

U.S. Nuclear Regulatory Commission
Diablo Canyon RO Written Examination

Applicant Information

Name:

Date: 8 August, 2014

Facility/Unit: Diablo Canyon

Region: I II III IV

Reactor Type: W CE BW GE

Start Time:

Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the examination, you must achieve a final grade of at least 80.00 percent. Examination papers will be collected 6 hours after the examination begins.

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

U.S. Nuclear Regulatory Commission
Diablo Canyon SRO Written Examination

Applicant Information

Name:

Date: 8 August, 2014

Facility/Unit: Diablo Canyon

Region: I II III IV

Reactor Type: W CE BW GE

Start Time:

Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets.

To pass the examination you must achieve a final grade of at least 80.00 percent overall, with 70.00 percent or better on the SRO-only items. Examination papers will be collected 8 hours after the examination begins.

Applicant Certification

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

 Applicant's Signature

Results

RO/SRO-Only/Total Examination Values _____ / _____ / _____ Points

Applicant's Scores _____ / _____ / _____ Points

Applicant's Grade _____ / _____ / _____ Percent

Multiple Choice (Fill in your choice)

NAME: _____

If you change your answer, write your selection in the blank and initial.

- 1. A B C D
- 2. A B C D
- 3. A B C D
- 4. A B C D
- 5. A B C D
- 6. A B C D
- 7. A B C D
- 8. A B C D
- 9. A B C D
- 10. A B C D
- 11. A B C D
- 12. A B C D
- 13. A B C D
- 14. A B C D
- 15. A B C D
- 16. A B C D
- 17. A B C D
- 18. A B C D
- 19. A B C D
- 20. A B C D
- 21. A B C D
- 22. A B C D
- 23. A B C D
- 24. A B C D
- 25. A B C D

- 26. A B C D
- 27. A B C D
- 28. A B C D
- 29. A B C D
- 30. A B C D
- 31. A B C D
- 32. A B C D
- 33. A B C D
- 34. A B C D
- 35. A B C D
- 36. A B C D
- 37. A B C D
- 38. A B C D
- 39. A B C D
- 40. A B C D
- 41. A B C D
- 42. A B C D
- 43. A B C D
- 44. A B C D
- 45. A B C D
- 46. A B C D
- 47. A B C D
- 48. A B C D
- 49. A B C D
- 50. A B C D

Multiple Choice (Fill in your choice)

NAME: _____

If you change your answer, write your selection in the blank and initial.

- 51. A B C D
- 52. A B C D
- 53. A B C D
- 54. A B C D
- 55. A B C D
- 56. A B C D
- 57. A B C D
- 58. A B C D
- 59. A B C D
- 60. A B C D
- 61. A B C D
- 62. A B C D
- 63. A B C D
- 64. A B C D
- 65. A B C D
- 66. A B C D
- 67. A B C D
- 68. A B C D
- 69. A B C D
- 70. A B C D
- 71. A B C D
- 72. A B C D
- 73. A B C D
- 74. A B C D
- 75. A B C D
- 76. A B C D
- 77. A B C D
- 78. A B C D
- 79. A B C D
- 80. A B C D
- 81. A B C D
- 82. A B C D
- 83. A B C D
- 84. A B C D
- 85. A B C D
- 86. A B C D
- 87. A B C D
- 88. A B C D
- 89. A B C D
- 90. A B C D
- 91. A B C D
- 92. A B C D
- 93. A B C D
- 94. A B C D
- 95. A B C D
- 96. A B C D
- 97. A B C D
- 98. A B C D
- 99. A B C D
- 100. A B C D

Question 01

GIVEN:

- Unit 1 is in MODE 4
- RCS temperature is 55°F lower than steam generator temperature
- Pressurizer level is 60%
- Pressurizer boron concentration is 60 ppm lower than the RCS

The crew is preparing to start the first RCP in accordance with OP L-6, Cold Shutdown/Refueling.

Which of the following is the potential consequence of starting the first RCP at this time?

- A. Pressurizer heatup exceeding the Technical Specification limit
- B. RCS cooldown exceeding the Technical Specification limit
- C. Pressurizer outsurge causing a RCS boron dilution
- D. RCS pressure spike causing LTOP actuation

Question 02

Unit 1 has been at normal full power lineup for 300 days. Rods are at 223 steps.

The crew is placing Charging 1-1 pump in service. Charging pump 1-1 was last run 60 days ago.

Which of the following is the expected plant response when the operator starts the 1-1 Charging pump?

- A. Boration; rods will step if Tave changes by more than 1.5°F.
- B. Dilution; rods will step if Tave changes by more than 1.5°F.
- C. Boration; rods will not respond no matter how much Tave changes.
- D. Dilution; rods will not respond no matter how much Tave changes.

Question 03

Unit 2 is in MODE 5. RHR pump 2-1 is in service.

The feeder breaker from startup to vital 4 kV Bus F trips on overcurrent.

Which of the following describes the expected response of RHR pump 2-1?

- A. The pump remains running, it is not powered from 4 kV bus F.
- B. The pump trips then restarts when the diesel energizes the bus.
- C. The pump trips, it will not restart and must be restarted by the operator.
- D. The pump trips and cannot be restarted because the bus is de-energized.

Question 04

GIVEN:

- The crew is at step 12, CHECK If ECCS Flow Should Be Reduced, in E-0, Reactor Trip or Safety Injection
- RCPs are running
- Pressurizer level is 17% and rising
- RCS pressure is 1400 psig and rising
- RCS temperature is 500°F and stable
- Total AFW flow is 300 gpm
- Containment pressure is 0.2 psig
- 1-1, 1-3 and 1-4 Steam Generator narrow range levels are 12% and rising slowly
- 1-2 Steam Generator narrow range level is 17% and rising slowly

Can the crew proceed and reduce ECCS flow?

- A. Yes, all termination criteria are satisfied, SI may be reset and ECCS injection secured.
- B. No, SI termination criteria are not met; the crew must raise steam generator levels or raise AFW flow.
- C. No, SI termination criteria are not met; the crew must raise pressurizer level.
- D. No, SI termination criteria are not met; RCS pressure must be greater than SI pump injection pressure.

Question 05

GIVEN:

- Unit 1 experienced a faulted steam generator downstream of the MSIVs
- The faulted steam generator has been isolated
- RCS pressure is 1800 psig and rising slowly
- PK05-25, PRT PRESS/LVL TEMP, has alarmed
- PRT level and pressure are rising slowly

The reason the PRT parameters are rising is:

- A. A Pressurizer Power Operated Relief Valve is open.
- B. Reactor Coolant Pump Seal Water Return flow is going to the PRT.
- C. Normal letdown flow is diverted to the PRT through RV-8117, Letdown Relief Valve.
- D. RCS-8030, Primary Water valve to the PRT, has failed open due to instrument air isolation to containment.

Question 06

Which of the following is the NORMAL source of makeup water to the CCW system?

- A. Transfer Tank
- B. Fire Water Storage Tank
- C. Condensate Storage Tank
- D. Raw Water Reservoir

Question 07

GIVEN:

- A reactor trip occurred 10 minutes ago
- SI has actuated
- Pressurizer level is 25 % and rising
- Pressurizer liquid temperature is 604°F.
- Pressurizer vapor temperature is 618°F.
- RCS pressure is 1665 psig.

Given these conditions, the Pressurizer liquid is _____ and the Pressurizer vapor is _____.

- A. subcooled; saturated
- B. saturated; superheated
- C. saturated; saturated
- D. subcooled; superheated

Question 08

Unit 1 is at full power. One Steam Generator 1-1 narrow range low-low level channel has been tripped for testing.

A narrow range low-low level channel on Steam Generator 1-2 fails low.

Which of the following is the expected plant response?

- A. No actuations occur, the plant remains at power.
- B. AMSAC actuates in 25 seconds.
- C. Automatic start of all AFW pumps.
- D. An automatic reactor trip on low-low steam generator level.

Question 09

Unit 1 is at full power.

A loss of PY-12 occurs.

Which of the following will be the bistable status light indications the operator will see in the Control Room?

- A. Channel I bistable status lights ON and channel II bistable status lights OUT.
- B. Channel I bistable status lights OUT and channel II bistable status lights ON.
- C. Channel II bistable status lights ON and channel III bistable status lights OUT.
- D. Channel II bistable status lights OUT and channel III bistable status lights ON.

Question 10

GIVEN:

- Unit 2 trips when a small RCS break occurs
- One reactor trip breaker remains closed
- SI has been reset

Subsequently, the RCS break worsens and containment pressure rises from 2 to 26 psig.

Which of the following describes the expected plant response?

- A. Phase B actuates: Containment Spray actuates
- B. Phase B actuates: Containment Spray does not actuate
- C. Phase B does not actuate: Containment Spray actuates
- D. Phase B does not actuate: Containment Spray does not actuate

Question 11

GIVEN:

- Unit 1 is at full power
- A Pressurizer pressure channel has failed
- The failed channel has been removed from service and, Pressurizer Low Pressure SI and Pressurizer Low Pressure reactor trip bistables, tripped in accordance with OP AP-5, Malfunction of Eagle 21 Protection or Control Channel

As a minimum, how many of the remaining OPERABLE Pressurizer Pressure channels must trip to cause Pressurizer Low Pressure SI and Pressurizer Low Pressure reactor trip to actuate?

