FACILITY NAME: Vogtle Section 8

REPORT NUMBER: 2009-301

FINAL RO WRITTEN EXAM

CONTENTS:

- ☑ **Final RO Written Exam (75 'as given' questions with changes made during administration annotated)**
- ☑ **Reference Handouts Provided To Applicants**
- ☑ **Answer Key**

Location of Electronic Files:

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U.S. Nuclear Regulatory Commission

Site-Specific RO Written Examination

Applicant Information	
Name:	
Date: 06-26-2009	Facility/Unit: Vogtle 1 & 2
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	75 Points
Applicant's Score	_____ Points
Applicant's Grade	_____ Percent

Date: 06-26-2009
VEGP NRC RO Examination Answer Sheet

Student Name:_____

1. _____	26. _____	51. _____
2. _____	27. _____	52. _____
3. _____	28. _____	53. _____
4. _____	29. _____	54. _____
5. _____	30. _____	55. _____
6. _____	31. _____	56. _____
7. _____	32. _____	57. _____
8. _____	33. _____	58. _____
9. _____	34. _____	59. _____
10. _____	35. _____	60. _____
11. _____	36. _____	61. _____
12. _____	37. _____	62. _____
13. _____	38. _____	63. _____
14. _____	39. _____	64. _____
15. _____	40. _____	65. _____
16. _____	41. _____	66. _____
17. _____	42. _____	67. _____
18. _____	43. _____	68. _____
19. _____	44. _____	69. _____
20. _____	45. _____	70. _____
21. _____	46. _____	71. _____
22. _____	47. _____	72. _____
23. _____	48. _____	73. _____
24. _____	49. _____	74. _____
25. _____	50. _____	75. _____

1.

Given the following:

- A turbine runback occurred and the crew has now stabilzed the plant.
- The UO is making minor turbine adjustments to control RCS Tave.
- Control Rods are currently in AUTO.
- Tave is currently 2.8 degrees higher than Tref.

Which **ONE** of the following describes the current rod speed and when rod movement would stop?

Current Rod Speed (In steps per minute)	**When Rod Motion Stops (temperature deviation)**
A. 8 steps per minute	Tave < 1.0 degrees > Tref
B. 8 steps per minute	Tave < 1.5 degrees > Tref
C. > 8 steps per minute	Tave < 1.0 degrees > Tref
D. > 8 steps per minute	Tave < 1.5 degrees > Tref

2.

Given the following:

- All RCPs are de-energized.

Based on RVLIS indication, which **ONE** of the following RCP hand switch positions would lead to a false CORE COOLING CSF status tree condition?

	RCP 1E handswitches	**RCP non-1E handswitches**
A.	Open	Open
B.	Closed	Open
C.	Open	Closed
D.	Closed	Closed

3.

Given the following:

- Dropped rod recovery in progress.

- The OATC initiates rod withdrawal for the **affected** rod.

- The ROD CONTROL URGENT FAILURE annunciator illuminates.

Which ONE of the following completes the following statements?

This is due to a_____**(a)**_____ failure in the **unaffected** rod group in the **affected** bank.

Once rod withdrawal is complete, the OATC should reset the ROD CONTROL URGENT FAILURE alarm using the_____**(b)**_____.

A. **(a)** regulation

(b) ROD CONTROL STARTUP switch

B. **(a)** regulation

(b) ROD CONTROL ALARM RESET switch

C. **(a)** multiplexing

(b) ROD CONTROL STARTUP switch

D. **(a)** multiplexing

(b) ROD CONTROL ALARM RESET switch

4.

Initial conditions:

- RCS heatup is in progress.
- Filling and venting of the RCS in progress.
- The OATC is ready to start the **first** RCP.

Which **ONE** of the following sets of parameters will **ALLOW** starting of the **first** RCP in accordance with SOP-13003, Reactor Coolant Pumps?

	RCS Pressure (psig)	VCT Pressure (psig)	Seal Injection Flow (gpm)
A.	360	17	14
B.	340	19	10
C.	320	21	7
D.	300	15	11

5.

Given the following:

- AOP-18007-C, "Chemical Volume Control System Malfunction," Section A for "Total Loss of Letdown Flow" has been entered.

- Seal injection flows are as follows:

  RCP # 1 - 8.5 gpm
  RCP # 2 - 9.0 gpm
  RCP # 3 - 8.5 gpm
  RCP # 4 - 9.0 gpm

- Charging flow is currently ~ 120 gpm

- The OATC is reducing charging flow using FIC-0121, Charging Flow Controller while maintaining the current seal injection flows using HC-0182, "Seal Water Controller."

In accordance with 18007-C, which **ONE** of the following is the **required** action the OATC should take in accordance with 18007-C and the basis for the **final** charging flow rate?

A. Reduce charging flow to ~ 35 gpm.

   Prevent Regenerative Heat Exchanger damage due to high thermal stresses.

B. Reduce charging flow to ~ 45 gpm

   Prevent Regenerative Heat Exchanger damage due to high thermal stresses.

C. Reduce charging flow to ~ 35 gpm.

   Prevent an additional high stress thermal cycle on the charging line nozzles.

