Panel
A	DG A BKR 1818	0-HS-211-A/22A	0-9-23-7
B	DG B BKR 1822	0-HS-211-B/4A	0-9-23-7
C	DG C BKR 1812	0-HS-211-C/4A	0-9-23-8
D	DG D BKR 1816	0-HS-211-D/20A	0-9-23-8

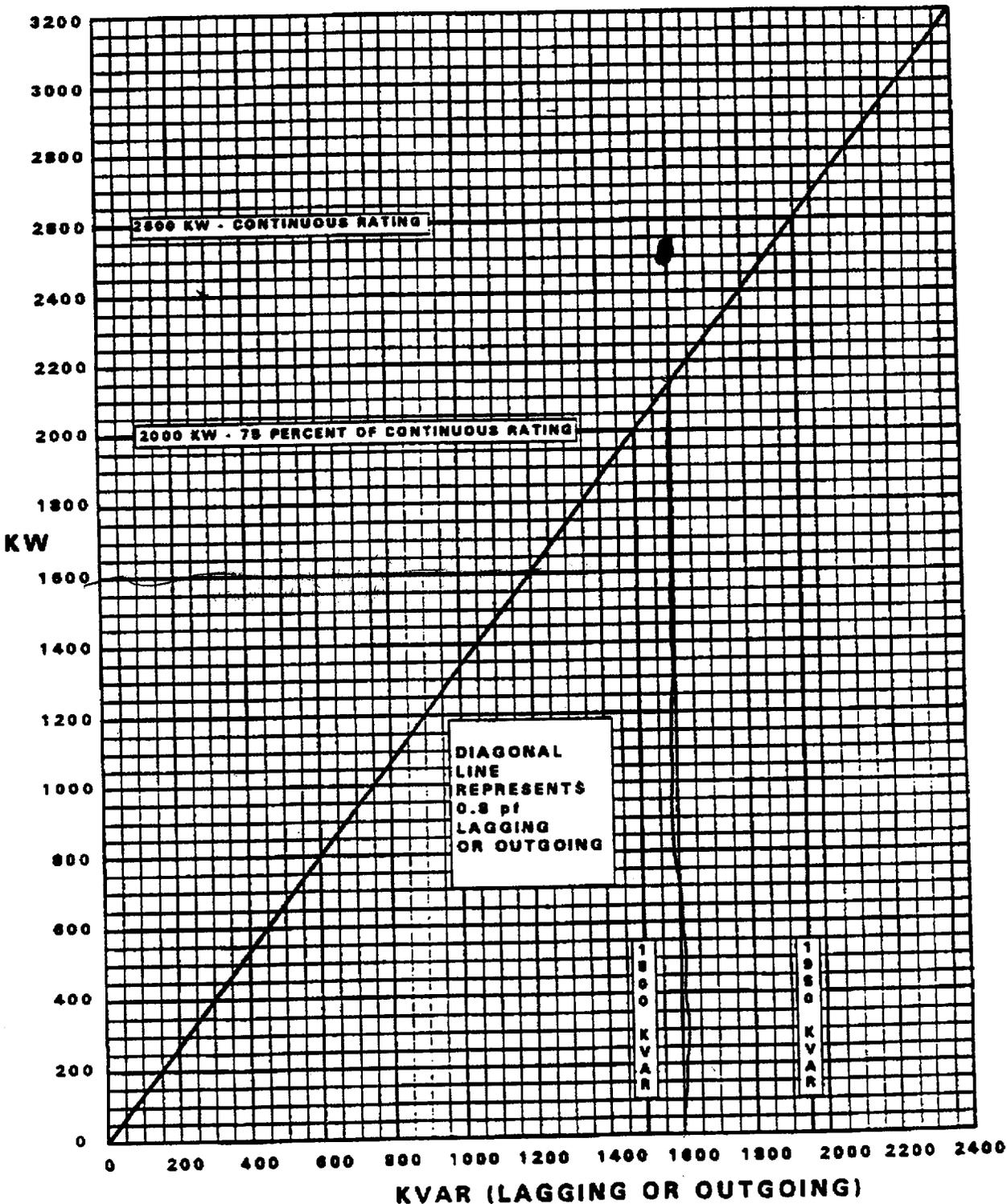
8.1.11 **PLACE** the associated Diesel Generator breaker synchronizing switch in OFF:

Diesel	Handswitch Name	Handswitch No.	Panel
A	DG A BKR 1818 SYNC	0-25-211-A/22A	0-9-23-7
B	DG B BKR 1822 SYNC	0-25-211-B/4A	0-9-23-7
C	DG C BKR 1812 SYNC	0-25-211-C/4A	0-9-23-8
D	DG D BKR 1816 SYNC	0-25-211-D/20A	0-9-23-8

NOTE:

Lagging VARS should be maintained when adjusting kW load (rising or lowering). This may require kW load adjustment to be stopped periodically to allow for adjusting kVAR load. Once desired kW load is achieved, Illustration 1 should be referred to for determination of kVAR loading required to obtain a power factor (pf) of 0.8 lagging. Diesel generator kVAR load should then be adjusted to obtain a 0.8 pf lagging. If system conditions will not permit the kVAR loading required to obtain a 0.8 pf lagging, kVAR load should be adjusted to the maximum kVAR lagging the system will allow.

### DG KW vs KVAR LOADING



1. OPL171.038 003/ 2/ OI/ DG/ / U082NO01/ 10/ 3.5 /3./ YES

Diesel Generator "A" is synchronized to 4KV S/D Bd "A". The instrumentation readings for the diesel generator are as follows:

- voltage = 4160 VAC
- frequency = 60 Hz
- current = 340 amps
- vars = 2400 Kvars
- watts = 2600 Kw (Desired load)

Determine what actions ARE NEEDED to bring the diesel generator operating parameters into conformance with procedural requirements for CONTINUOUS OPERATION with a power factor of .8 lagging. (Attached Illustration 1 of OI 82 may be utilized if desired)

- A. Take the voltage regulator control switch to raise.
- B. Take the voltage regulator control switch to lower.
- C. Take the governor control switch to raise.
- D. Take the governor control switch to lower.

Answer is B.

Old TEGRS Number (Deleted Bank)13455 Taskno: U-082-NO-01 Skills 264000A4.01  
Knowledge RO3.5SRO3. Comment: O-OI-82 Illustration 1 3.3/3.4

DIESEL GENERATOR OPERATING LOG

Date \_\_\_\_\_ Diesel Generator \_\_\_\_\_

**Log all manipulations of Diesel Generator LOGIC BREAKER in the Narrative Log**

STARTS/LOAD RUNS	OUT OF SERVICE TIME
Reason for Start: _____	Time/Date Removed From Service: ____/____
(Test, Auto Start)	Reason Taken Out Of Service: _____
<sup>3</sup> Slow Starts/Load Runs ____/____	Time/Date Returned To Service: ____/____
<sup>3</sup> Fast Starts/Load Runs ____/____	Comments/Explanation Of Failures: _____
Time/Date Started: ____/____	_____
Time/Date Loaded: ____/____	_____
Time/Date Unloaded: ____/____	_____
Time/Date Stopped: ____/____	_____

Duty Technical Support Representative notified to obtain a copy of Illustration 2.

Tech Support (Copy obtained)

UO

Readings are taken from Panel 9-23 or applicable Shutdown Board depending on D/G control location. Readings are initiated once every 15 minutes during the first hour of operation at rated speed and once every 30 minutes thereafter. Enter the actual time that each set of readings are initiated.