<u>Pressurizer Low Pressure SI</u>	<u>Pressurizer Low Press trip</u>
A. 1 of 2	1 of 2
B. 1 of 2	1 of 3
C. 1 of 3	1 of 3
D. 2 of 3	2 of 3

Question 12

The following events occur:

- While at full power, a cold leg LOCA and complete loss of offsite power occurs
- Bus F and G become de-energized when the plant trips
- All other equipment operates as designed

Which of the following describes why containment design pressure may or may not be exceeded?

- A. Not exceeded - because the minimum requirement of one train of Containment spray and 2 CFCU's will be met.
- B. Not exceeded - because the minimum requirement of one train of Containment spray and 3 CFCU's will be met.
- C. May be exceeded - because the minimum requirement of one train of Containment spray and 2 CFCU's will not be met.
- D. May be exceeded - because the minimum requirement of one train of Containment spray and 3 CFCU's will not be met.

Question 13

The crew is starting a CFCU in LOW speed.

PK01-21, CONTMT FAN CLRS alarms due to high vibration.

Which of the following describes whether the alarm was expected or unexpected?

- A. It is not expected and the operator should stop the CFCU.
- B. It is expected and will remain in until the operator resets the vibration alarm.
- C. It is expected but should clear once the operator acknowledges the PK01-21 alarm.
- D. It is expected but should have cleared; the operator should stop the CFCU.

Question 14

The crew is performing the actions of E-1.3, Transfer to Cold Leg Recirculation. Containment Spray is in service.

Which of the following describes the operation of the spray pumps while in E-1.3?

- A. The pumps trip at 33% RWST level. The crew will align the pumps to a train of RHR.
- B. The pumps trip at 33% RWST level. The crew will align the pumps to a train of SI.
- C. The pumps are stopped by the operator at 4% RWST level. The crew will align RHR to provide spray.
- D. The pumps are stopped by the operator at 4% RWST level. The crew will align SI to provide spray.

Question 15

GIVEN:

- The crew is performing E-0, Reactor Trip or Safety Injection
- Safety Injection has actuated
- All Steam Generator levels are 22% narrow range and lowering slowly
- RCS temperature is 540°F and lowering
- AFW flow has been reduced to 440 gpm total
- HC-507 Steam Pressure controller output is zero
- One 40% steam dump valve is displaying only a red position light on VB3
- All other 40% steam dump valves are displaying green lights

The RCS cooldown is continuing.

What action should the operators take next to address the cooldown?

- A. Continue to lower AFW flow as needed
- B. Commence Emergency Boration at greater than 30 gpm
- C. Place Steam Dump Mode Select switch in OFF and maintain all steam dump valves closed
- D. Close MSIVs and bypass valves, and adjust 10% dump valves to stabilize temperature

Question 16

Unit 1 Plant startup is in progress.

Plant conditions at turnover are:

- The Condensate and Feedwater Systems are aligned for Long Recirculation
- The previous shift turned over that MFW Pump 1-1 was in STANDBY, ready to transfer control to the Digital Feed Water System per OP C-8:II "Place Main Feedwater Pump In Service".

The following indications at the MFW Pump Startup Station on VB3 are noted:

- The Pump 1-1 Trip/Latch Select control has the red "LATCHED" light illuminated
- The "Loc Cont Enabled" pushbutton is not illuminated
- The "RAMP TO IDLE" pushbutton is illuminated
- The "IDLE TO STBY" pushbutton is not illuminated
- The "SPEED" display indicates 600 rpm
- The "SPEED SETPOINT" display indicates 600 rpm

Does this status agree with the turnover?

- A. Yes. The MFW Pp turbine is latched, speed is matched to setpoint and ready to transfer control to the Digital Feedwater System.
- B. No. The "IDLE TO STBY" pushbutton should be illuminated and "SPEED" and "SPEED SETPOINT" displays should both be reading 3000 rpm.
- C. No. With the "RAMP TO IDLE" pushbutton illuminated, speed should be ramping to 3000 rpm.
- D. No. The "Loc Cont Enabled" pushbutton not illuminated indicates that MFW Pump control is still at the local Op View Panel.

Question 17

Unit 1 trips after over 500 days of full power operation.

30 minutes later, AFW will be required to aid in removing decay heat of approximately _____ of Rated Thermal Power due to _____.

- A. 6%: gradual cooldown of the fuel clad
- B. 2%: gradual cooldown of the fuel clad
- C. 6%: decay of fission fragments
- D. 2%: decay of fission fragments

Question 18

Unit 1 is at 100% power.

The crew is preparing to parallel 11 EDG to its vital bus.

The operator is preparing to close the generator breaker.

To properly close the breaker, what should be the synchroscope indication when the breaker is closed?

- A. Rotating slowly in the SLOW direction, slightly BEFORE 12 o'clock.
- B. Rotating slowly in the SLOW direction, slightly AFTER 12 o'clock.
- C. Rotating slowly in the FAST direction, slightly BEFORE 12 o'clock.
- D. Rotating slowly in the FAST direction, slightly AFTER 12 o'clock.

Question 19

Unit 2 was at 100% power when a Reactor Trip occurred.

PT-434, AFW pump 2-3 discharge pressure transmitter fails to zero.

What effect will this failure have on LCV-115 and LCV-113, AFW supply valves to Steam generators 2-3 and 2-4?

The LCVs will fail:

- A. Open; operate the 2-3 AFW pump run interlock bypass switch to restore control of the valves.
- B. Open; place the controller in MANUAL to restore control of the valves.
- C. Closed; operate the 2-3 AFW pump run interlock bypass switch to restore control of the valves.
- D. Closed; place the controller in MANUAL to restore control of the valves.

Question 20

Which of the following are the normal and backup power sources for DC bus 11?

- A. Normal source is battery 11. If voltage lowers, battery charger ED11 supplies the bus and charges the battery.
- B. Normal source is battery 11. If voltage lowers, battery charger ED121 supplies the bus and charges the battery.
- C. Normal source is battery charger ED11. If voltage lowers, battery 11 supplies the bus.
- D. Normal source is battery charger ED121. If voltage lowers, battery 11 supplies the bus.

Question 21

The crew is performing the actions of ECA-0.0, Loss of All Vital AC.

The operator reports that battery voltages on the vital DC buses are approaching 110 VDC.

What is the concern of allowing 125 VDC battery to continue to discharge and voltage to decrease below 110 VDC?

- A. Bus voltage may decrease to a voltage that supplied loads may not function.
- B. Low bus voltage causes the battery output breaker to open on undervoltage.
- C. Battery current decreases rapidly and damages remaining DC loads.
- D. The battery reverses polarity and damages remaining DC loads.

Question 22

The crew has completed the actions of E-1.3, Transfer to Cold Leg Recirc. RCS pressure is 25 psig.

A loss of startup occurs and the emergency diesel generators start and energize their respective vital 4 kV bus.

Once sequencing of loads is complete, what ECCS pumps, if any, will have been automatically started?

- A. None, all will have to be re- started by the operator
- B. Only the ECCS CCPs
- C. Only the RHR pumps and ECCS CCPs
- D. All ECCS pumps will be running

Question 23

If there is less than the required level in the diesel fuel oil storage tanks, the emergency diesel generators may not operate for the required Engineered Safeguards MINIMUM assumed time of:

- A. 72 hours
- B. 7 days
- C. 14 days
- D. 30 days

Question 24

During a discharge of a Processed Waste Receiver Tank, the Liquid Rad Waste Discharge Radiation Monitor RE-18 loses power.

Which of the following describes the effect on the discharge?

- A. The discharge continues and must be terminated by the operator.
- B. The discharge is terminated by RCV-18, Circ Water Overboard Valve, closing, and FCV-477, Filters 0-4 or 0-5 Outlet to EDR valve, opening.
- C. The discharge is terminated by FCV-647, Discharge Flow Control Valve, closing and FCV-477, Filters 0-4 or 0-5 Outlet to EDR valve, opening.
- D. The discharge is terminated by RCV-18, Circ Water Overboard valve and FCV-647, Discharge Flow Control Valve, closing.

Question 25

Which of the following is the normal alignment of Auxiliary Salt Water Pump Crosstie Valves, FCV-495 and FCV-496, and what does this alignment ensure?

- A. Both valves are open. This ensures that a water hammer event resulting from an ASW pump trip and restart will not affect both trains of cooling to CCW.
- B. Both valves are closed. This ensures that a water hammer event resulting from an ASW pump trip and restart will not affect both trains of cooling to CCW.
- C. Both valves are open. This ensures that a single active failure will not result in a significant reduction in heat removal capability.
- D. Both valves are closed. This ensures that a single active failure will not result in a significant reduction in heat removal capability.

