

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

**Applicant Information**

Name:

Date: 02/01/2012

Facility/Unit: SQN Units 1 & 2

Region:    I  II X III  IV

Reactor Type: W X 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

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1. Given the following:

- Unit 2 is starting up and is at 2% power with the Steam Dump Control System operating as follows:
  - Steam Dump Mode Selector Switch (HS-1-103D): STEAM PRESS
  - Steam Dump Pressure Controller (PIC-1-33): AUTO
- A spurious Reactor Trip occurs, however Reactor Trip Breaker B fails to open.

Which ONE of the following identifies the steam generator (SG) pressure setpoint immediately after the reactor trip and the required actions to adjust SG pressure?

- A. SG pressure corresponding to Tavg of 547°F (~ 1005 psig)  
Use the lever at the bottom of the PIC-1-33 controller.
- B. SG pressure corresponding to Tavg of 550°F (~ 1026 psig)  
Use the lever at the bottom of the PIC-1-33 controller.
- C. SG pressure corresponding to Tavg of 547°F (~ 1005 psig)  
Use the setpoint up/down pushbuttons on the PIC-1-33 controller.
- D. SG pressure corresponding to Tavg of 550°F (~ 1026 psig)  
Use the setpoint up/down pushbuttons on the PIC-1-33 controller.

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2. Given the following plant conditions:

- Unit 1 is operating at 100% power.
- A small leak has developed on the line connecting the pressurizer to the PORVs.

Which ONE of the following describes the **initial** response of the pressurizer pressure control and level control systems?

Pressurizer Pressure Controller  
1-PIC-68-340A

Charging Flow Controller  
1-HIC-62-93A

- |                         |                      |
|-------------------------|----------------------|
| A. output will INCREASE | output will INCREASE |
| B. output will INCREASE | output will DECREASE |
| C. output will DECREASE | output will INCREASE |
| D. output will DECREASE | output will DECREASE |

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3. Given the following plant conditions:

- A reactor trip and safety injection has occurred concurrent with a loss of off-site power.
- RCS pressure is 1500 psig and slowly lowering.
- The crew has transitioned to E-1, "Loss of Reactor or Secondary Coolant."
- Containment pressure 2.9 psig and slowly rising.

Which ONE of the the following describes the level band that the Steam Generators are required to be maintained between and why?

- A. 10-50%; to provide a static head of water to prevent primary to secondary leakage.
- B. 25-50%; to provide a static head of water to prevent primary to secondary leakage.
- C. 10-50%; to ensure an adequate SG inventory to maintain a heat sink.
- D. 25-50%; to ensure an adequate SG inventory to maintain a heat sink.

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4. Given the following plant conditions:

- A large break LOCA has occurred on Unit 1.
- ES-1.3, "Transfer to RHR Containment Sump," was completed 1 hour ago.
- A loss of offsite power has just occurred.

Which ONE of the following describes a manual action required to be taken in response to this event?

- A. STOP/PULL TO LOCK the Containment Spray pumps.
- B. STOP/PULL TO LOCK Safety Injection Pumps.
- C. STOP/PULL TO LOCK the RHR pumps.
- D. STOP/PULL TO LOCK the CCPs.

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5. Given the following plant conditions:

- Unit 1 is operating at 100% power.
- The following alarms are received on M-27B-A:
  - CCS REAC BLDG SUPPLY HEADER FLOW LOW
  - RC PUMPS THRM BARRIER RETURN HEADER FLOW LOW
  - RC PUMP 1 THRM BARRIER OUTLET FLOW LOW
  - RC PUMP 2 THRM BARRIER OUTLET FLOW LOW
  - RC PUMP 3 THRM BARRIER OUTLET FLOW LOW
  - RC PUMP 4 THRM BARRIER OUTLET FLOW LOW
  - RC PUMP 1 OIL COOLERS OUTLET FLOW LOW
  - RC PUMP 2 OIL COOLERS OUTLET FLOW LOW
  - RC PUMP 3 OIL COOLERS OUTLET FLOW LOW
  - RC PUMP 4 OIL COOLERS OUTLET FLOW LOW
- Seal injection flow rate to each RCP is 8 gpm.

Which ONE of the following identifies how the operation of the RCPs will be affected if the operators do not respond to the alarms?

- A. The RCPs are designed to operate without CCS indefinitely.
- B. The RCPs will experience seal failure.
- C. The RCP stator windings will overheat.
- D. The RCP motor bearings will overheat.

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6. Given the following plant conditions:

AT 10:00, Unit 1 plant conditions were as follows:

- 100% steady state power.
- The following parameters are observed:
  - Letdown flow: 75 gpm as indicated on 1-FI-62-82
  - Total charging flow: 85 gpm as indicated on 1-FI-62-93A
  - Seal Injection flow: 10 gpm per RCP
  - Seal return flow: 3 gpm per RCP

At 12:00, Unit 1 plant conditions were as follows:

- 100% steady state power.
- 1-FCV-62-93, Charging Flow Control Valve, has failed closed.
- Normal letdown cannot be established.
- The following parameters are observed:
  - Total charging flow: 40 gpm as indicated on 1-FI-62-93A
  - Seal injection flow: 10 gpm per RCP
  - Seal return flow: 3 gpm per RCP

Which ONE of the following identifies the trend in Pressurizer level at 10:00 and 12:00?

Pressurizer level at 10:00 was \_\_(1)\_\_ and pressurizer level at 12:00 was \_\_(2)\_\_.

- |    | (1)        | (2)        |
|----|------------|------------|
| A. | Increasing | Increasing |
| B. | Increasing | Decreasing |
| C. | Decreasing | Increasing |
| D. | Decreasing | Decreasing |

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7. Given the following plant conditions:

- Unit 2 RCS has been drained to 695'10" during a refueling outage, per 0-GO-13, "Reactor Coolant System Drain and Fill Operations."
- The reactor vessel head is in place but bolts are NOT tightened.
- Containment sump level starts increasing.
- Annunciator "RCS MID LOOP LEVEL LOW" (M6-C, A7) alarms.
- Running RHR pump amps are observed cycling between 20 and 40 amps.

Which ONE of the following identifies the procedure that is required to be entered to mitigate the event?

- A. AOP-R.02, "Shutdown LOCA."
- B. 0-SO-74-1, "Residual Heat Removal System."
- C. AOP-R.03, "RHR System Malfunction."
- D. AOP-R.05, "RCS Leak and Leak Source Identification."



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8. Given the following plant conditions,

- The Unit 1 Main Control Room has been abandoned.
- The transfer switches per AOP-C.04, "Shutdown from the Auxiliary Control Room," have been placed in the AUX position.
- Aux Control Room alarm "PS-68-336AC RCS PRZR PRESS HI" has just been received.

Which ONE of the following identifies the lowest RCS pressure when the alarm is received and where the PZR Backup heaters will be operated?

	<u>RCS Pressure</u>	<u>Location</u>
A.	2310 psig	6.9 Kv Shutdown Boards 1A-A & 1B-B
B.	2310 psig	1-L-10, Auxiliary Control Room
C.	2335 psig	6.9 Kv Shutdown Boards 1A-A & 1B-B
D.	2335 psig	1-L-10, Auxiliary Control Room

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9. Given the following plant conditions:

- Unit 1 is responding to an ATWS per FR-S.1, "Nuclear Power Generation / ATWS."
- Power is lost to all of panel 1-M-2.

Which ONE of the following would the CRO utilize for indication of turbine stop valves being closed?

- A. "P-9 TURBINE TRIP/ REACTOR TRIP" annunciator on Reactor First Out panel.
- B. TV-1 through TV-4 "CLOSED" lights on the EHC Control panel 1-XX-47-1000.
- C. Dispatch AUO to verify turbine stop valves closed on EHC local panel.
- D. All 4 status lights "Turb. Stop Valves Closed" lit on 1-XX-55-6A.