TIME									
Generator									
Frequency									
(59 - 61 HERTZ) <sup>1</sup>									
Generator Voltage									
<sup>5</sup>									
(3950 - 4400									
VOLTS)									
Generator Watts <sup>2,4</sup>									
(520 - 2850 kW)									
Generator VARS <sup>2,4</sup>									
(400 - 2100 KVAR)									
(.8 pf lagging)									
Generator amps									
(less than									
495 amps)									
INITIALS									

- 1 Only indicated if one of the associated 4KV shutdown board feeder breaker synchroscope switches is in the ON position. The synchroscope switch should only be placed in the ON position long enough to obtain a reading and then placed back in the OFF position.
- 2 The lower limit specified for Generator Watts and the limits specified for Generator VARS do not apply when the diesel generator is the only source of power to the shutdown board.
- 3 Number of each type of start/number of times load was applied either automatically or manually after each type of start.
- 4 The upper limits specified for Generator Watts and Vars shall be 2805 kW and 2200 kVAR during the DG 24 hour Run Surveillances.
5. This voltage is based on the diesel generator being loaded. For a diesel generator which is running unloaded the voltage should be 4250 to 4400 volts.

NAME (print) INITIALS NAME (print) INITIALS

Performed by: \_\_\_\_\_

Review by the US signifies that the Duty Tech Support Eng. has received the copy of Ill 2 and the original Ill 2 has been attached to the SR if the D/G was run to support an SR, otherwise place the original in the STA box.

Reviewed by: \_\_\_\_\_ Unit Supervisor \_\_\_\_\_ Date \_\_\_\_\_

DIESEL GENERATOR OPERATING LOG

Date \_\_\_\_\_ Initial ELAPSED TIME INDICATOR reading \_\_\_\_\_

Diesel Generator \_\_\_\_\_ Final ELAPSED TIME INDICATOR reading \_\_\_\_\_

**Ensure all manipulations of Diesel Generator LOGIC BREAKER are logged in the Narrative Log**

Readings are taken locally in Diesel Generator Room. Readings are initiated once every 15 minutes during the first hour of operation at rated speed and once every 30 minutes thereafter. Enter the actual time that each set of readings are initiated. If any readings are out of their specified range record reason and action taken in remarks.

TIME									
RPM (885-915)									
PRIMING FUEL PRESS (20-64 psig)									
NORMAL FUEL PRESS (20-64 psig)									
MAIN BEARINGS LUBE OIL PRESS (45-125 psig)									
LUBE OIL FILTER INLET PRESS (8-40 psig)									
ENGINE CLG WTR OUTLET TEMP (100-190°F)									
LO CLR CLG WTR OUTLET TEMP (100-190°F)									
LO CLR LUBE OIL OUTLET TEMP (100-190°F)									
Engine Lube Oil Level (-4-0 inches) (note 1)									
Governor Fuel Rack Position (.62 - 1.96)									
Governor Oil Level (Visible) (I)									
FUEL TANK LEVEL GAUGE (260-500 gallons)									
EXPANSION TANK WATER LEVEL LOW (L) - NORMAL (N) HIGH (H)									
INITIALS									

NOTE 1 Initiate corrective maintenance to restore lube oil level if it lowers to -2" at idle speed. Initiate corrective maintenance to restore lube oil level if it lowers to ≤-3" while the Diesel Generator is running.

REMARKS: \_\_\_\_\_

	<u>NAME (print)</u>	<u>INITIALS</u>
Performed by:	_____	_____
	_____	_____
	_____	_____
Reviewed by:	_____	_____
	Unit Supervisor	Date

SRO Question # 9 ( 295017AA1.03)

Change the Correct answer to "B" verses "A"

This question was designed to test the operators knowledge of the lowest level detectable reading. The question should have read  $1.5E-5$  verses  $1.5E5$ . This is a drastic increase in the activity of the release (E10). This value would cause BFN to exceed ODCM release rate limits and cause building release rate fraction to be greater than 0.9. This change in magnitude would require the operator to stop the release, thus making "B" the correct answer

Reference: 0-SI-4.8.B.1.a.1 step 7.8.6 and 7

9. 295017AA1.03 001/ / SROT1G1/ 3.4/3.4/ CIA/ NEW/ BF00301/ SRO/ 107

You are the Unit Supervisor on Unit 2. A chemistry technician taking routine samples reports that a sample from the roof vent monitored by RM-90-250 indicates there is a release of Xe133 from the roof of the reactor building. The sample had a total activity of 1.5E5 microcuries per cubic centimeter and no other gases or isotopes were detected.