Question 26

The following events occur:

- A load rejection occurs due to a loss of the 500 kV switchyard
- A minute later, during the runback the running ASW pump trips and system pressure lowers to 35 psig
- Problems with feedwater control cause the crew initiate a reactor trip
- While performing the immediate actions of E-0, Reactor Trip or Safety Injection, safety injection actuates

While performing Appendix E of E-0, the operator notes that the standby ASW pump is running.

The first start signal to the standby pump occurred when:

- A. the load rejection occurred
- B. ASW pressure lowered to 35 psig
- C. the reactor was tripped
- D. SI actuated

Question 27

An Instrument Air leak is occurring on Unit 1.

The Reactor Operator notes that the Main Feedwater Reg Valves are slowly closing.

The Instrument Air Pressure header pressure gauge PI-380 should read approximately how much pressure based on the plant response?

- A. 40 to 45 psig
- B. 75 to 78 psig
- C. 83 to 86 psig
- D. 90 to 95 psig

Question 28

GIVEN:

- Unit 1 is at full power.
- Over the last 12 hours, Containment temperature has risen from 104°F to 105°F and Containment pressure has risen from 0.8 to 1.1 psig
- Both parameters are continuing to rise slowly at the same rate
- Radiation levels are normal

Which containment parameter needs to be addressed first to prevent exceeding a Technical Specification limit and what should be done to address that parameter?

- A. Containment pressure; vent containment
- B. Containment temperature; start an additional CFCU, only
- C. Containment pressure; place containment purge in service
- D. Containment temperature; start all available CFCU's and all CRDM fans

Question 29

GIVEN:

- Unit 1 is at full power
- Pressurizer level channels are reading:
 - LT-459 – 60.5%
 - LT-460 – 59%
 - LT-461 – 59.5%

LT-459 fails instantly LOW.

Which of the following describes the expected plant response?

- A. Charging will initially rise once LT-461 is the controlling channel. Letdown will isolate.
- B. Charging will initially rise once LT-461 is the controlling channel. Letdown will remain in service.
- C. No change in charging flow. Letdown will isolate.
- D. No change in charging flow. Letdown will remain in service.

Question 30

Unit 1 has been raised to 12% reactor power. All actions per OP L-3, Secondary Plant Startup, have been completed for this power level.

A loss of PY-14 occurs.

This loss of the PY will result in which of the following occurring?

- A. The deenergization of only a Power Range nuclear instrument, but no reactor trip.
- B. The deenergization of only a Power Range nuclear instrument and a reactor trip.
- C. The deenergization of Power Range and one Intermediate Range nuclear instrument, but no reactor trip.
- D. The deenergization of a Power Range and one Intermediate Range nuclear instrument and a reactor trip.

Question 31

GIVEN:

- Unit 1 is at full power
- Annunciators PK06-01, Channel Set Failure and PK06-04, PPS Trouble, have alarmed
- The following bistables are lit:
 - PC 456A High Press Trip
 - PC 456B P-11
 - PC 456C Low Press Trip
 - PC 456D Low Press S.I.
 - LC 460A High Lvl Trip
 - FC 415 - RCS Loop 1 Flow
 - FC 425 - RCS Loop 2 Flow
 - FC 435 - RCS Loop 3 Flow
 - FC 445 - RCS Loop 4 Flow
- No board indications have changed (failed “as is”)

Which of the following has occurred and what action should be taken by the crew?

- A. Loss of power to an Eagle 21 rack with no reactor trip actuation required. Take actions per OP AP-5, Malfunction of Eagle 21 Protection or Control Channel.
- B. Loss of Power to an Eagle 21 rack and the reactor should have tripped. Trip the reactor and go to E-0, Reactor Trip or Safety Injection.
- C. An Eagle 21 LCP halt with no reactor trip actuation required. Take actions per OP AP-5, Malfunction of Eagle 21 Protection or Control Channel.
- D. An Eagle 21 LCP halt and the reactor should have tripped. Trip the reactor and go to E-0, Reactor Trip or Safety Injection.

Question 32

Unit 1 is at full power.

One Train B incore thermocouple fails high.

Which of the following describes the effect, if any, on the displayed Subcool Margin Monitor (SCMM), YI-31 on Vertical Board 2?

- A. No effect, incore thermocouples are not an input to the SCMM.
- B. No effect, the Thermocouple Monitoring System automatically disables unreliable inputs.
- C. Displayed subcooling will read the fail position of approximately 0°F.
- D. Displayed subcooling will read the fail position of approximately -40°F.

Question 33

GIVEN:

- Large Break LOCA is in progress
- Core damage is occurring

Which of the following describes the minimum equipment that is needed in operation in order to maintain hydrogen at or below limits?

- A. ONE Recombiner ONLY in service
- B. BOTH Recombiners in service
- C. ONE Recombiner and Containment Spray System in service
- D. ONE Recombiner and the Containment Purge System in service

Question 34

Containment Purge is in progress.

The following sequence of events occur:

- AR PK02-06, CONTMT VENT ISOLATION, alarms
- It is determined that the alarm was due to Containment Purge Radiation Monitor, RE-44A, failing high

The operator attempts to reset the CVI signal with RE-44A still in alarm.

When the operator presses the RESET pushbuttons on VB1 the signal resets:

- A. and is available to actuate again if RE-44B detects high radiation.
- B. but immediately occurs again once the operator releases the reset pushbuttons.
- C. however, a subsequent high radiation condition will not cause isolation to occur.
- D. however, the containment purge cannot be re-established until the signal is cleared.

Question 35

Which of the following identifies the rod position indication system that is:

1. The most accurate - Digital Rod Position Indication (DRPI) OR Bank Demand Position Indication (BDPI)
 2. The most reliable - Digital Rod Position Indication (DRPI) OR Bank Demand Position Indication (BDPI)
- A. DRPI is the most accurate, within 4 steps and the most reliable because it actually measures rod position.
 - B. BDPI is the most accurate within 1 step and the most reliable because it actually measures rod position.
 - C. DRPI is the most reliable because it actually measures rod position. BDPI is the most accurate because it is a direct count of each up and down step.
 - D. DRPI is the most accurate within 4 steps because it actually measures rod position. BDPI is the most reliable because it is a direct count of each up and down step.

Question 36

GIVEN:

- Both Unit 1 and Unit 2 are at full power
- All Control Room Vent Train Mode Selector Switches are in MODE 1
- CR Vent Mode Status Lights - Mode 1 ON

High radiation is sensed by Control Room Vent Intake radiation monitors, 1-RE-25 and 1-RE-26.

Which of the following changes will occur to the Control Room Ventilation System to minimize radiation exposure to the Control Room operators?

- A. Unit 1 Pressurization Fan will start.
- B. Unit 2 Pressurization Fan will start.
- C. Unit 1 and Unit 2 Pressurization Fans will start.
- D. None of the fans start because auto start requires at least one Control Room Vent radiation monitor, RE-51, 52, 53 or RE-54 to be in alarm.

Question 37

GIVEN:

- Both units are at full power
- ASW pump 1-1 is in service
- ASW pump 2-1 is in service
- Emergency Diesel Generator 1-3 is out of service
- Emergency Diesel Generator 2-1 is out of service

A total loss of offsite power occurs. The available Emergency Diesel Generators start and energize their respective vital buses on both units.

Which ASW pumps will be running?

- A. ASW pumps 1-1, 1-2 and 2-1.
- B. ASW pumps 1-2, 2-1 and 2-2.
- C. ASW pumps 1-2 and 2-1 only
- D. ASW pumps 1-1 and 2-2 only

Question 38

Unit 2 is at full power.

Alarm PK14-21, Main Transf, input 827, Mn Bk Sudden Press Trip alarms. Then, PK10-10, Fire Detected, alarms.

Which of the following could have caused PK10-10 to actuate?

- A. The sudden pressure relay actuation, which causes the deluge system to spray firewater on the main transformer.
- B. The sudden pressure relay actuation, which causes CARDOX to initiate to the main transformer.
- C. The heat actuated device above the main transformer which causes the deluge system to spray firewater on the main transformer.
- D. The heat actuated device above the main transformer which causes CARDOX to initiate to the main transformer.

Question 39

GIVEN:

- Safety Injection has occurred
- Containment pressure is 0.5 psig and RISING slowly
- RVLIS level is LOWERING slowly
- PRT pressure is 3 psig and STABLE
- Pressurizer level is 48% and RISING
- RCS pressure is 1700 psig and LOWERING

Which of the following leak locations is consistent with the current plant conditions?

- A. RCS hot leg
- B. Pressurizer safety seat leakage
- C. CRDM canopy weld
- D. Pressurizer safety valve weld

Question 40

GIVEN:

- A small LOCA has occurred on Unit 1
- Safety Injection has actuated
- RCS pressure is 1625 psig and stable
- Containment pressure is at 2.9 psig and slowly lowering
- All RCPs are running

Which of the following is required for maintaining adequate core heat removal for the current plant conditions?