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10. Given the following plant conditions:

- Unit 1 is operating at 100% power.
- A SGTR occurs.
- The crew manually trips the reactor and initiates safety injection.
- Offsite power is lost on the trip.
- The crew is performing actions in E-3, "Steam Generator Tube Rupture," to minimize break flow and refill the pressurizer.

In accordance with E-3, which ONE of the following identifies:

(1) the method that is attempted first to depressurize the RCS

and

(2) a potential consequence of performing this action?

- A. (1) using a PZR PORV  
(2) PRT rupture disk ruptures.
- B. (1) using Auxiliary Spray  
(2) thermal shock of PZR spray nozzle.
- C. (1) using a PZR PORV  
(2) interruption of natural circulation flow.
- D. (1) using Auxiliary Spray  
(2) PZR cooldown limit will be exceeded.

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11. Given the following plant conditions:

- A Reactor Trip and SI has occurred on Unit 2 from 100% power.
- All SGs are depressurizing in an uncontrolled manor.
- The crew was unable to isolate any of the SGs.
- All SG levels are less than 10% NR.
- RCS cooldown rate is greater than 100°F/hr.

In accordance with ECA-2.1, "Uncontrolled Depressurization of All Steam Generators," which ONE of the following identifies the correct action to take concerning AFW flow and the reason for the action?

- A. Reduce AFW flow to "0" to each SG to stop RCS cooldown.
- B. Reduce AFW flow to 50 gpm to each SG to prevent SG dryout.
- C. Reduce AFW flow by 50 gpm to each SG to minimize RCS cooldown.
- D. Reduce AFW flow to 440 gpm to prevent a required entry into FR-H.1, "Loss of Secondary Heat Sink."

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12. Given the following plant conditions:

- Unit 2 is operating at 52% power.
- 2B MFP is in service.
- Due to excessive vibrations, the 2B MFP needs to be shutdown.
- Just as the 2A MFP has been reset and is ready to be placed in service the 2B MFP trips.
- Immediately following the Reactor Trip, the following SG NR levels are observed:
  - # 1 10%
  - # 2 15%
  - # 3 20%
  - # 4 18%
  
- RCS Tave is maintained at 552°F

Which ONE of the following identifies the AFW pump(s) that will be automatically started and the reason why?

- A. The 2A MDAFW pump, ONLY, starts due to low level in #1 SG.
- B. Both MDAFW pumps, ONLY, start due to the level in #1 SG.
- C. Both MDAFW pumps start due to trip of MFW pump.
- D. Both MDAFW pumps and the TDAFW pump start due to Rx trip and Lo Tave.

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13. Given the following plant conditions:

- The crew is in ECA-0.0, "Loss of All AC Power."
- Maximum cooldown rate allowed is commenced through the atmospheric reliefs.
- During the rapid depressurization of all intact SGs to 160 psig, an overshoot occurs.
- SG pressure is reduced to 50 psig before the depressurization is stabilized.

Which ONE of the following identifies the potential implication that could result from this overshoot in SG depressurization?

- A. Natural circulation may be impeded.
- B. Unacceptable upper head voiding may occur.
- C. The integrity of the RCP seals may be challenged.
- D. A Red Path on PTS may occur.

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14. Given the following plant conditions:

- The 1B-B DG is tagged for maintenance
- A loss of off-site power has occurred.
- Unit 1 is responding per AOP-P.01, "Loss of Offsite Power."
- Unit 2 is responding per ECA-0.0, "Loss of All AC Power."
- You are an extra UO and have been directed by U2 SRO to perform EA-250-1, "Load Shed of Vital Loads After Station Blackout."

Which ONE of the following identifies both:

(1) the time load shedding actions of EA-250-1 are required to be completed

and based upon that time

(2) which loads will no longer be available after the required dc loads have been load shed?

- A. (1) 45 minutes  
(2) MCR annunciators, permissive lights and SSPS status lights.
- B. (1) 45 minutes  
(2) DC air side seal oil pump.
- C. (1) 90 minutes  
(2) MCR annunciators, permissive lights and SSPS status lights.
- D. (1) 90 minutes  
(2) DC air side seal oil pump.

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15. Given the following plant conditions:

- Unit 1 is at 100% RTP.
- MCR alarms received indicate that an electrical board has failed.
- All trip status lights on Panel 1-XX-55-5 (1-M-5) are OFF with the exception of Protection Set 3 Trouble light which is LIT.
- The crew responds in accordance with the appropriate procedure.

Which ONE of the following identifies (1) the electrical board that failed and (2) the reason that manipulation of Auxiliary Feedwater (AFW) controls will be required?

(1)

(2)

- A. 120 VAC Vital Instrument Board 1-I. To prevent overcooling caused by excessive AFW flow due to the LCVs failing open.
- B. 120 VAC Vital Instrument Board 1-I. To allow the turbine driven AFW pump to be operated above minimum speed.
- C. 120 VAC Vital Instrument Board 1-III. To prevent overcooling caused by excessive AFW flow due to the LCVs failing open.
- D. 120 VAC Vital Instrument Board 1-III. To allow the turbine driven AFW pump to be operated above minimum speed.



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16. Given the following plant conditions:

- The crew entered AOP-M.01, "Loss of Essential Raw Cooling Water," due to high flow on ERCW Supply Header 2A.
- The leak was isolated by closing 2-FCV-67-223, Hdr 2A to Hdr 1B Isol Valve.
- The crew completes the applicable section of AOP-M.01.

Which ONE of the following describes the ERCW Supply Header that will be aligned to the CCS heat exchangers after the remaining actions of AOP-M.01 are complete?

**Reference Provided**

	<u>2A1/2A2 Hx</u>	<u>OB1/OB2 Hx</u>	<u>1A1/1A2 Hx</u>
A.	2A ERCW Supply Header	2B ERCW Supply Header	1B ERCW Supply Header
B.	2A ERCW Supply Header	ERCW Isolated to Hx	1B ERCW Supply Header
C.	2A ERCW Supply Header	2B ERCW Supply Header	ERCW Isolated to Hx
D.	ERCW Isolated to Hx	2B ERCW Supply Header	1B ERCW Supply Header

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17. Given the following plant conditions:

- Both Units were operating at 100% power when a Station Blackout occurs.
- Both unit crews are repounding using ECA-0.0, "Loss of All AC Power."

Which ONE of the following is the reason for the backup air supply for the TD AFW Pump LCVs and the action/condition required to align the backup supply?

- A. Allows the LCVs to be CLOSED during a Station Blackout event and will require manual alignment locally when needed.
- B. Allows the LCVs to be CLOSED during a Station Blackout event and is automatically supplied when air pressure drops below regulator setpoint.
- C. Allows the LCVs to be OPENED during a Station Blackout event and will require manual alignment locally when needed.
- D. Allows the LCVs to be OPENED during a Station Blackout event and is automatically supplied when air pressure drops below regulator setpoint.

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18. Given the following plant conditions:

- Unit 1 is responding to a Loss of Heat Sink per FR-H.1, "Response to Loss of Secondary Heat Sink."
- All Steam Generator Wide Range levels are Off-Scale low.
- RCS temperature is approximately 588°F and rising slowly.
- Core Exit Thermocouples are 605°F and rising slowly.

Which ONE of the following describes the preferred method of initiating Auxiliary Feed flow for these conditions?

- A. Feed at the maximum available feed flow to all S/Gs to reestablish SG inventory and secondary heat sink.
- B. Feed at 50 to 100 gpm to one SG to prevent possible tube failures.
- C. Feed at the maximum available feed flow to one S/G to reestablish SG inventory and secondary heat sink.
- D. Feed at 50 to 100 gpm to all SGs to establish a controllable cooldown rate and prevent RCS pressure from reaching the PORV setpoint.

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19. Given the following plant conditions:

- Unit 2 is at 12% reactor power during a plant startup.
- The OATC reports that Rod H4 has dropped into the core.
- The crew enters AOP-C.01, "Rod Control System Malfunctions."
- While monitoring Tave the OATC reports RCS temperature at 540°F.
- PZR pressure is 2225 psig.