Which one of the following states your required actions?

- A. Direct the chemistry technician to continue routine monitoring.
- B. Without delay, take appropriate actions to terminate the release.
- C. Monitor the release and prepare to notify the NRC pursuant to 10 CFR 50.73.
- D. Terminate the release within one hour and initiate a Special Report pursuant to the ODCM.

REF: ODCM, Rev. 10, Section 1/2.2

OPL171.033, Rev. 7

SOURCE: NEW QUESTION

help is this expected operator knowledge or a lookup

JUSTIFICATION

- a. (Correct)
- b. No action required. The objective was to confirm the candidate's knowledge that the reading was just about LLD for the RM.
- c. Not a reportable release level.
- d. No need to terminate the release, nor is it reportable by special report.

10. 295023AA1.05 001/ / SROT1G1/ 2.8/3.5/ MEMORY/ MODIFIED/ BF00301/ SRO/ 151

Fuel loading is in progress on Unit 2. A bundle is in transport from the SFSP to the core, when the fire alarm sounds. Which one of the following describes the correct actions to be taken?

- A. Stop all fuel movement until determination of the fire's impact on refueling operations can be made.
- B. Immediately lower the bundle to the closest location in the core and wait for determination of the fire's impact on refueling operations can be made.
- C. Refueling SRO will monitor the Fire/Medical radio frequency and discontinue fuel movement only if the fire could adversely affect refueling.
- D. Fire brigade team leader will determine if refueling operations could be adversely affected and direct the refueling SRO to discontinue fuel movement if necessary.

REF: OPL171.060, Rev. 9, Page 17

SOURCE: MODIFIED BANK QUESTION OPL171.060 005

lookup

## 7.8 (Continued)

- 7.8.5 **SUM** the three unit total release rates and the 0-RM-90-252 actual rate. **RECORD** the building ventilation release rate on Page 4 of Attachment 4.

**NOTE:**

For reporting purposes, the release fraction should only be recorded to three decimal places. For examples:

1. A release fraction of 0.12345 should be recorded as 0.123.
2. A release fraction of 0.00012 should be recorded as 0.000.

- 7.8.6 **DETERMINE** the building ventilation release fraction by dividing the total building ventilation release rate by  $1.50 \text{ E}+05$  (or 150,000)  $\mu\text{Ci}/\text{sec}$ . **RECORD** the fraction on both Attachment 2 and Attachment 4.

- 7.8.7 **VERIFY** the acceptance criteria as given in Step 6.2.1 has been met. The building ventilation release fraction must be less than or equal to 0.90. If the acceptance criteria has failed, immediately **CONTACT** the Unit Supervisors. (AC)

- 7.9 **DETERMINE** the elevated (stack) noble gas release rate once per shift by completing the following steps:

- 7.9.1 **RECORD** the highest noble gas count rates (counts per second, cps) for the 0-RM-90-147 and 0-RM-90-148 monitors in the appropriate columns of Attachment 6 in accordance with one of the following steps:

- 7.9.1.1 If both the 0-RR-90-147 and at least one of the radiation monitors are operable, **OBTAIN** the necessary information from 0-RR-90-147 on Panel 9-2. If applicable, **RECORD** "OOS" in the appropriate column of Attachment 6 if one of the monitors is out of service.