- A. Steam Generators, Centrifugal Charging pumps and Safety Injection pumps
- B. Steam Generators and Centrifugal Charging pumps only
- C. Reactor Coolant Pumps, Centrifugal Charging pumps and Safety Injection pumps
- D. Reactor Coolant Pumps and Centrifugal Charging Pumps only

Question 41

GIVEN:

- A large LOCA has occurred
- Reactor Trip and Safety Injection have actuated
- All Centrifugal Charging Pumps have failed
- Safety Injection Pumps and Residual Heat Removal Pumps are running

Which of the following describes the significance of reflux cooling in removing heat from the core for the current plant conditions?

- A. Reflux cooling is significant. Without high pressure injection via the charging pumps, steam generator tubes will eventually void, stopping Natural Circulation.
- B. Reflux cooling is minimal. Core heat is removed by Safety Injection water flowing out the break to the containment sump and eventually recirculated.
- C. Reflux cooling is significant. Coolant is boiled in the core, with the steam condensing in the Steam Generator tubes, and flowing back to the core through the Hot Legs.
- D. Reflux cooling is minimal. Safety injection pumps will provide enough volume to maintain the core covered, and heat will be removed using natural circulation and steam dumps.

Question 42

GIVEN:

- Unit 1 is at 100% power
- PK01-08 “CCW Header C” has annunciated
- Input 264 “RCP Thermal Barrier CCW Flo Hi” alarmed and cleared
- Input 428 “RCP Thermal Barrier CCW Flo Lo” is in alarm

Which of the following automatic actions has occurred and what action should the crew take?

- A. FCV-357, RCP Thermal Barrier Return Valve O.C., has closed. The reactor should be tripped and the RCP stopped.
- B. FCV-355, RCP CCW Header C Supply, has closed. The reactor should be tripped and the RCP stopped.
- C. FCV-357, RCP Thermal Barrier Return Valve O.C., has closed. Monitor RCP lower radial bearing temperatures and verify proper RCP seal injection flow.
- D. FCV-355, CCW Header C Supply, has closed. Monitor RCP lower radial bearing temperatures and verify proper RCP seal injection flow.

Question 43

GIVEN:

- Unit 1 is in MODE 5
- One RCP is running
- The crew must isolate a charging line leak in accordance with OP AP-17, Section D, Charging Line Leak On RHR
- Letdown orifice isolation valves, CVCS 8149A,B,C are closed

Step 1 is to isolate Letdown and Charging.

Which of the following valves will the operator close to isolate Letdown and Charging?

- A. RHR to Letdown Flow Control Valve, HCV-133, and Charging isolation valve, 8108.
- B. RHR to Letdown Flow Control Valve, HCV-133, and Charging Discharge Flow Control valve, FCV-128.
- C. Letdown Pressure Control Valve, PCV-135, and Charging isolation valve, 8108.
- D. Letdown Pressure Control Valve, PCV-135, and Charging Discharge Flow Control valve FCV-128.

Question 44

GIVEN:

- The unit is in MODE 4
- Electrical power is aligned to Startup

A loss of startup occurs. The crew is unable to start either RHR pump.

Which of the following is the preferred method of RCS temperature control in accordance with OP AP-16, Malfunction of the RHR System?

- A. Dump steam to the Condenser
- B. Dump steam to the Atmosphere
- C. Charging injection to the Cold Legs
- D. Fill and spill to containment floor

Question 45

Which of the following describes how the design of the shunt and undervoltage trip coils of the Reactor Trip Breakers minimizes the possibility of an ATWS occurring?

- A. Either trip coil de-energizing will cause the breaker to open.
- B. Either trip coil energizing will cause the breaker to open.
- C. Either the Shunt trip coil de-energizing or the Undervoltage coil energizing will cause the breaker to open.
- D. Either the Shunt trip coil energizing or the Undervoltage coil de-energizing will cause the breaker to open.

Question 46

Where in the sequence of events during a steam generator tube rupture does the isolation of the ruptured steam generator occur?

- A. After RCS depressurization and just prior to terminating safety injection
- B. After the RCS cooldown and just prior to performing the RCS depressurization
- C. After identifying the ruptured steam generator and just prior to performing the RCS cooldown
- D. After identifying the ruptured steam generator and just prior to performing the RCS depressurization

Question 47

GIVEN:

- The 1-2 Steam Generator is faulted
- The crew has entered E-2, Faulted Steam Generator Isolation

Which of the following describes the 1-2 Steam Generator AFW flow requirements and the reason for the requirement?

- A. The crew will maintain 25 gpm to the steam generator to maintain the U-tubes “wet”.
- B. The crew will maintain 25 gpm to the steam generator to minimize thermal shock of the U-tubes.
- C. The crew will isolate AFW to the steam generator to minimize RCS cooldown.
- D. The crew will isolate AFW to the steam generator to aid in determining if the steam generator is also ruptured.

Question 48

Unit 1 reactor trip has occurred from 30% power.

Subsequently, the following indications are received:

- PK09-11 "FEEDWATER ISOLATION" annunciates
- All Main Feedwater Regulating Valves Close
- All Main Feedwater Bypass Valves Close
- All Main Feedwater Isolation Valves remain open
- Main Feedwater Pump 1-2 has remained running

Which of the following has caused the changes to Main Feedwater?

- A. P-14 Hi-Hi Steam Generator Level has occurred
- B. Safety Injection has actuated
- C. Loss of 125 VDC bus SD-3 has occurred
- D. Tave has lowered to less than 554°F

Question 49

The crew is performing a secondary depressurization to reduce RCS pressure and inject Accumulators in accordance with ECA-0.0, Loss of All AC Power.

Which of the following actions or cautions in the step is designed to prevent an interruption of natural circulation?

- A. Stopping when RCS temperature is 270°F.
- B. Stopping when steam generator pressure is 240 psig.
- C. Depressurizing the secondary at the maximum rate.
- D. Maintaining intact Steam Generator levels between 20 and 65%.

Question 50

GIVEN:

- Aux Saltwater (ASW) pump 1-1 is in service
- ASW pump 1-2 is secured, with Auto/Manual switch in MANUAL
- The plant trips from full power and SI actuates when a small break LOCA occurs

When the reactor trips a loss of Offsite Power occurs and the Vital 4 kV buses transfer to Diesel Emergency Generators.

What is the expected status of the ASW pumps?

- A. Both ASW pumps 1-1 and 1-2 immediately start.
- B. Both ASW pumps 1-1 and 1-2 start after a time delay.
- C. ASW pump 1-1 immediately starts, ASW pump 1-2 starts after a time delay.
- D. ASW pump 1-1 starts after a time delay, ASW pump 1-2 will not automatically start.

Question 51

GIVEN:

- Unit 2 tripped from full power
- All steam generator narrow range levels are now 60% and rising
- AFW flow hand controllers are in AUTO with 30% demand

A loss of PY-23 occurs. As a result, power is lost to the hand controllers for Steam Generator AFW Control valves, LCV-110 and LCV-111.

When power is restored to PY-23 the Control Room hand controllers for LCV-110 and LCV-111 will be in:

- A. AUTO with 30% demand.
- B. AUTO with 100% demand.
- C. MANUAL with 0% demand.
- D. MANUAL with 100% demand.

Question 52

The output breaker from Battery Charger 12 trips open due to a fault in the battery charger.

The crew is aligning the swing battery charger to the DC bus.

Which of the following describes the operation of the Kirk Key Interlock when aligning the swing charger to 125 VDC Bus 12?

- A. Locks OPEN the output breaker from the normal charger to bus 12 and locks CLOSED the output breaker from the swing charger to bus 12.
- B. Locks OPEN the output breaker from the swing charger to bus 11 and locks CLOSED the output breaker from the swing charger to bus 12.
- C. Locks OPEN the output breaker from the swing charger to bus 11 and allows the output breaker from the swing charger to bus 12 to be CLOSED.
- D. Locks OPEN the output breaker from the normal charger to bus 12 and the output breaker from the swing charger to bus 11 and allows the output breaker from the swing charger to bus 12 to be CLOSED.

Question 53

GIVEN:

- The crew has entered ECA-1.2, LOCA Outside Containment
- RCS pressure is 1750 psig

Which of the following describes the valves the operator will close and why?

1. 8801 A and B – ECCS CCP to RCS Cold Legs
 2. 8822 A, B, C and D – SI to RCS Cold Legs
 3. 8809 A and B - RHR to Cold Legs
- A. 3 only; because RHR is the most likely location of the leak.
- B. 3 then 2; because ECCS systems below current RCS pressure, starting with the lowest pressure, are the most likely location of the leak.
- C. 1, then 2, then 3; because regardless of RCS pressure, the isolation is from highest pressure (most likely) to lowest pressure (least likely) systems.
- D. 3, then 2, then 1; because regardless of RCS pressure, the isolation is from lowest pressure (most likely) to highest pressure (least likely) systems.

Question 54

The Crew was unable to align at least one RHR Pump for SI Recirculation, and entered ECA-1.1, Loss Of Emergency Coolant Recirculation

Power has been restored to valve 8982A, RHR Pump 1-1 Suction From Containment Sump. The operator attempts to open the valve and it does not respond.