Which ONE of the following identifies the required actions and why?

- A. Recover the control rod within 1 hr to prevent exceeding Enthalpy Rise Hot Channel Factor (  $F^N_{\Delta H}$  ).
- B. Recover the control rod within 1 hr to ensure Moderator Temperature Coefficient remains within assumed values.
- C. Immediately trip the reactor because the Enthalpy Rise Hot Channel Factor (  $F^N_{\Delta H}$  ) value has been exceeded .
- D. Immediately trip the reactor because the Moderator Temperature Coefficient may be outside the initial conditions assumed in accident analysis.

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20. Given the following plant conditions:

- Unit 1 tripped from 100% power.
- 1-FCV-62-135, "RWST to CCP Suction" is tagged closed for maintenance.
- The OATC is directed to perform EA-68-4, "Emergency Boration."
- The OATC reports that neither Boric Acid Transfer pump will shift to fast speed.

Based on the above conditions, which ONE of the following identifies the flow path that meets the requirements of EA-68-4 for Emergency Boration?

- A. Normal boration via FCV-62-140 & 144.
- B. Emergency Boration via FCV-62-138.
- C. Alternate Emergency Boration via VLV-62-929.
- D. RWST via FCV-62-136.

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21. Given the following:

- Unit 1 is in Mode 6.
- An irradiated assembly is in the manipulator crane and is being transferred from an incore location to the upender.
- The Refueling SRO determines a leak has developed in the Reactor Cavity Seal.
- No assemblies are in the RCCA change fixture.

In accordance with AOP-M.04, "Refueling Malfunctions," which ONE of the following identifies the required action to be taken with the fuel assembly?

- A. Place the fuel assembly in the upender and transport to the SFP.
- B. Place the fuel assembly in the upender and lower the upender.
- C. Place the fuel assembly in the RCCA change fixture.
- D. Place the fuel assembly in any core location.

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22. Given the following plant conditions:

- Unit 1 is operating at 100% power.
- Unit 2 is in Mode 6 for a refueling outage.
- Chemistry reports that a sample of the Turbine Bldg sump exceeds the limit for ODCM sect 1.2.1.1 "Radioactive Effluents; Liquid Effluents."

Which ONE of the following identifies (1) the reason for the declaring 0-RM-90-212 Station Sump Discharge rad monitor inoperable and (2) how the station sump pump discharge will be aligned?

- A. (1) The radiation monitor failed to alarm.  
(2) to the LVWT pond with the "L" valve closed
- B. (1) The radiation monitor failed to alarm  
(2) to the LVWT pond with the "L" valve open.
- C. (1) The radiation monitor failed to alarm and isolate the release.  
(2) to the LVWT pond with the "L" valve closed
- D. (1) The radiation monitor failed to alarm and isolate the release.  
(2) to the LVWT pond with the "L" valve open.

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23. Given the following plant conditions:

- Unit 1 is at 100% power.
- Chemistry Lab is performing a sample of the reactor coolant system.
- PZR level starts dropping rapidly.
- A manual Reactor Trip and Safety Injection have been initiated.
- Containment pressure is 3.5 psig.
- While performing ES-0.5, "Equipment Verifications," the CRO observes that the RCS sample valves 1-FSV-43-22 and 1-FCV-43-23 status lights are red.
- All other status lights for CNMNT VENT; PHASE A; and PHASE B on panel 6K and 6L are green.

Which ONE of the following identifies the correct CRO response to the window indication?

- A. The valves are in the correct position for an RCS sample; continue with the support system verification.
- B. Contact Chemistry and direct them to secure Zinc Injection .
- C. Initiate a manual Containment Phase B isolation signal on both A and B trains.
- D. Immediately dispatch personnel to close both 1-FSV-43-22 and 1-FCV-43-23.



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24. Given the following plant conditions:

- Unit 1 was operating at 100% power.
- Reactor Trip and Safety Injection have occurred.
- The following plant conditions are observed:
  - RCS pressure is 1100 psig and slowly rising.
  - CETs 720°F and slowly rising.
  - Containment pressure 3.1 psig and slowly lowering.
  - RVLIS Lower Range 40% and slowly lowering.
- All required procedural actions have been taken.

Which ONE of the following identifies both:

(1) the procedure that is required to be entered

and

(2) the method used to depressurize the RCS, when directed by procedure?

- A. (1) FR-C.1, "Inadequate Core Cooling"  
(2) Steam Dump Valves
- B. (1) FR-C.1, "Inadequate Core Cooling"  
(2) ATM Relief Valves
- C. (1) FR-C.2, "Degraded Core Cooling"  
(2) Steam Dump Valves
- D. (1) FR-C.2, "Degraded Core Cooling"  
(2) ATM Relief Valves

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25. Given the following plant conditions,

- Unit 1 was operating at 100% power.
- The TD AFW pump is tagged out of service for maintenance.
- A Pressurizer PORV fails open.
- Reactor Trip and SI have actuated.
- 6.9 kV 1B-B SD board trips on a differential fault and locks out.
- The associated PORV block valve was closed by the OATC.
- Total AFW flow to #1 & #2 SGs 460 gpm.

Which ONE of the following parameters would prevent SI from being terminated?

- A. RCS pressure 1850 psig and stable.
- B. All SG levels less than 10% and slowly lowering.
- C. RCS subcooling 48°F and slowly lowering.
- D. Pressurizer level is 8% and slowly increasing.

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26. Given the following plant conditions:

- The crew entered FR-H.2, "Steam Generator Overpressure," due to an overpressure condition on SG #2.
- SG #2 pressure is 1170 psig.
- SG #2 narrow range level is 82%.

Which ONE of the following describes the appropriate actions, in sequence, to mitigate this event in accordance with FR-H.2?

- A. First Isolate AFW flow and then initiate SG Blowdown.
- B. First Verify Feedwater Isolation and then initiate SG Blowdown.
- C. First Isolate AFW flow and then attempt to dump steam from the affected SG.
- D. First Verify Feedwater Isolation and then attempt to dump steam from the affected SG.

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27. Given the following plant conditions:

- Unit 1 is responding to a LOCA.
- ES-1.3, "Transfer To RHR Containment Sump," was completed and containment recirculation cooling is in progress.
- The STA has identified a yellow path on containment radiation.

Which ONE of the following identifies a high level action performed in FR-Z.3, "High Containment Radiation," to minimize the effects of the high containment radiation condition?

- A. VERIFY Phase A isolation.
- B. VERIFY ABGTS operation.
- C. VERIFY Containment Ventilation Isolation.
- D. VERIFY Containment Spray remains in operation.

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28. Given the following plant conditions:

- Unit 1 is at 30% power.
- #2 RCP trips on overcurrent.

Which ONE of the following identifies how the indicated level in #2 SG initially responds and the effect of RCP trip on reactor status?

<u>SG #2 Level</u>	<u>Reactor Status</u>
A. Decrease	RCP trip generates an automatic reactor trip.
B. Decrease	Manual reactor trip is required due to RCP tripping.
C. Increase	RCP trip generates an automatic reactor trip.
D. Increase	Manual reactor trip is required due to RCP tripping.

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29. Given the following plant conditions:

- Unit 1 is at 20% power.
- Excess Letdown had been placed in service while normal letdown was unavailable.
- Operators then return normal letdown to service.

Which ONE of the following identifies the expected response of #1 and #2 RCP seal leakoff flows when Excess Letdown is removed from service?

- A. #1 seal leakoff - rises.  
#2 seal leakoff - rises.
- B. #1 seal leakoff - rises.  
#2 seal leakoff - drops.
- C. #1 seal leakoff - drops  
#2 seal leakoff - rises.
- D. #1 seal leakoff - drops.  
#2 seal leakoff - drops.