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
 0-SI-4.8.B.1.a.1  
 ATTACHMENT 4  
 (Page 4 of 4)

Building Effluent Release Rate Log - Unit 0

Week From \_\_\_\_\_ To \_\_\_\_\_

D A Y	S H I F T	Radwaste Building			Unit Total Release Rates			Building Ventilation Release Rate ( $\mu$ Ci/sec) (7.8.5)	Building Ventilation release Fraction (7.8.6)	Acceptance Criteria	Initials				
		0-RM-90-252 [001]			( $\mu$ Ci/sec)						Unit 1 (7.8.4)	Unit 2 (7.8.4)	Unit 3 (7.8.4)	A U O	Unit Super- visor
		Release Rate ( $\mu$ Ci/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate ( $\mu$ Ci/sec) (7.8.3)											
FRI	D									$\leq 0.90$					
	N									$\leq 0.90$					
SAT	D									$\leq 0.90$					
	N									$\leq 0.90$					
SUN	D									$\leq 0.90$					
	N									$\leq 0.90$					
MON	D									$\leq 0.90$					
	N									$\leq 0.90$					
TUE	D									$\leq 0.90$					
	N									$\leq 0.90$					
WED	D									$\leq 0.90$					
	N									$\leq 0.90$					
THU	D									$\leq 0.90$					
	N									$\leq 0.90$					

TITLE: AIRBORNE EFFLUENT RELEASE RATE

UNIT 0  
 0-SI-4.8.B.1.a.1  
 ATTACHMENT 4  
 (Page 2 of 4)

Building Effluent Release Rate Log - Unit 2

Week From \_\_\_\_\_ To \_\_\_\_\_

Unit 2

D A Y	S H I F T	Reactor Building			Turbine Building						Initials	
		2-RM-90-250 [010]			2-RM-90-249 [003]			2-RM-90-251 [006]				
		Release Rate ( $\mu$ Ci/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate ( $\mu$ Ci/sec) (7.8.3)	Release Rate ( $\mu$ Ci/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate ( $\mu$ Ci/sec) (7.8.3)	Release Rate ( $\mu$ Ci/sec) (7.8.1)	Release Factor (7.8.2)	Actual Rate ( $\mu$ Ci/sec) (7.8.3)	A U O	Unit Super- visor
FRI	D											
	N											
SAT	D											
	N											
SUN	D											
	N											
MON	D											
	N											
TUE	D											
	N											
WED	D											
	N											
THU	D											
	N											

Building Ventilation System Release Factors

1-, 2-, and 3- RM-90-250					
Fan Status (Note 1)			Release Factor		
Refuel	Reactor	Turbine	Unit 1	Unit 2	Unit 3
Off	Off	Off	0.00	0.00	0.00
Slow	Slow	Slow	0.49	0.53	0.49
Fast	Slow	Slow	0.63	0.60	0.59
Slow	Fast	Slow	0.64	0.73	0.69
Slow	Slow	Fast	0.72	0.73	0.71
Fast	Fast	Slow	0.77	0.80	0.78
Fast	Slow	Fast	0.86	0.80	0.81
Slow	Fast	Fast	0.87	0.94	0.91
Fast	Fast	Fast	1.00	1.00	1.00

0-RM-90-252			
Number Fans On	0	1	2 Fans
Release Factor	0.00	0.62	1.00

1-RM-90-249, 2-RM-90-249, and 3-RM-90-251					
Number Fans On	0	1	2	3	4
Release Factor	0.00	0.25	0.50	0.75	1.00

1-RM-90-251, 2-RM-90-251, and 3-RM-90-249						
Number Fans On	0	1	2	3	4	5
Release Factor	0.00	0.20	0.40	0.60	0.80	1.00

**NOTE 1:**  
 If one or more of the fans are off and one or more of the fans are on, assume off fans are on "slow". (This will cover the case where the fans are off, off, slow; off, slow, off; etc.)

Table 2.1-2 (Page 2 of 2)  
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION  
SURVEILLANCE REQUIREMENTS

NOTE: Each requirement shall be performed within the specified time interval with a maximum allowable extension not to exceed 25% of the interval given.