Which of the following valves, if open, would prevent 8982A from being opened?

- A. 8700A, RWST to RHR Pump Suction
- B. 8980, RHR Pump Suction From RWST
- C. 8804A, RHR to Charging and SI Pumps
- D. 8701, RCS Loop Suction Isolation

Question 55

As the crew exits E-0, Reactor Trip or Safety Injection, there is a valid RED terminus for the H.1 Critical Safety Function.

The crew, after entering FR-H.1, Loss of Secondary Heat Sink, has determined that a secondary heat sink is NOT required for RCS heat removal.

Why would a secondary heat sink NOT be required to remove heat from the RCS?

- A. All steam generators are faulted.
- B. A large break (design basis) LOCA has occurred.
- C. Steam generator pressure is less than RCS pressure.
- D. The RED path is due to operator action to control RCS temperature while in E-0.

Question 56

Unit 1 is in MODE 4. LTOP is in service

Which of following would cause a Pressurizer PORV to open in response to a detected threat to RCS integrity?

1. RCS wide range pressure rising to 450 psig
2. RCS cold leg temperature lowering to 275°F
3. RCS cold leg temperature rising to 285°F

- A. 1 only
- B. 1 or 2
- C. 1 or 3
- D. 3 only

Question 57

GIVEN:

- Following a refueling, the reactor reaches criticality below the RIL during the startup
- In accordance with OP L-2, Hot Standby to Startup Mode, the crew is to emergency borate approximately 900 gallons of 4% boric acid per OP AP-6, Emergency Boration
- Both Boric acid transfer pumps trip when attempting to initiate emergency boration
- Emergency Borate valve, CVCS-8104, fails to open

The operator is to emergency borate using the RWST.

What is the approximate length of time the operator will need to borate using the RWST as a suction source for the Charging pumps at the minimum flow required by OP AP-6?

NOTE:

- 4% Boric Acid Storage Tank boron concentration = 7200 ppm
- RWST boron concentration = 2400 ppm

- A. 10 minutes
- B. 18 minutes
- C. 30 minutes
- D. 90 minutes

Question 58

The crew is performing step 6 CHECK If ECCS Can Be Terminated, in FR-P.1, "Response to Imminent Pressurized Thermal Shock Condition". All RCPs are secured.

The crew is unable to terminate SI due to subcooling only being approximately half of the required 70°F. As a result, the procedure directs attempting to start an RCP.

Which of the following describes the benefit of starting an RCP at this time?

- A. Mixing of the colder SI water in the Cold leg/reactor vessel downcomer, which may be causing the low temperature condition, with warmer RCS water.
- B. RCS temperature should quickly rise once the RCP is started and a 60 minute soak of the RCS will not be required.
- C. Collapse of any reactor vessel head voids.
- D. Ensures continued core cooling.

Question 59

Given:

- Unit 1 is shutting down to MODE 3
- Power is 35% power
- PK3-06, "NIS DETECTOR VOLT LOSS" is annunciated
- Input 335 "Intmed Rnge NC35 Loss of Compens V" is indicated on the RONAN

Which of the following describes the effect this condition will have on Intermediate Range (IR) N35 channel performance as the shutdown continues?

- A. At the present power, Intermediate Range channels will agree, and as power goes below 1E-8 amps, channel N35 will begin to indicate higher than N36.
- B. At the present power, N35 will indicate higher than channel N36, and the difference will increase as power is lowered.
- C. At the present power, Intermediate Range channels will agree, and as power goes below 1E-8 amps, channel N35 will begin to indicate lower than N36.
- D. At the present power, N35 will indicate lower than channel N36, and the difference will increase as power is lowered.

Question 60

GIVEN:

- The Control Room has received a report of a fire in the Unit 1 Cable Spreading Room
- PK10-10, FIRE DETECTED, has annunciated
- The Fire Detection Computer is displaying a fire alarm in the Cable Spreading Room

Which of the following describes the operation of the Cardox System during this event?

- A. Ventilation to the Cable Spreading Room is automatically isolated, and Cardox immediately dumps into the room.
- B. A local alarm sounds (for 48 seconds), the Cardox Hose Reel Station pressurizes, and the purge valve opens for 1 minute to purge air out of the line.
- C. Ventilation to the Cable Spreading Room is automatically isolated, the Cardox Hose Reel Station pressurizes, and the purge valve opens for 1 minute to purge air out of the line.
- D. Ventilation to the Cable Spreading Room is automatically isolated, a local alarm sounds in the Cable Spreading Room (for 48 seconds), and then the Cardox System automatically dumps into the room.

Question 61

GIVEN:

- The crew is performing E-1 Step 19 “Check Containment Hydrogen Concentration”
- The Operator reports that Containment Hydrogen concentration on PAM 1 is 2.5%

Which of the following describes what should be done with the Hydrogen Recombiner and why?

- A. Do NOT place a Hydrogen Recombiner in service because a flammable situation is not imminent and Recombiner operation is not required.
- B. Place a Hydrogen Recombiner in service since ignition of hydrogen is not expected until concentration exceeds 4.0%.
- C. Place a Hydrogen Recombiner in service since ignition of hydrogen is not expected until concentration exceeds 8.0%.
- D. Do NOT place a Hydrogen Recombiner in service because ignition may occur, causing a pressure rise.

Question 62

GIVEN:

- The crew is performing FR-C.1, Response to Inadequate Core Cooling
- Core exit thermocouples all indicate 1270 - 1280°F
- Seal Injection and CCW are NOT available to RCPs
- Source Range nuclear instrument readings are elevated and very unstable
- Narrow Range Steam Generator levels in all steam generators are 26%

The Shift Foreman is considering starting a RCP.

Which of the following states the appropriate decision and reason?

- A. Start one RCP to circulate borated water through the core to recover the Subcriticality safety function.
- B. Do NOT start a RCP because conditions to run a RCP are not met and RCP damage could result.
- C. Do NOT start a RCP because the reactor may restart if cold water is suddenly circulated through the core.
- D. Start one RCP to provide some amount of core cooling even though RCP damage may result.

Question 63

GIVEN:

- The crew is performing the ECCS flow reduction actions of E-1.2, Post-LOCA Cooldown and Depressurization
- One ECCS Charging pump and both SI pumps are running
- The RHR pumps are secured
- Conditions are met for securing one of the SI pumps

When the SI pump is secured, RCS pressure begins to decrease.

Which of the following describes if the plant response is expected?

- A. This is not the expected plant response; the crew should restart the RHR pumps.
- B. This is not the expected plant response; the crew should immediately reinitiate SI.
- C. This is the expected plant response; RCS pressure should fall until injection flow matches break flow and RCS pressure should stabilize at approximately zero subcooling.
- D. This is the expected plant response; RCS pressure should fall until injection flow matches break flow but the RCS should remain subcooled.

Question 64

Given:

- A reactor trip from full power has occurred
- Condenser vacuum has degraded to 15" Hg and stable, and C-9 has extinguished
- 10% dump valves are unavailable
- All Steam Generator pressures are about 1070 psig and the 1st Safety Valves are cycling
- RCS Tc is about 555°F and stable
- Steam Dump Mode Selector switch was placed in "Steam Pressure" mode after the trip
- HC-507 is in AUTOMATIC, set at 1040 psig

The crew would like to restore 40% steam dump operation.

Which of the following is the MINIMUM that must be accomplished before the 40% dump valves will respond to the output of the steam pressure controller?

- A. Establish condenser vacuum (C-9 illuminated) ONLY
- B. Establish condenser vacuum (C-9 illuminated) AND move the Bypass Interlock switch to "Off/Reset" and back to ON
- C. Establish condenser vacuum (C-9 illuminated), AND go to "Block" on the Control Bypass Interlock switches
- D. Establish condenser vacuum (C-9 illuminated), AND move the Mode Selector Switch to "Reset" and back to "Steam Pressure" mode, AND move the Control Bypass Interlock switches to "Off/Reset" and back to ON

Question 65

Unit 1 is at 30% power.

When the operator begins to step rods out, one Control Bank C and one Control Bank D rod drops.

Which of the following states what is done and why it is done instead of attempting to recover the rods?

- A. The plant is shutdown. The rods are not recovered because two dropped rods is not an analyzed condition.
- B. The plant is shutdown. The rods are not recovered because they are in different banks.
- C. The reactor is tripped. The rods are not recovered because two dropped rods is not an analyzed condition.
- D. The reactor is tripped. The rods are not recovered because they are in different banks.

Question 66

An event has occurred that will cause a safety injection actuation (SI) setpoint to be exceeded, and automatic actuation is deemed to be unavoidable. The operator informs the Shift Foreman of the condition.