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30. Given the following plant conditions:

- Unit 1 is operating at 100% power.
- 1-FCV-62-89, Charging Seal Water Flow Control Valve, is operating at 60% open.
- The RCP seal injection flows indicated in the Main Control Room are:

LOOP 1 = 8.4 gpm LOOP 2 = 8.3 gpm LOOP 3 = 9.8 gpm LOOP 4 = 9.4 gpm

- 1-FCV-62-89 suddenly drifts resulting in the following indications:

LOOP 1 = 5.4 gpm LOOP 2 = 5.3 gpm LOOP 3 = 6.8 gpm LOOP 4 = 6.4 gpm

- Assume **NO** adjustments have been made to 1-FCV-62-93, Charging Flow Control Valve.

Which ONE of following identifies both:

(1) the direction 1-FCV-62-89 drifted

and

(2) the required operator action, if any?

- A. (1) Further in the Closed direction;  
(2) Adjust **1-FCV-62-89** OPEN until all RCP seal injection flows are > 6.0 gpm.
- B. (1) Further in the Closed direction;  
(2) Adjust **1-FCV-62-93** OPEN until all RCP seal injection flows are > 6.0 gpm.
- C. (1) Further in the Open direction;  
(2) Adjust **1-FCV-62-89** CLOSED until all RCP seal injection flows are > 6.0 gpm.
- D. (1) Further in the Open direction;  
(2) Adjust **1-FCV-62-93** CLOSED until all RCP seal injection flows are > 6.0 gpm.

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31. Given the following plant conditions:

- Unit 2 is in Mode 6 with core off-load ready to commence.
- A reactor cavity seal failure has just occurred.
- The crew has entered AOP-M.04, "Refueling Malfunctions."
- Cavity makeup from the RWST has been established in accordance with Appendix A, "Filling Refueling Cavity From RWST."

Which ONE of the following identifies the alignment directed by AOP-M.04 for the RHR pumps and CCPs if the RWST level drops below 5%?

	<u>RHR pumps</u>	<u>CCPs</u>
A.	Place in P-T-L	Place in P-T-L
B.	Place in P-T-L	Align suction to VCT
C.	Align suction to RCS Loop 4 hot leg	Place in P-T-L
D.	Align suction to RCS Loop 4 hot leg	Align suction to VCT



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32. Given the following plant conditions:

- Unit 2 is at 100% power.
- A Reactor Trip and Safety Injection occurs.

Which ONE of the following identifies the effect this event has on RCP seal injection and RCP seal return?

- A. Both RCP seal injection from CCPs and seal return to the VCT are isolated.
- B. Neither RCP seal injection nor seal return to VCT are affected.
- C. Only RCP seal injection from CCPs is isolated.
- D. Only RCP seal return to the VCT is isolated.

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33. Given the following plant conditions:

- A small break LOCA has occurred.
- The crew is in ES-1.2, "Post LOCA Cooldown and Depressurization."
- One RCP is operating.
- One CCP is operating.
- RCS Pressure is 1600 psig and stable.
- RCS subcooling is 72°F and stable.
- Two SI Pumps are in service.

Which ONE of the following describes how the plant and subcooling margin respond if one of the running SI pumps trips?

<u>Subcooling Margin</u>	<u>Plant Response</u>
A. Decreases	RCS pressure will decrease.
B. Decreases	RCS break flow will remain constant.
C. Remains the same	Injection flow from the running SI pump increases.
D. Remains the same	RCS pressure will remain constant.

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34. Given the following plant conditions:

- The OATC on Unit 2 has been directed to lower the level in PRT using 2-SO-68-5, "Pressurizer Relief Tank."
- The RCDT pump hand switches are aligned for normal operation.
- The OATC opens 2-FCV-68-310, PRT Drain to RCDT.

Which ONE of the following identifies how the B RCDT pump is stopped?

- A. Automatically when the OATC closes 2-FCV-68-310.
- B. Automatically when the level in the PRT reaches 50%.
- C. Manually by the AUO when the level in the PRT reaches 50%.
- D. Manually by the AUO when directed by the OATC prior to closing 2-FCV-68-310.

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35. Given the following plant conditions:

- 1A-A, 2B-B, and C-S CCS pumps are normally aligned and running.
- 1B-B and 2A-A CCS pumps are aligned in Standby Auto.
- Unit 2 Start Buses 2A and 2B are inadvertently de-energized.
- All 4 EDGs started and operated as expected.

Which ONE of the following describes the response of the CCS system to these conditions?

- A. All running CCS pumps will be load shed and will automatically start after the shutdown boards are energized.
- B. 2B-B and C-S CCS pumps will be load shed, Only 2A-A and 2B-B CCS pumps will automatically start after the shutdown boards are energized.
- C. 2B-B CCS pump will be load shed, Only 2A-A and 2B-B CCS pumps will automatically start after the shutdown boards are energized.
- D. 2B-B and C-S CCS pumps will be load shed, 2A-A, 2B-B and C-S CCS pumps will automatically start after the shutdown boards are energized

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36. Given the following conditions,

- Unit 2 is in Mode 5.
- The crew is preparing to draw a bubble in PZR per 0-GO-1, "Unit Startup From Cold Shutdown to Hot Standby."
- Pressurizer is in water solid condition.
- The crew is performing actions to draw a bubble in the PZR.

With RCS **Wide Range** pressure at 150 psig, which **ONE** of the following identifies the temperature of the pressurizer liquid when a bubble starts to form?

- A. 333-335°F
- B. 341-347°F
- C. 353-358°F
- D. 373-381°F

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37. Given the following:

- Unit 1 is at 100% power.
- A loss of 125V DC Vital Battery Board I occurs.

Which ONE of the following describes the effect on the Reactor Trip Breaker?

- A. MCB indication is lost for RTA and BYA; breakers will NOT open on a Reactor Trip signal.
- B. MCB indication is lost for RTB and BYB; breakers will NOT open on a Reactor Trip signal.
- C. MCB indication is lost for RTA and BYA; breakers will open on a Reactor Trip signal.
- D. MCB indication is lost for RTB and BYB; breakers will open on a Reactor Trip signal.

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38. Given the following plant conditions:

- Unit 1 is at 45%.
- Bypass breaker BYB is racked in and closed.
- "PROTECTION SYSTEM TRAIN B TROUBLE" (1-M6A-E-3) is in alarm.
- Electrical Maintenance is working on RTB.

Which ONE of the following identifies the effect that a loss of one of the 15v or 48v power supplies inside the Train A SSPS logic cabinet will have on plant operation?

- A. Failure of a single 15v power supply will cause a reactor trip, but failure of a single 48v power supply will **NOT**.
- B. Failure of a single 48v power supply will cause a reactor trip, but failure of a single 15v power supply will **NOT**.
- C. A reactor trip will **NOT** occur due to a failure of a single 15v or single 48v power supply.
- D. A reactor trip will occur due to a failure of either a single 15v or a single 48v power supply.

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39. Given the following plant conditions:

- A loss of 120V AC Vital Instrument Power Board 1-I has occurred.
- Unit 1 reactor is tripped and the crew has implemented E-0, "Reactor Trip or Safety Injection."
- The OATC has just reported that PZR pressure transmitter 1-PT-68-334 (Channel II) failed LOW.

Which ONE of the following describes the plant response?

(Assume **NO** operator action)

- A. SI master relays on both trains of SSPS would actuate AND both trains of ECCS equipment would start.
- B. SI master relays on both trains of SSPS would actuate AND only "B" train ECCS equipment would start.
- C. Only the "B" train SSPS SI master relays would actuate AND both trains of ECCS equipment would start.
- D. Only the "B" train SSPS SI master relays would actuate AND only "B" train ECCS equipment would start.



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40. Given the following plant conditions:

- A Safety Injection occurred 30 minutes ago on Unit 1 due to a faulted S/G that is now depressurized.
- The crew has transitioned to ES-1.1, "SI Termination."
- Reactor trip breaker 'A' failed to open and remains closed.
- Both Safety Injection Reset pushbuttons have been depressed.
- Both Safety Injection Pump control switches have been placed to STOP and returned to A-AUTO.