- 1 The CHANNEL CALIBRATION shall include the use of a known (traceable to the National Institute of Standards and Technology (NIST)) radioactive source(s) positioned in a reproducible geometry with respect to the sensor or using standards that have been obtained from suppliers that participate in measurement assurance activities with the NIST.
- 2 The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:
  1. Instrument indicates measured levels above the alarm/trip setpoint.
  2. Instrument indicates an inoperative/downscale failure.
  3. Instrument controls not set in operate mode (stack only).
- 3 The CHANNEL FUNCTIONAL TEST shall demonstrate that automatic isolation of this pathway and control room alarm annunciation occurs if any of the following conditions exists:
  1. Instrument indicates measured levels above the alarm/trip setpoint.
  2. Instrument indicates an inoperative/downscale failure.
  3. Instrument controls not set in operate mode (stack only).

The two channels are arranged in a coincidence logic such that 2 upscale, or 1 downscale and 1 upscale or 2 downscale will isolate the offgas line.
- 4 The noble gas monitor shall have a LLD of  $1E-5$   $\mu\text{Ci/cc}$  (Xe-133 Equivalent).
- 5 The noble gas monitor shall have a LLD of  $1E-6$   $\mu\text{Ci/cc}$  (Xe-133 Equivalent).

# **RADIOACTIVITY RELEASES 4.0**

**NOTES:**

- NOTE 4.1-U** Prior to making this emergency classification based upon the WRGERMS indication, assess the release by either of the following:  
 1. Actual field measurements exceed the limits in Table 4.1-U  
 2. SI 4.8.B.1.a.1 Release Fraction exceeds 2.0  
 If neither assessment can be conducted within 60 minutes then the declaration must be made on the valid WRGERMS reading.
- NOTE 4.1-A** Prior to making this emergency classification based upon the WRGERMS indication, assess the release by either of the following:  
 1. Actual field measurements exceed the limits in Table 4.1-A  
 2. SI 4.8.B.1.a.1 Release Fraction exceeds 200  
 If neither assessment can be conducted within 15 minutes then the declaration must be made on the valid WRGERMS reading.
- NOTE 4.1-S** Prior to making this emergency classification based upon the Gaseous Release Rate indication, assess the release by either of the following methods:  
 1. Actual field measurements exceed the limits in Table 4.1-S.  
 2. Projected or Actual Dose Assessments exceed 100 mrem TEDE or 500 mrem CDE.  
 If neither assessment can be conducted within 15 minutes then the declaration must be made based on the valid WRGERMS reading.
- NOTE 4.1-G** Prior to making this emergency classification based upon the Gaseous Release Rate indication, assess the release by either of the following methods:  
 1. Actual field measurements exceed the limits in Table 4.1-G.  
 2. Projected or Actual Dose Assessments exceed 1000 mrem TEDE or 5000 mrem CDE.  
 If neither assessment can be conducted within 15 minutes then the declaration must be made based on the valid WRGERMS reading.

**CURVES/TABLES:**

Table 4.1-U RELEASE LIMITS FOR UNUSUAL EVENT			
TYPE	MONITORING METHOD	LIMIT	DURATION
GASEOUS RELEASE RATE	STACK NOBLE GAS (WRGERMS)	$2.88 \times 10^{-7}$ $\mu$ Ci/sec	1 HOUR
GASEOUS RELEASE RATE	SI 4.8.B.1.a.1	RELEASE FRACTION 2.0	1 HOUR
SITE BOUNDARY RADIATION READING	FIELD ASSESSMENT TEAM	0.10 MREM HR $\gamma - \beta$	1 HOUR

Table 4.1-A RELEASE LIMITS FOR ALERT			
TYPE	MONITORING METHOD	LIMIT	DURATION
GASEOUS RELEASE RATE	STACK NOBLE GAS (WRGERMS)	$2.88 \times 10^{-9}$ $\mu$ Ci/sec	15 MINUTES
GASEOUS RELEASE RATE	SI 4.8.B.1.a.1	RELEASE FRACTION 200	15 MINUTES
SITE BOUNDARY RADIATION READING	FIELD ASSESSMENT TEAM	10 MREM HR $\gamma - \beta$	15 MINUTES