In accordance with OP1.DC10, Conduct of Operations, the operator should then:

- A. initiate a reactor trip and ensure SI actuation during the immediate actions of E-0, Reactor Trip or Safety Injection
- B. monitor the plant and ensure that the reactor trips and SI actuates automatically
- C. wait for direction to trip the reactor and initiate SI
- D. initiate SI and verify the reactor automatically trips

Question 67

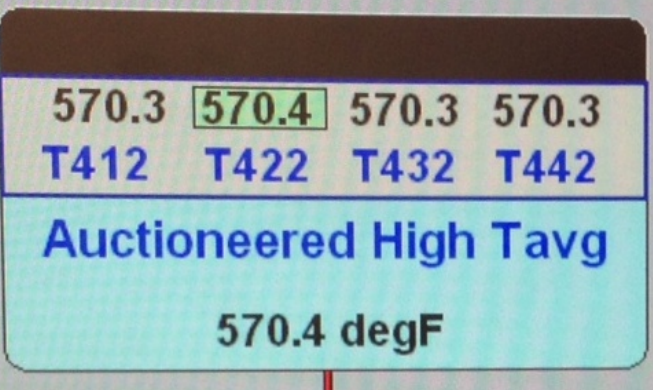
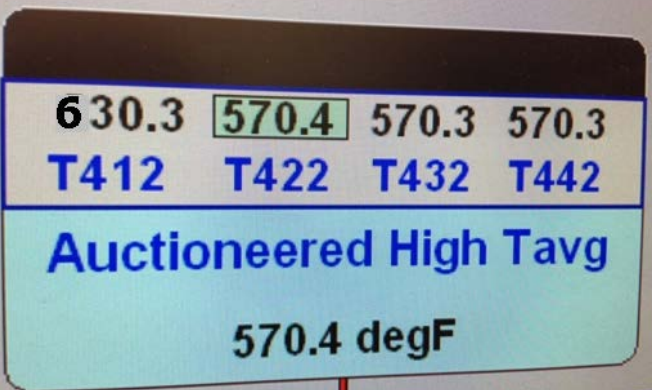
In accordance with OP1.DC31, Dissemination of Operations Information, which of the following types of communication would be used for short-term (less than one week) operating directions?

- A. Operations Policy
- B. Operations Shift Order
- C. Operations Memo
- D. Operations Standing Order

Question 68

Unit 1 is at full power.

The operator sees the following:

Time 0	2 seconds later
	

What is the status of rod control and charging?

- A. Rods are not moving and charging is not changing.
- B. Rods are inserting at maximum speed and charging flow is not changing.
- C. Rods are not moving and charging is rising.
- D. Rods are inserting at maximum speed and charging flow rising.

Question 69

An operator is performing a pump start in the Control Room using a normal operating procedure.

In accordance with AD1.ID1, Nuclear Generation Procedure Writer's Manual, how will two hazards associated with performing a step in the procedure be presented?

- A. CAUTION: hazard 1 statement and action to take if the hazard occurs. hazard 2 statement and action to take if the hazard occurs
- B. CAUTION 1: hazard 1 statement and action to take if the hazard occurs
CAUTION 2: hazard 2 statement and action to take if the hazard occurs
- C. CAUTION: hazard 1 statement only, (no actions will be included). hazard 2 statement, (no actions will be included)
- D. CAUTION 1: hazard 1 statement only, (no actions will be included)
CAUTION 2: hazard 2 statement only, (no actions will be included)

Question 70

Which of the following describes a normal operator action taken as a plant startup from MODE 5 to MODE 2 is performed?

- A. When RCS temperature exceeds 283°F and RHR has been removed from service, the operator takes the Low Setpoint Protection Cutout switches to CUTIN for Pressurizer PORVs PCV-455C and PCV-456.
- B. When RCS pressure exceeds P-11 and PK08-06, "PZR SI PERMISSIVE, P-11", goes OFF, the operator takes the Pressurizer SI RESET/BLOCK switches to RESET.
- C. When PK08-01, INTMED RNG PERMISSIVE P-6, goes ON, the operator takes the Source Range Trip Reset/Block switches to "BLOCK".
- D. When PK08-05, PWR RNG AT POWER PER P-10, goes ON, the operator takes the Intermediate Range Rod Stop and Trip Block switches to "BLOCK".

Question 71

According to OP2.ID2, Tagging Requirements, what type of tags are used by Operations to place equipment in a safe condition for maintenance, repair, or testing?

- A. Only Red tags
- B. Only Danger tags
- C. Either a Red or Danger tag
- D. Man-on-Line (MOL) tags

Question 72

An operator has a Total Effective Dose Equivalent (TEDE) of 1.5 REM for the current year.

Which of the following is the maximum time the operator can stay in a 200 mR/hr radiation area without exceeding the DCPP Administrative Exposure Guideline for the year?

NOTE: assume that if necessary, any required approvals have been given.

- A. 0 – the worker is at the admin guideline limit
- B. 2.5 hours
- C. 5 hours
- D. 15 hours

Question 73

GIVEN:

- Several Auxiliary Building radiation alarms are received
- It is confirmed that Liquid Hold-Up Tank 1-1 has ruptured and is leaking in the Auxiliary Building
- The crew has entered OP AP-14, Tank Ruptures

What action must be taken to prevent the offsite release of radioactive particulate and iodine?

- A. Select "S" signal test at POV1 and POV2, place Aux Building Ventilation in "Safeguards Only" and energize charcoal heaters.
- B. Push "Status Reset" at POV1 and POV2, and reset the "S" signal.
- C. Stop all Aux Bldg supply and exhaust fans, and energize charcoal heaters.
- D. Locally close dampers that isolate the Waste Gas Decay Tank rooms.

Question 74

Which of the following procedure or procedure sets has priority over all emergency response guidelines?

- A. Any Red or Magenta path Function Restoration Guidelines
- B. FR-S.1, Response to Nuclear Power Generation/ATWS
- C. ECA-0.0, Loss of All Vital AC Power
- D. E-0, Reactor Trip or Safety Injection

Question 75

The crew is performing EOP E-0, Reactor Trip or Safety Injection.

In accordance with OP1.DC10, Conduct of Operations, the operators are expected to:

- A. only provide the information requested by the Shift Foreman.
- B. take the actions of the first 10 steps and then report the action to the Shift Foreman as the high level steps are reached.
- C. memorize the first 10 steps to allow time critical operator actions to be completed promptly.
- D. be familiar enough with the first 10 steps to allow for SFM reading high level steps and the board operator responding with details required by the step.

Question 76

Unit 1 at full power.

The CO reports the following:

- Pressurizer level is stable
- Normal letdown is in service
- Seal Injection is 8 gpm to each RCP
- Charging flow has risen to 120 gpm
- VCT level is lowering
- Containment parameters are normal
- Regen Heat Exchanger outlet temperature has risen

RCS Leakage

SU6.1

Unidentified or pressure boundary
leakage > 10 gpm

OR

Identified leakage > 25 gpm

- A. There is an RCS leak, No E-Plan declaration is required.
- B. There is an RCS leak. The Shift Manager will make an E-Plan declaration due to exceeding the limits of SU6.1.
- C. There is a leak on the charging line. No E-Plan declaration is required.
- D. There is a leak on the charging line. The Shift Manager will make an E-Plan declaration due to exceeding the limits of SU6.1.

Question 77

GIVEN:

- The crew is preparing to exit E-0, Reactor Trip or Safety Injection
- RCPs are secured
- RCS cold leg temperatures are 210°F and rising slowly
- All steam generator narrow range levels are off scale low
- All steam generator pressures are approximately 10 psig and stable
- Containment pressure is 48 psig
- No Containment Spray pumps are running

Which of the following procedures should be entered from E-0?

- A. E-2, Faulted Steam Generator Isolation
- B. ECA-2.1, Uncontrolled Depressurization of All Steam Generators
- C. FR-P.1, Response to Imminent Pressurized Thermal Shock Condition
- D. FR-Z.1, Response to High Containment Pressure

Question 78

For a main feedline break event, LCO 3.7.5 Auxiliary Feedwater Tech Spec bases assumes which of the following Auxiliary Feedwater pumps will provide flow to the steam generator(s)?

- A. One motor driven AFW pump
- B. Both motor driven AFW pumps
- C. One motor driven AFW pump and the TDAFW pump
- D. The TDAFW pump

Question 79

Unit 1 is at full power.

The operator reports:

- Ocean temperature has been slowly rising and is now 65°F
- CCW heat exchanger outlet temperature is 80°F and rising slowly

Which of the following actions would be taken by the Shift Foreman?

- A. Commence a plant shutdown in accordance with LCO 3.0.3 because there are no OPERABLE CCW loops due to the high ocean temperature.
- B. Direct the operator to trip the reactor and all RCPs in accordance with OP AP-11, Loss of Component Cooling Water System, to prevent damage to the RCP thermal barrier.
- C. Direct the operator to trip the reactor and all RCPs in accordance with OP AP-11, Loss of Component Cooling Water System, to prevent possibly exceeding CCW maximum design temperature during a design basis accident
- D. Take the action of LCO 3.7.9, Ultimate Heat Sink, to place a second CCW heat exchanger in service, to prevent possibly exceeding CCW maximum design temperature during a design basis accident.