Assuming 3 seconds has elapsed since the last switch manipulation, which ONE of the following describes the status of Safety Injection Train 'A' and Safety Injection Pump 1A-A?

	<u>Train A</u>	<u>Pump 1A-A</u>
A.	RESET	Running
B.	NOT RESET	Running
C.	RESET	Stopped
D.	NOT RESET	Stopped

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41. Given the following plant conditions:

- Unit 2 is at 100% power.
- 6.9 kv Shutdown Board "2B-B" trips on a differential fault.
- All D/Gs functioned as designed.

Which ONE of the following is a result of this condition?

- A. Train "B" RHR pump will be available when the blackout sequencer times out.
- B. Feedwater flow is increased due to more demand by the S/G level program.
- C. Available forced flow from the upper compartment coolers is reduced.
- D. Unit runback will occur due to loss of HDT Pump.

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42. Which ONE of the following statements identifies both the Tech Spec 3.6.5.1, "Ice Condenser," maximum containment ice bed temperature and a potential effect of operating above the maximum temperature?

	<u>Maximum Temp.</u>	<u>Potential Effect</u>
A.	20°F	Exceeding 12 psig inside Containment during a LOCA
B.	20°F	Exceeding 12 psig inside Containment during a Steam Line Break
C.	27°F	Exceeding 12 psig inside Containment during a LOCA
D.	27°F	Exceeding 12 psig inside Containment during a Steam Line Break

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43. Given the following plant conditions:

- Unit 2 has experienced a Reactor Trip and SI due to a Steamline Break inside Containment.
- Phase B has actuated.
- The CRO reports that neither 2A-A nor 2B-B CCS pump is running and they will **NOT** start.

Which **ONE** of the listed pumps, is expected to experience bearing failure within 10 minutes?

- A. 2A-A Centrifugal Charging Pump.
- B. 2A-A Safety Injection System Pump.
- C. 2A-A Residual Heat Removal Pump.
- D. 2A-A Containment Spray Pump.

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44. Given the following plant conditions:

- A plant cooldown is in progress.
- RCS pressure is 1850 psig.
- RCS temperature is 525°F.
- All required actions have been taken for the cooldown in accordance with 0-GO-7, "Unit Shutdown from Hot Standby to Cold Shutdown."

An event occurs:

- RCS pressure is 1700 psig and lowering at 10 psi per second.
- SG pressures are 700 psig and lowering at 25 psi per second.
- Containment pressure is 1.2 psig and rising.

Assuming NO operator action, which ONE of the following describes the ESF actuation status?

- A. Safety Injection AND Main Steam Line Isolation have occurred.
- B. Safety Injection has occurred; Main Steam Line Isolation has NOT.
- C. Main Steam Line Isolation has occurred; Safety Injection has NOT.
- D. NEITHER Main Steam Isolation NOR Safety Injection have occurred.

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45. Given the following plant conditions:

- Unit 1 is at 72% power.
- PT-1-33, "Steam Header Pressure to DCS," indicates 930 psig.
- PT-1-33A, "Steam Header Pressure to DCS," indicates 900 psig.
- PT-1-33B, "Steam Header Pressure to DCS," indicates 895 psig.
- PT-1-33B fails Low.

Which ONE of the following describes the INITIAL effect this failure will have on the Unit 1 Main Feed Pump Turbine Master speed controller?

- A. Output Increases.
- B. Output Decreases.
- C. Output remains the same.
- D. Transfers to Manual and output remains the same.

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46. Given the following conditions:

- Unit 1 was operating at 100% power when a reactor trip occurs.
- Normal post trip conditions are observed except for the following:
- Neither MD AFW pump will start.
- The TD Trip/Throttle Valve Position is RED.
- Turbine AFP Speed on indicator 1-SI-46-56A, reads "0".
- With no operator action, 2 minutes after the Reactor Trip, 1-FCV-1-16, SG-4 Steam Supply to Turbine AFP is RED.
- AFW flow is observed to all SGs.

Which ONE of the following identifies (1) why 1-FCV-1-16 opened and (2) how the SG levels will be controlled?

- A. (1) TD pump discharge pressure was <100 psig for >60 seconds.  
(2) Manually by controlling TD AFP speed to maintain level 10 to 50%.
- B. (1) TD pump discharge pressure was <100 psig for >60 seconds.  
(2) Automatically by operation of TD LCVs maintaining level at 33%.
- C. (1) TD pump discharge pressure was 100 psig less than SG pressure for 5 seconds.  
(2) Manually by controlling TD AFP speed to maintain level 10 to 50%.
- D. (1) TD pump discharge pressure was 100 psig less than SG pressure for 5 seconds.  
(2) Automatically by operation of TD LCVs maintaining level at 33%.

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47. Given the following plant conditions:

- Unit 2 is in Mode 3 preparing for startup.
- Start Bus Selector switches are in Manual
- "C" CSST is inadvertently deenergized.
- 2B-B Diesel fails to start.
- RCS pressure is 2100 psig.

Which ONE of the following identifies the pressurizer heater groups that will automatically energize to control RCS pressure?

- A. Backup heater groups 2A-A, 2B-B, and 2C only
- B. Backup heater groups 2A-A and control heater group 2D only
- C. Backup heater group 2A-A and 2C only
- D. Backup heaters groups 2A-A, 2B-B, and control heater group 2D only



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48. Given the following plant conditions:

- Unit 2 is at 85% power.
- The following alarm is received:
  - Annunciator "125V DC VITAL CHGR III FAIL/VITAL BAT III DISCHARGE".
  - The CRO reports that Battery Board III voltage indicates 0 volts.

Assuming **NO** operator action, which **ONE** of the following describes the impact on Unit 2?

- A. All MSIVs will close.
- B. Reactor Power will increase.
- C. Reactor will Trip on high pressurizer level.
- D. Control Air Compressors C and D will unload.

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49. Given the following plant conditions:

- Unit 1 at 100% power.
- Panel M-1B Annunciator Window "6900V SD BD 1A-A FAILURE OR BUS UNDERVOLTAGE/OVERVOLTAGE" alarms.
- The crew enters AOP-P.05, "Loss Of Unit 1 Shutdown Boards."
- A reactor trip occurs on high PZR pressure.

Which ONE of the following identifies the allowed usage of AOP-P.05 after the Emergency Operating Procedure network is entered following the reactor trip?

Continued performance of AOP-P.05 is ...

- A. allowed after the crew enters ES-0.1, "Reactor Trip Response" because ES-0.1 is NOT an accident mitigation EOP.
- B. allowed after the crew enters ES-0.1, "Reactor Trip Response" because restoring power could have an impact on meeting the goals of the EOP.
- C. NOT allowed until the crew exits ES-0.1, "Reactor Trip Response" because the procedure reader must remain dedicated to the EOP in effect until the EOPs are exited.
- D. NOT allowed until the crew exits ES-0.1, "Reactor Trip Response" because actions taken in AOP-P.05 could degrade the performance of the EOP.

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50. Given the following plant conditions:

- Both Units are at 100% power
- All four Diesel Generators are in standby alignment.

Which ONE of the following completes the statement below?

As the ambient air temperature rises diesel generator operability is **first** required to be determined based on the number of operable (1) when the ambient temperature exceeds (2).

<u>(1)</u>	<u>(2)</u>
A. Exhaust fans only	99.3°F
B. Exhaust fans and Generator & Electrical Panel Vent fan	99.3°F
C. Exhaust fans only	104°F
D. Exhaust fans and Generator & Electrical Panel Vent fan	104°F

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51. Given the following plant conditions:

- Unit 1 is at 100% RTP.
- Alarm "1-RA-120B/121B STM GEN BLDN LIQ SAMP MON INSTR MALFUNC" (M-12A-B6) annunciates.