Table 4.1-S RELEASE LIMITS FOR SITE AREA EMERGENCY			
TYPE	MONITORING METHOD	LIMIT	DURATION
GASEOUS RELEASE RATE	STACK NOBLE GAS (WRGERMS)	$1.3 \times 10^{-10}$ $\mu$ Ci/sec	15 MINUTES
SITE BOUNDARY RADIATION READING	FIELD ASSESSMENT TEAM	100 MREM HR $\gamma - \beta$	1 HOUR
SITE BOUNDARY IODINE-131	FIELD ASSESSMENT TEAM	$3.9 \times 10^{-9}$ $\mu$ CI $cm^3$	1 HOUR

Table 4.1-G RELEASE LIMITS FOR GENERAL EMERGENCY			
TYPE	MONITORING METHOD	LIMIT	DURATION
GASEOUS RELEASE RATE	STACK NOBLE GAS (WRGERMS)	$1.3 \times 10^{-11}$ $\mu$ Ci/sec	15 MINUTES
SITE BOUNDARY RADIATION READING	FIELD ASSESSMENT TEAM	1000 MREM HR $\gamma - \beta$	1 HOUR
SITE BOUNDARY IODINE-131	FIELD ASSESSMENT TEAM	$3.9 \times 10^{-9}$ $\mu$ CI $cm^3$	1 HOUR

<b>LIQUID EFFLUENT</b>		
<b>DESCRIPTION</b>	<b>DESCRIPTION</b>	
<p><b>4.3-U</b></p> <p>Liquid release rate exceeds 20 times ECL as determined by chemistry sample  <b>AND</b>                      Release duration exceeds or will exceed 60 minutes.</p> <p>OPERATING CONDITION:                      - All</p>		<b>UNUSUAL EVENT</b>
<p><b>4.3-A</b></p> <p>Liquid release rate exceeds 2000 times ECL as determined by chemistry sample  <b>AND</b>                      Release duration exceeds or will exceed 15 minutes.</p> <p>OPERATING CONDITION:                      - All</p>		<b>ALERT</b>
		<b>SITE EMERGENCY</b>
		<b>GENERAL EMERGENCY</b>

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<b>GASEOUS EFFLUENT</b>		<b>MAIN STEAM LINE BREAK</b>		
<b>DESCRIPTION</b>		<b>DESCRIPTION</b>		
<b>4.1-U</b>		<b>4.2-U</b>		<b>UNUSUAL EVENT</b>
<p>Gaseous release exceeds ANY limit and duration in Table 4.1-U.</p> <p>OPERATING CONDITION: - All</p>		<p>Main Steam Line break outside Primary Containment with isolation.</p> <p>OPERATING CONDITION: - Mode 1 - Mode 2 - Mode 3</p>		
<b>4.1-A</b>				<b>ALERT</b>
<p>Gaseous release exceeds ANY limit and duration in Table 4.1-A.</p> <p>OPERATING CONDITION: - All</p>				
<b>4.1-S</b>		<b>4.2-S</b>		<b>SITE EMERGENCY</b>
<p>EITHER of the following conditions exists:</p> <ul style="list-style-type: none"> <li>Gaseous release exceeds or is expected to exceed ANY limit and duration in Table 4.1-S.</li> <li>Dose assessment indicates actual or projected dose consequences above 100 mrem TEDE or 500 nrem thyroid CDE.</li> </ul> <p>OPERATING CONDITION: - All</p>		<p>Unisolable Main Steam Line break outside Primary Containment.</p> <p>OPERATING CONDITION: - Mode 1 - Mode 2 - Mode 3</p>		
<b>4.1-G</b>				<b>GENERAL EMERGENCY</b>
<p>EITHER of the following conditions exists:</p> <ul style="list-style-type: none"> <li>Gaseous release exceeds or is expected to exceed ANY limit and duration in Table 4.1-G.</li> <li>Dose assessment indicates actual or projected dose consequences above 1000 mrem TEDE or 5000 mrem thyroid CDE.</li> </ul> <p>OPERATING CONDITION: - All</p>				

**NOTES:**

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**CURVES/TABLES:**