Question 80

GIVEN:

- Unit 2 has completed a refueling outage
- RCS temperature is 400°F
- L-1, "Plant Heatup From Hot Shutdown to Hot Standby" is in progress

A loss of all offsite power occurs. None of the Emergency Diesels start.

Which of the following should be performed by the Shift Foreman?

- A. Refer to OP AP SD-1, Loss of AC Power.
- B. Go to OP AP SD-1, Loss of AC Power.
- C. Refer to EOP ECA-0.0, Loss of All AC Power.
- D. Go to EOP ECA-0.0, Loss of All AC Power.

Question 81

GIVEN:

- The crew is performing E-1, Loss of Reactor or Secondary Coolant
- RCS pressure is 200 psig
- Readings on RM-13, RHR Exhaust Duct, radiation monitor are increasing
- RWST level is 40% and decreasing
- RHR pump amps are fluctuating
- The following alarms are received in the Control Room:

PK02-16	RHR SYSTEM
PK02-17	RHR PUMPS

Which of the following procedures will the Shift Foreman transition to from E-1?

- A. E-1.2, Post-LOCA Cooldown and Depressurization
- B. ECA-1.1, Loss of Emergency Coolant Recirculation
- C. ECA-1.2, LOCA Outside Containment
- D. ECA-1.3, Sump Blockage Guideline

Question 82

GIVEN:

- Unit 2 transitioned to E-0.4, Natural Circulation Cooldown With Steam Void in the Vessel (Without RVLIS)
- The crew has begun the initial RCS depressurization using auxiliary spray
- Prior to the initial depressurization step, there is a caution stating that auxiliary spray delta T should not exceed 320°F

Which of the following describes how the crew will operate auxiliary spray during RCS depressurizations and what is the concern addressed by the caution?

- A. It is cycled as necessary to control pressure. Thermal shock of the letdown regen heat exchanger.
- B. It is left open until the final RCS pressure is reached. Thermal shock of the letdown regen heat exchanger.
- C. It is cycled as necessary to control pressure. Thermal shock of the pressurizer spray nozzle.
- D. It is left open until the final RCS pressure is reached. Thermal shock of the pressurizer spray nozzle.

Question 83

Unit 1 is at full power.

The Shift Foreman is trending the following in accordance with OP O-4, Primary to Secondary Steam Generator Tube Leakage due to tube leakage in the 1-2 Steam Generator:

- U5503 Leak rate based on RM-15
- U5504 Leak rate based on RM-15R
- U5507 Rate of rise based on RM-15
- U5508 Rate of rise based on RM-15R

Chemistry reports that RCS activity is much less than the activity level used to set the alert and high alarm setpoints for SJAE radiation monitors, RM-15 and RM-15R.

As the SFM evaluates the RM-15/15R data points, the SFM should take into account that the:

- A. actual leak rate is probably greater than the trended leak rate.
- B. actual leak rate is probably lower than the trended leak rate.
- C. conversion factors are invalid and therefore, the leak rate points are not providing any meaningful data.
- D. conversion factors are invalid and therefore, the rate of rise points are not providing any meaningful data.

Question 84

The crew is performing ECCS reduction in E-1.2, Post LOCA Cooldown and Depressurization. One SI pump has been stopped.

Which of the following describes how the subcooling requirement changes and the basis for the amount of subcooling required for securing the second SI pump?

Required subcooling:

- A. increases to ensure the RCS will remain subcooled after the second SI pump is stopped.
- B. increases to compensate for the anticipated void formation after the second pump is stopped.
- C. decreases due to decreased break flow after stopping the second pump.
- D. decreases to allow pressure to decrease sufficiently after stopping the second pump to place RHR cooling in service.

Question 85

According to the bases for Technical Specification LCO 3.6.4, Containment Pressure, the events that bound the analysis for upper and lower allowable containment pressure are which of the following?

	LOWER LIMIT	UPPER LIMIT
A.	LOCA	Steam line break
B.	Steam line break	LOCA
C.	Inadvertent containment spray actuation	LOCA
D.	Inadvertent containment spray actuation	Steam line break

Question 86

Unit 1 is in MODE 2, performing a plant startup.

Steam Generator 14 Steamline radiation monitor, RM-74 fails, and is declared inoperable.

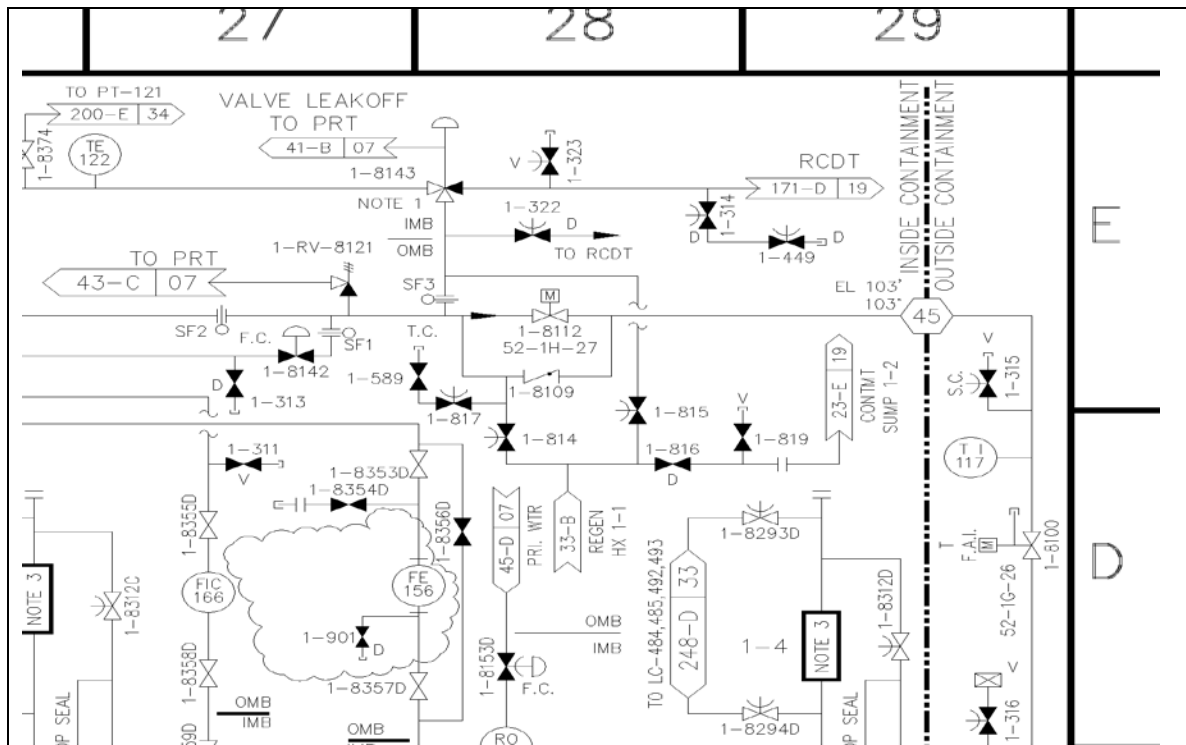
Which of the following describes whether Unit 1 can enter MODE 1 and the REQUIRED ACTIONS that would meet ECG 7.8, Accident Monitoring Instrumentation?

- A. The plant cannot enter MODE 1 until RM-74 is OPERABLE. Performing ECG 7.8 actions E.1 and E.2 or E.1 and E.3 would satisfy the ECG.
- B. The plant may enter MODE 1 with RM-74 inoperable. Performing ECG 7.8 actions E.1 and E.2 or E.1 and E.3 would satisfy the ECG.
- C. The plant cannot enter MODE 1 until RM-74 is OPERABLE. Performing ECG 7.8 actions E.1 and E.2 or only E.3 would satisfy the ECG.
- D. The plant may enter MODE 1 with RM-74 inoperable. Performing ECG 7.8 actions E.1 and E.2 or only E.3 would satisfy the ECG.

Question 87

A leak develops at the inlet of RCP Seal Water Return Stop valve, CVCS-8100.

Which of the following actions will be necessary to stop the leakage and what will be the impact, if any, when a leak rate is calculated using STP-R-10C, Reactor Coolant System Water Inventory Balance, after the leakage is isolated?



- A. Close CVCS-8100 to stop the leakage. Calculated RCS leakrate per STP-R-10C will NOT be affected.
- B. Close CVCS-8112 to stop the leakage. Calculated RCS leakrate per STP-R-10C will NOT be affected.
- C. Close CVCS-8100 to stop the leakage. Calculated RCS leakrate per STP-R-10C will be affected.
- D. Close CVCS-8112 to stop the leakage. Calculated RCS leakrate per STP-R-10C will be affected.

Question 88

GIVEN:

- Unit 1 is at full power
- The crew is attempting to determine which Pressurizer PORV is leaking by its seat
- TI-463, PORVs (common) Discharge Temperature, is reading 145°F
- The operator has closed PCV-474 block valve, MOV-8000A

30 minutes later, temperature indication on TI-463 is reading 110°F.