Which ONE of the following describes the cause of the alarm and the mitigating actions that the crew would implement?

<u>Cause</u>	<u>Mitigating Action</u>
A. Loss of power to the radiation monitor	Verify automatic termination of S/G blowdown release.
B. Loss of power to the radiation monitor	Place the standby monitor in service
C. High flow through the radiation monitor	Verify automatic termination of S/G blowdown release.
D. High flow through the radiation monitor	Place the standby monitor in service

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52. Given the following plant conditions:

- Unit 1 was at 100% power when a manual SI is initiated.

Which ONE of the following describes the automatic response of the ERCW system?

1-FCV-67-146, "CCS Hx 1A1 and 1A2 ERCW Return to Header B" \_\_\_(1)\_\_\_ and  
0-FCV-67-152, "CCS HXs 0B1 and 0B2 Discharge to B Discharge Header" \_\_\_(2)\_\_\_.

- A. (1) CLOSES  
(2) REPOSITIONS to 35% position
- B. (1) remains AS IS  
(2) remains CLOSED
- C. (1) remains AS IS  
(2) REPOSITIONS to 35% position
- D. (1) OPENS fully  
(2) remains CLOSED

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53. Given the following plant conditions:

- Unit 1 is in MODE 3 following a shutdown.
- A loss of Auxiliary Air occurred.
- Auxiliary Feedwater was aligned as directed by AOP-M.02, "Loss Of Control Air" to support current plant operations.
- EA-3-4, "Local Alignment of TD AFW LCV Backup Air Supply" has been implemented.

Which ONE of the following completes the statement below?

The operators will use \_\_\_\_\_(1)\_\_\_\_\_ to restore Auxiliary Feedwater valve operation to normal and bottle pressure must be at least \_\_\_\_\_(2)\_\_\_\_\_ to meet the OPERABILITY requirements following the restoration of the plant air systems.

- A. (1) EA-3-4  
(2) 800 psig
- B. (1) EA-3-4  
(2) 1500 psig
- C. (1) 0-SO-32-1, "Control Air System"  
(2) 800 psig
- D. (1) 0-SO-32-1, "Control Air System"  
(2) 1500 psig

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54. Given the following plant conditions:

- Unit 1 is at 98% power.
- The Channel III Containment "HIGH-HIGH PRESS," pressure switch is out of service for surveillance testing, and its' bistable is in BYPASS.
- The associated Channel III "HIGH PRESS," bistable has been TRIPPED.
- A voltage spike causes the Channel II Containment "HIGH PRESS," pressure switch to fail HIGH.

Which ONE of the following describes both, (1) the Containment Isolation system response, and (2) the procedure the crew would use to mitigate this event?

	<u>Containment Isolation response</u>	<u>Procedure</u>
A.	Phase B	AOP-I.05, "Containment Instrument Malfunction"
B.	Phase B	E-0, "Reactor Trip or Safety Injection"
C.	Phase A	AOP-I.05, "Containment Instrument Malfunction"
D.	Phase A	E-0, "Reactor Trip or Safety Injection"

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55. Given the following plant conditions:

- Unit 2 is operating at 100% power.
- Alarm "LS-68-53A/B REAC COOL PMP 2 OIL RESERVOIR LEVEL HI-LOW" (M5-B) has just been received.
- An emergency containment entry is being prepared to allow maintenance to add oil to the #2 RCP motor lower bearing from the remote fill line.

In accordance with 0-PI-OPS-000-011.0, "Containment Access Control," which ONE of the following identifies both:

- (1) the chemical that is evaluated prior to making the containment entry  
and
  - (2) the method used to control personnel exposure if the chemical is not within its limits?
- A. (1) Formaldehyde  
(2) Containment Purge
  - B. (1) Formaldehyde  
(2) Containment Air Return Fans
  - C. (1) Oxygen  
(2) Containment Purge
  - D. (1) Oxygen  
(2) Containment Air Return Fans



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56.

Given the following plant conditions:

- Unit 1 is shutdown.
- All RCS temperatures are approximately 300°F.
- RCS Pressure is 600 psig.
- Cold overpressure protection is armed.
- Both PORVs are closed.
- Loop 3 cold leg temperature instrument 1-TI-68-60 fails LOW.

Which ONE of the following identifies the plant response to this instrument failure?

**Reference Provided**

- A. PORV-334 will open and remain open.
- B. PORV-340 will open and remain open.
- C. PORV-334 will open until pressure is below the lift setpoint.
- D. PORV-340 will open until pressure is below the lift setpoint.

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57. Which ONE of the following identifies all nuclear instruments that are powered from 120V AC Vital Instrument Power Board 1-I?
- A. N-31 and N-41 only
  - B. N-35 and N-41 only
  - C. N-31 and N-35 only
  - D. N-31, N-35, and N-41

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58. Which ONE of the following identifies the primary function of the Isolation Amplifier associated with the Pressurizer Pressure Transmitters?
- A. Protects the Pressurizer Pressure Control circuit.
  - B. Protects the Solid State Protection System circuit.
  - C. Amplifies the pressure output signal between containment and the instrument rack.
  - D. Amplifies the pressure output signal between the instrument rack and the main control room.

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59. Given the following plant conditions:

- Both Units are operating at 100% power.
- Alarm, "LS-78-3 SPENT FUEL PIT LEVEL HIGH-LOW," (M6-D, D3) has just been received.
- The Aux Bldg AUO reports a leak on the discharge of the in-service Spent Fuel Pit Cooling Pump.

Assuming **NO** operator action, which ONE of the choices correctly completes the following statement?

Spent Fuel Pit level lowers until the running pump \_\_\_\_\_.

- A. begins to cavitate at the NPSH limit.
- B. trips on low spent fuel pit level interlock.
- C. becomes air-bound when the suction line uncovers.
- D. becomes air-bound when the anti-siphon holes uncover.

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60. Given the following plant conditions,

- Unit 1 is in Mode 6.
- Refueling activities are in progress.
- A fuel assembly has been damaged during removal from the core.
- AOP-M.04, "Refueling Malfunctions," is in progress.

Which ONE of the following would provide the FIRST indications in the control room of a developing leak from the damaged fuel assembly?

- A. Annunciator "1-RA-90-106A CNTMT BLDG LWR COMPT AIR MON HI RAD" (1-M12-A, A4) alarms and slowly rising counts on 1-RM-90-59A, "Reactor Building Area Rad Monitor."
- B. Annunciator "0-RA-90-101A AUX BLDG VENT MONITOR HI RAD" (0-M12-B, B1) and slowly rising counts on 1-RM-90-130A and 131A "Containment Purge Exhaust Monitors."
- C. Annunciators "CONTAINMENT VENTILATION ISOLATION TRAIN A" or "TRAIN B" (1-M6-C, C-5 & C-6 respectively) and rapidly rising counts on 1-RM-112A/B/C "Upper Containment Air Monitor"
- D. Annunciator "1-RA-90-59A RX BLDG AREA RAD MON HIGH RAD," and slowly rising counts on 1-RM-90-106, "Containment Lower Compartment Radmonitor."

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61. Given the following plant conditions:

- Unit 2 is at 50% RTP with rod control selector switch in Manual.
- Turbine Impulse PT-1-73 fails low.

Assuming NO operator action, which ONE of the following identifies the effect, if any, on the Distributed Controls System (DCS) ?

- A. SG Level Control will NOT be affected.
- B. SG Level Control will switch to Manual on all 4 SGs.
- C. SG Level will decrease flow initially and level will stabilize at 33%.
- D. SG Level will increase flow resulting in Feed Water Isolation at 81% level.

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62. Given the following plant conditions:

- Unit 1 is shutdown and at NOP and NOT
- Chemistry reports the Hydrogen concentration in "A" Waste Gas Decay tank at 5% by volume and Oxygen concentration at 3% by volume.