Based on the above conditions the Shift Foreman should declare PCV-474 inoperable, leave MOV-8000A closed:

- A. but do not remove power from 8000A. PCV-474 is still considered available to be used to control pressure. No further isolations are required, only PCV-474 was leaking by.
- B. and remove power from 8000A within one hour. PCV-474 is not considered available to be used to control pressure. No further isolations are required, only PCV-474 was leaking by.
- C. but do not remove power from 8000A. PCV-474 is still considered available to be used to control pressure. Then repeat the isolation process for the remaining PORVs to determine which one(s) is still leaking by.
- D. and remove power from 8000A within one hour. PCV-474 is not considered available to be used to control pressure. Then repeat the isolation process for the remaining PORVs to determine which one(s) is still leaking by.

Question 89

GIVEN:

- E-3, Steam Generator Tube Rupture, is being performed
- Charging is in service
- The crew has just completed step 26 and isolated charging injection

The Control Operator reports that RCS subcooling is 15°F and lowering and pressurizer level is 30% and lowering and RCS pressure is 800 psig and lowering.

What action should be taken by the Shift Foreman?

- A. Continue with E-3, and establish charging per step 27, this is the expected plant response until charging is established.
- B. Direct the operator to manually restart ECCS pumps as necessary and go to E-1, Loss of Reactor or Secondary Coolant.
- C. Direct the operator to reinitiate SI and go to E-1, Loss of Reactor or Secondary Coolant.
- D. Direct the operator to manually restart ECCS pumps as necessary and go to ECA-3.1, SGTR With Loss of Reactor Coolant, Subcooled Recovery Desired.

Question 90

GIVEN:

- Main Feedwater pump 1-1 tripped at 70% power
- The crew is performing OP AP-15, Loss of Feedwater Flow, Section A, One MFP Trips with Both MFPs Operating
- Turbine ramps have been completed
- Turbine load is 530 MWe and stable
- Reactor power is 51% and lowering slowly

Main Feedwater Reg Valve to Steam Generator 1-1, FCV-510, begins to open. The operator reports the valve will not respond in MANUAL. Steam Generator 1-1 level is 85% and rising.

Which of the following actions should be taken by the Shift Foreman?

- A. Direct the crew to trip the reactor and go to E-0, Reactor Trip or Safety Injection.
- B. Direct the crew to trip the turbine and go to OP AP-29, Main Turbine Malfunction.
- C. Direct an operator to go to the valve locally and attempt to control the valve and restore level in Steam Generator 1-1; if level continues to rise, then direct the crew to trip the reactor and go to E-0, Reactor Trip or Safety Injection prior to reaching the P-14 setpoint.
- D. Direct an operator to go to the valve locally and attempt to control the valve and restore level in Steam Generator 1-1; if level continues to rise, then direct the crew to trip the turbine and go to OP AP-29, Main Turbine Malfunction prior to reaching the P-14 setpoint.

Question 91

A steam generator tube rupture has occurred on Unit 1. The crew has completed E-3, Steam Generator Tube Rupture.

The crew has selected E-3.3, Post-SGTR Cooldown Using Steam Dump, as the recovery procedure.

Which of the following cooldown methods is preferred to cooldown the ruptured steam generator and why?

- A. Cooldown using the 10% steam dump because the cooldown will be faster.
- B. Cooldown using the condenser steam dumps to minimize the radiological release to the public.
- C. Cooldown using the 10% steam dump because it is a monitored release and the condenser steam dumps are not.
- D. Cooldown using the condenser steam dumps because it is a monitored release and the 10% steam dump is not.

Question 92

PLANT CONDITIONS:

- Core offload is in progress
- The manipulator crane is transferring a spent fuel assembly from the reactor vessel to the transfer canal
- The assembly is currently close to the transfer canal

Indications of a dropped or damaged fuel assembly are observed.

In accordance with AP-21, Irradiated Fuel Damage, if the dropped or damaged assembly can be moved, which of the following describes what should be done with the assembly?

- A. Return it to its original core position.
- B. Leave the assembly in the mast of the manipulator crane and lower to the bottom of the transfer canal.
- C. Place the assembly in the containment side upender and lower the upender, do not transfer the assembly to the spent fuel pool.
- D. Place the assembly in the containment side upender, lower the upender, and transfer the assembly to the spent fuel pool.

Question 93

GIVEN:

- A discharge of Process Waste Receiver 0-1 is in progress per OP G-1:II, Liquid Radwaste System - Discharge of Liquid Radwaste
- A High Radiation alarm is received for RE-18, Liquid Radwaste Radiation Detector
- The release fails to terminate automatically due to the high radiation signal but is terminated by the operator at the Aux Panel in less than a minute
- Due to the failure to automatically terminate the release, RE-18 is declared inoperable

Which of the following:

- 1) Identifies the Federal Regulatory impact, if any, of this condition?
 - 2) If the discharge may occur while RE-18 is inoperable?
- A. 1) The continued release may have exceeded the Liquid Effluent Limits of the Offsite Dose Calculation Procedure.
2) No releases may occur until RE-18 is OPERABLE.
- B. 1) The continued release may have exceeded the Liquid Effluent Limits of the Offsite Dose Calculation Procedure.
2) The discharge may occur provided two independent samples are taken and analyzed by two technically qualified technicians.
- C. 1) No regulatory impact, the discharge permit is a state, not a federal, regulation.
2) No releases may occur until RE-18 is OPERABLE.
- D. 1) No regulatory impact, the discharge permit is a state, not a federal, regulation.
2) The discharge may occur provided two independent samples are taken and analyzed by two technically qualified technicians.

Question 94

According to OP1.DC10, Conduct of Operations, which of the following are the responsibility of the Shift Foreman?

1. Perform Control Board walkdowns
 2. Track degraded and inoperable technical specification and other equipment important to safe and reliable plant operations
 3. Perform non-routine reporting per XI1.ID2, Regulatory Requirements and Reporting Process
- A. 1 only
- B. 1 and 2 only
- C. 2 and 3 only
- D. 3 only

Question 95

Which of the following situations would require the use of a Sealed Component Change Form prior to breaking the seal?

- A. While transferring PY-17 from normal to back-up power supply using OP J-10:IV, the Nuclear Operator breaks a RED seal on the PY-17 power transfer switch (EY-17).
- B. During response to a loss of coolant accident, the Shift Foreman directs a Nuclear Operator to break a RED seal in order to open a sealed-closed valve.
- C. While performing STP M-54, Verification of RCP Seal Injection Flow by Resistance Measurement, the YELLOW seal on CVCS-8369A (RCP 1-1 Seal Injection Water) is broken when directed by the procedure.
- D. During the hanging of a clearance, the Nuclear Operator breaks a GREEN seal.

Question 96

Implementation of an “Interim“ On the Spot Change (OTSC) which effects the operational status of plant equipment, but does not constitute a change of intent to a procedure, must be authorized by which of the following?

- A. Operations Director
- B. Site Procedure group
- C. Plant Management staff with an SRO
- D. Plant Staff Review Committee (PSRC)

Question 97

The crew is performing a test procedure which does not provide guidance for returning the equipment to its normal alignment.

Can a Pink Tag be used for Status Control of the equipment?

- A. No, Pink Tags are not appropriate for status control
- B. Yes, no approval is needed, Pink Tags are Operator aids
- C. Yes, Pink Tags may be used for status control with Shift Foreman approval
- D. Yes, Pink Tags may be used for status control with Shift Manager approval

Question 98

A Site Area Emergency has been declared due to a LOCA Outside Containment.

An operator volunteers to make an emergency entry into the penetration area to isolate the leak. Isolating the leak would result in a significant reduction in the offsite dose.

Which of the following is the MAXIMUM exposure the Site Emergency Coordinator (SEC) may authorize for this situation?

- A. 4,500 mrem TEDE
- B. 5,000 mrem TEDE
- C. 10,000 mrem TEDE
- D. 25,000 mrem TEDE

Question 99

Given the choice, why is E-3.1, Post-SGTR Cooldown Using Backfill, the preferred procedure for the Shift Foreman to enter from E-3, Steam Generator Tube Rupture?

- A. To minimize radiological release and prevent boron dilution of the RCS.
- B. To minimize radiological release and facilitates processing of contaminated primary coolant.
- C. It is the fastest of the recovery methods and facilitates processing of contaminated primary coolant.
- D. To prevent boron dilution of the RCS and facilitates processing of contaminated primary coolant.

Question 100

The crew has just entered an Emergency Operating Procedure (EOP) and cannot perform a transition brief.

According to OP1.DC10, Conduct of Operations, how will the foldout page items be monitored?

- A. The WCSFM and the Shift Manager should monitor the foldout page items.
- B. The WCSFM and the Shift Foreman on the affected unit should monitor the foldout page items.
- C. The WCSFM and the Shift Foreman from the unaffected unit should monitor the foldout page items.
- D. Foldout pages in EOPs without transition briefs are not applicable until specifically directed by the procedure, at that point foldout page items can be assigned to the board operators by the Shift Foreman.