Which ONE of the following describes the gas concentration, if any, that exceeded the Unit 1 Tech Spec 3.11.2.5 limit for waste gas decay tanks?

- A. Oxygen only.
- B. Hydrogen only.
- C. Neither Hydrogen or Oxygen.
- D. Both Hydrogen and Oxygen.

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63. Given the following plant conditions:

- Both Units are at 100% power
- 0-RM-90-103A, "Spent Fuel Pit Radiation Monitor," fails HIGH

Which ONE of the following indentifies the expected plant response?

- A. ONLY Train B ABGTS cleanup fan starts;  
ONLY Train B Aux. Building General Supply, Exhaust and Fuel Handling exhaust fans trip.
- B. ONLY Train B ABGTS cleanup fan starts;  
ALL Aux. Building General Supply, Exhaust and Fuel Handling exhaust fans trip.
- C. BOTH Train A and Train B ABGTS cleanup fans start;  
ONLY Train B Aux. Building General Supply, Exhaust and Fuel handling exhaust fans trip.
- D. BOTH Train A and Train B ABGTS cleanup fans start;  
ALL Aux. Building General Supply, Exhaust, and Fuel handling exhaust fans trip.



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64. Given the following plant conditions:

- Both units are operating at 100% power.
- Control air system pressure begins to drop.

Which ONE of the following identifies...

- (1) the pressure setpoint that the 0-PCV-33-4, "Service Air isolation from Control Air", will close  
and
- (2) the expected position of 0-FCV-32-82, "Train A Control Air Supply Valve," if the air pressure is stabilized at 73 psig?

	<u>0-PCV-33-4</u>	<u>0-FCV-32-82</u>
A.	88 psig	Open
B.	88 psig	Closed
C.	77 psig	Open
D.	77 psig	Closed

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65. Given the following plant conditions,

- Both Units are operating at 100% power.
- Several fire alarms are received from the Unit 1 Auxiliary Building (charging pump area and cross zone detectors are in alarm).
- An AUO is sent to investigate.
- A Unit 2 CRO reports that neither the electric fire pump nor the diesel fire pump is running.
- 0-PI-26-299, "Fire Protection Header Pressure" reads 108 psig and lowering.
- Prior to a report from the Aux Bldg AUO, the 1A-A charging pump trips and LCV-62-132, "VCT Outlet To CCP," indicates CLOSED.
- The crew has implemented AOP-N.01, "Plant Fires."

Which ONE of the following identifies the expected plant response to the above conditions and the required procedure actions?

- A. (1) The fire pumps would not be required to start for these conditions.  
(2) Go to AOP-M.09, "Loss of Charging."
- B. (1) The fire pumps would not be required to start for these conditions.  
(2) Go to AOP-N.08, "Appendix R Fire Safe Shutdown."
- C. (1) Manually start the Electric Fire pump from 0-M-29.  
(2) Go to AOP-M.09, "Loss of Charging."
- D. (1) Manually start the Electric Fire pump from 0-M-29.  
(2) Go to AOP-N.08, "Appendix R Fire Safe Shutdown."

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66. Given the following plant conditions:

- Unit 1 has automatically tripped from 100% and SI has actuated.
- The crew is performing actions in E-0, "Reactor Trip or Safety Injection."
- You are the "At the Controls" operator.
- The following conditions exist:
  - RCS temperature is 540°F and lowering
  - RCS pressure is 1400 psig and stable
  - Containment pressure is 3 psig and rising.
- The Unit Supervisor has reached step 8, "CHECK RCP trip criteria,"
- The Unit Supervisor states  
"OATC, Check RCS pressure less than 1250 psig AND At least one CCP or SI pump RUNNING."

In accordance with OPDP-1, "Conduct of Operations," which ONE of the following is the correct method to communicate the requested information to the Unit Supervisor?

- A. RCS pressure is NOT less than 1250 psig and at least one CCP or SI pump is running.
- B. Yes, RCS pressure is NOT less than 1250 psig and at least one CCP or SI pump is running.
- C. No, (Name), RCS pressure is 1400 psig and stable and all CCPs and SI pumps are running.
- D. Yes, (Name), RCS pressure is NOT less than 1250 psig, it is 1400 psig and all CCP and SI pumps are running.

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67. Given the following plant conditions:

- Unit 1 is in Mode 5 and has just achieved water solid condition.
- RHR Train "A" is operating in shutdown cooling mode.
- RCS is at 160°F.
- VCT temperature is 115°F.
- #2 RCP was the only RCP running and was inadvertently stopped 10 minutes ago after a 1 hour run.

Which ONE of the following identifies the requirements that must be met prior to attempting a restart of the #2 RCP?

- A. Must wait 30 minutes from the time the pump was stopped and can be restarted with current plant conditions.
- B. Must wait 30 minutes from the time the pump was stopped but a steam bubble must be established in the Pressurizer.
- C. No time restriction on restarting the pump and can be restarted with current plant conditions.
- D. No time restriction on restarting the pump but a steam bubble must be established in the Pressurizer.

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68. Given the following plant conditions:

- Unit 1 core re-load is in progress with sixty assemblies loaded in the core.

Which ONE of the following would require core alterations to be suspended in accordance with Tech Specs?

- A. Spent Fuel Pit level is at elevation 725' 11".
- B. Audible count rate is lost to containment.
- C. Spent Fuel Pit boron concentration is 2055 ppm.
- D. Source Range High Flux Level At Shutdown alarm is out of service.

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69. Given the following plant conditions:

- Unit 1 is at 100% power.
- It is 0630 and you have just relieved the Unit 1 CRO.

In accordance with 1-SI-OPS-000-002.0, "Shift Log," which ONE of the following completes the statement below?

The \_\_\_(1)\_\_\_ is **responsible** for ensuring that all "Outside MCR" appendices are complete and the applicable day shift appendices are required to be completed by \_\_\_(2)\_\_\_\_\_.

- A. (1) Assistant Unit Operator  
(2) 1830
- B. (1) Unit Operator/RO  
(2) 1830
- C. (1) Assistant Unit Operator  
(2) 1000
- D. (1) Unit Operator/RO  
(2) 1000

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70. Given the following,

- Unit 1 is operating at 100% power.
- Control Rod H-8 drops into the core.
- Unit 1 remains at power and no automatic protective or operator actions have occurred.
- The OATC reports that during the initial stages of the event Pressurizer pressure had dropped to 2195 psig before recovering to normal.

Which ONE of the following completes the statements below?

During this event, the Tech Spec DNB limit \_\_\_(1)\_\_\_ exceeded.

Tech Spec 3.1.3.1 "Moveable Control Assemblies," requires Reactor Power to be reduced to a maximum of \_\_\_(2)\_\_\_ within 1 hour, unless the rod is realigned.

- A. (1) was  
(2) 85%
- B. (1) was  
(2) 75%
- C. (1) was **NOT**  
(2) 85%
- D. (1) was **NOT**  
(2) 75%

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71. Given the following:

- A source check is required to be performed on 0-RM-90-103, "Spent Fuel Pit Radiation Monitor."

Which ONE of the following completes the following statement?

The CHECK SOURCE switch will be positioned \_\_\_\_\_ (1)  
and the High Rad relay \_\_\_(2)\_\_\_ be automatically blocked.

- | (1)                         | (2)             |
|-----------------------------|-----------------|
| A. in the main control room | will <b>NOT</b> |
| B. in the main control room | will            |
| C. locally only             | will <b>NOT</b> |
| D. locally only             | will            |



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72. Given the following plant conditions:

- A release of the Monitor Tank is in progress through the Liquid Radwaste System using the normal effluent flow path.
- "0-RA-90-122A WDS LIQ EFF MON HIGH RAD" (M12-B, C-1) annunciator alarms.

Which ONE of the following is required to continue the release if 0-RM-90-122 is declared inoperable?

- A. Release cannot be restarted until 0-RM-90-122 is repaired and restored to operable status.
- B. Notify chemistry to perform grab samples during the release and analyze for principal gamma emitters. Additional samples are to be documented on the post release permit.
- C. No further action is required since the tank has been sampled and a valid permit has been generated to comply with the ODCM requirements to document the liquid radioactivity release.
- D. Release may resume only if two additional samples are drawn and independently analyzed, release rate calculations are independently verified, and lineup independently verified.

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73. Given the following plant conditions:

- Unit 1 is cooling down for refueling.
- RCS pressure is 340 psig.
- Tavg is 175°F.
- 1A-A D/G is tagged for maintenance.
- A loss of Off-Site power occurs.
- 1B-B D/G fails to start.

Which ONE of the following identifies the plant procedure that the crew is required to enter to mitigate the event?

- A. ECA-0.0, "Loss of All AC"
- B. AOP-P.01, "Loss of Offsite Power"
- C. E-0, "Reactor Trip or Safety Injection"
- D. AOP-P.05, "Loss of Unit 1 Shutdown Boards"

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74. Given the following plant conditions:

- Unit 1 is operating at 45%.
- Due to scheduled maintenance in the 3KVA annunciator inverter cabinet, Channel B annunciators are inoperable.
- Annunciator "ANNUNCIATOR DIAGNOSTIC ERROR" (M6-D, E-4) is half lit.
- All channel B annunciator windows are dark.
- Two hours after shift change the OATC notices all lit channel A annunciator windows change to the dark condition.

Which ONE of the following identifies the required operating crew action to be performed for the given conditions?

- A. Go to AOP-P.08, "Loss of Control Room Annunciators," and reboot the ADDS terminal to restore indication.
- B. Go to 0-SO-55-1, "Annunciator System," and station personnel for increased monitoring.
- C. Go to AOP-P.08, "Loss of Control Room Annunciators," and station personnel for increased monitoring.
- D. Go to 0-SO-55-1, "Annunciator System," to reboot the ADDS terminal to restore indication.

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75. Given the following plant conditions:

- A fire in the Control Building has forced an evacuation of the Main Control Room due to excessive smoke.
- AOP-C.04, "Shutdown from Auxiliary Control Room," has just been entered.

In accordance with AOP-C.04, which ONE of the following identifies **both** the initial location the Unit 1 CRO is directed to go to and what action the Unit 1 CRO is directed to initially perform?

<u>Location</u>	<u>Action</u>
A. Aux Control Room	Direct AUO's to manually stabilize plant until Controls are transferred to Aux Control Room
B. Aux Control Room	Ensure personnel are dispatched to perform applicable checklists and appendices using Appendix Z, Task Assignment Sheet.
C. AOP-C.04 Cabinet	Ensure personnel dispatched to perform applicable checklists and appendices using Appendix Z, Task Assignment Sheet.
D. AOP-C.04 Cabinet	Direct AUO's to manually stabilize plant until Controls are transferred to Aux Control Room



## References for 1201 NRC RO Exam

1. Steam Tables
2. Mollier Diagram
3. Mechanical Flow Diagram – Essential Raw Cooling Water System, 1, 2-47W845-2  
rev 103
4. Pressure Temperature Limits Report – Sequoyah Unit 1 LTOPS Selected Set points

**ANSWER KEY REPORT**  
for SQN JAN 2012 POST ATLANTA RO EXAM Test Form: 0

#	ID	Points	Type	0	Answers
1	007 EA1.10 1	1.00	MCS	C	
2	008 AK2.03 2	1.00	MCS	C	
3	009 EK2.03 3	1.00	MCS	D	
4	011 EK2.02 4	1.00	MCS	D	
5	015 AK2.08 5	1.00	MCS	D	
6	022 AA1.03 6	1.00	MCS	C	
7	025 AA2.01 7	1.00	MCS	C	
8	027 AG2.1.30 8	1.00	MCS	A	
9	029 EG2.2.37 9	1.00	MCS	D	
10	038 EA1.07 10	1.00	MCS	A	
11	W/E12 EK3.2 11	1.00	MCS	B	
12	054 AA2.03 12	1.00	MCS	B	
13	055 EK1.02 13	1.00	MCS	A	
14	056 AG2.4.34 14	1.00	MCS	A	
15	057 AK3.01 15	1.00	MCS	D	
16	062 AA2.03 16	1.00	MCS	C	
17	065 AK3.08 17	1.00	MCS	A	
18	W/E05 EK1.3 18	1.00	MCS	C	
19	003 AK3.07 19	1.00	MCS	D	
20	024 AA2.04 20	1.00	MCS	D	
21	036 AK2.01 21	1.00	MCS	D	
22	059 AK3.03 22	1.00	MCS	A	
23	069 AA1.01 23	1.00	MCS	D	
24	074 EA2.03 24	1.00	MCS	B	
25	W/E01 EG2.1.7 25	1.00	MCS	D	
26	W/E13 EK2.2 26	1.00	MCS	D	
27	W/E16 EK1.3 27	1.00	MCS	C	
28	003 A1.05 28	1.00	MCS	B	
29	003 A4.05 29	1.00	MCS	B	
30	004 K6.31 30	1.00	MCS	C	
31	005 K1.11 31	1.00	MCS	D	
32	006 K1.05 32	1.00	MCS	D	
33	006 K6.03 33	1.00	MCS	D	
34	007 G2.1.30 34	1.00	MCS	D	
35	008 K4.01 35	1.00	MCS	D	
36	010 K5.01 36	1.00	MCS	C	
37	012 K2.01 37	1.00	MCS	C	
38	012 K6.02 38	1.00	MCS	D	
39	013 K2.01 39	1.00	MCS	B	
40	013 K5.02 40	1.00	MCS	B	
41	022 K2.02 41	1.00	MCS	C	
42	025 K5.01 42	1.00	MCS	C	
43	026 A1.06 43	1.00	MCS	D	
44	039 A3.02 44	1.00	MCS	C	
45	059 A3.04 45	1.00	MCS	A	
46	061 A2.07 46	1.00	MCS	A	

**ANSWER KEY REPORT**  
for SQN JAN 2012 POST ATLANTA RO EXAM Test Form: 0

#	ID	Points	Type	0	Answers
47	062 K3.01 47	1.00	MCS	A	
48	063 K3.02 48	1.00	MCS	A	
49	064 G2.4.8 49	1.00	MCS	B	
50	064 A1.05 50	1.00	MCS	B	
51	073 A4.01 51	1.00	MCS	B	
52	076 K4.03 52	1.00	MCS	C	
53	078 G2.4.11 53	1.00	MCS	A	
54	103 A2.03 54	1.00	MCS	D	
55	103 A2.05 55	1.00	MCS	A	
56	002 K6.06 56	1.00	MCS	C	
57	015 K2.01 57	1.00	MCS	D	
58	016 K5.01 58	1.00	MCS	B	
59	033 A1.01 59	1.00	MCS	C	
60	034 A4.01 60	1.00	MCS	C	
61	035 A3.01 61	1.00	MCS	A	
62	071 G2.2.40 62	1.00	MCS	<del>A</del> D	2/8/2012
63	072 K4.02 63	1.00	MCS	B	
64	079 K1.01 64	1.00	MCS	A	
65	086 A2.04 65	1.00	MCS	D	
66	G 2.1.17 66	1.00	MCS	C	
67	G 2.1.32 67	1.00	MCS	D	
68	G 2.1.41 68	1.00	MCS	B	
69	G 2.2.12 69	1.00	MCS	D	
70	G 2.2.38 70	1.00	MCS	B	
71	G 2.3.5 71	1.00	MCS	A	
72	G 2.3.13 72	1.00	MCS	D	
73	G 2.4.4 73	1.00	MCS	B	
74	G 2.4.32 74	1.00	MCS	C	
75	G 2.4.34 75	1.00	MCS	C	
<b>SECTION 1 ( 75 items)</b>		<b>75.00</b>			

*Key changed for Question # 62 based on Past Exam Comment. [Signature]*