D. Reduce charging flow to ~ 45 gpm.

   Prevent an additional high stress thermal cycle on the charging line nozzles.

6.

Initial conditions:

- The unit is at 100% power.

- Control rods are in automatic.

- Boric Acid Potentiometer is required to be set at 3.69

- Boric Acid Potentiometer actual setting is 2.69

Current conditions:

- An automatic makeup to the VCT occurs.

Which ONE of the choices completes the following statements?

To offset the reactivity change from the auto makeup control rods would need to be _____**(a)**_____.

At EOL, the effects of the Boric Acid Potentiometer setting error causes rods to move_____**(b)**_____than at BOL.

A. **(a)** INSERTED

(b) more

B. **(a)** INSERTED

(b) less

C. **(a)** WITHDRAWN

(b) more

D. **(a)** WITHDRAWN

(b) less.

7.

The Unit is in Mode 1.

Regarding the following valve:

- RHR PMP-A UPSTREAM SUCTION FROM HOT LEG LOOP 1, 1HV-8701B.

Which **ONE** of the following **CORRECTLY** describes the power supply and the normal valve status for present plant conditions?

A. 125V DC Inverter CD1I5, valve is normally energized.

B. 125V DC Inverter CD1I5, valve is normally de-energized.

C. 125V DC Inverter DD1I6, valve is normally energized.

D. 125V DC Inverter DD1I6, valve is normally de-energized.

8.

The plant is in Mode 5.

The following annunciator is illuminated and **cannot** be reset;

- B COLD OP ACTU VLV HV-8000B NOT FULL OPEN

Which **ONE** of the conditions below would **require** entry into the COPS LCO?

(Assume all valve lift setpoints are set correctly)

A. Train A RHR loop suction isolation valves open.

PORV A handswitch in auto, Train A COPS in ARM.

B. RHR Train A loop suction isolation valves open.

PORV B handswitch in auto, Train B COPS in ARM.

C. RHR Train A and Train B loop suction isolation valves open.

PORV A handswitch in auto, Train A COPS in BLOCK

D. RHR Train A and Train B loop suction isolation valves open.

PORV B handswitch in auto, Train B COPS in BLOCK.

9.

Initial conditions:

- The plant is at 100% power

Current conditions:

During Reactor Trip Breaker "A" testing, the following indications occur.

- Reactor Trip Breaker "A" **green** light is illuminated.
- Reactor Trip Breaker "B" **green** light is illuminated.
- Reactor Trip Bypass Breaker "A" **red** light is illuminated.
- Reactor Trip Bypass Breaker "B" has no light indication.

No operator actions have been taken.

Which **ONE** of the following is **CORRECT** regarding plant status and next **required** operator actions (if any)?

	Plant Status	**Required Action (if any)**
A.	The Reactor is tripped.	Check Turbine Tripped.
B.	The Reactor is tripped.	Trip the Reactor using both trip handswitches.
C.	The Reactor is at power.	No action is required.
D.	The Reactor is at power.	Trip the Reactor using either trip handswitch.

10.

Given the following conditions.

- PRZR Safety Valve, PSV-8010A, is stuck slightly open.
- RCS pressure is stable at 1920 psig.
- PZR Vapor Space Temperature is 630°F.
- PRT pressure is 35 psig and slowly rising.
- Containment pressure is 0 psig.
- PSV-8010A tailpipe temperature is reading ~ 281°F.

Select the correct choice for:

(a) the tail pipe temperature reading, and

(b) the expected response of the tailpipe temperature if the safety valve does not close.

REFERENCE PROVIDED

A. The tail pipe indication is reading correctly.

   The temperature should rise to ~ 338°F, then remain stable.

B. The tail pipe indication is reading correctly.

   The temperature should rise to ~ 338°F, then quickly lower to ~ 212°F.

C. The tail pipe indication should read ~ 258°F.

   The temperature should rise to ~ 328°F, then remain stable.

D. The tail pipe indication should read ~ 258°F.

   The temperature should rise to ~ 328°F, then quickly lower to ~ 212°F.

11.

Given the following:

- Maintenance on CCW Train A is to be performed.

During draining of the CCW Train A system, drain flow would normally be routed to_____**(a)**_____.

When CCW Train A fill and vent is performed, an operator should be stationed at the CCW Hx vent point and the Control Room should _____**(b)**_____.

A. **(a)** the Radwaste Processing Facility (RPF) for processing and reuse.

   (b) start 2 CCW pumps simultaneously, remain in this configuration after fill & vent has been completed.

B. **(a)** the Clean Water Sump for disposal to the Waste Water Retention Basins.

   (b) start 2 CCW pumps simultaneously, remain in this configuration after fill & vent has been completed.

C. **(a)** the Radwaste Processing Facility (RPF) for processing and reuse.

   (b) start 3 CCW pumps simultaneously, reduce to 2 CCW pumps after fill & vent has been completed.

D. **(a)** the Clean Water Sump for disposal to the Waste Water Retention Basins.

   (b) start 3 CCW pumps simultaneously, reduce to 2 CCW pumps after fill & vent has been completed.

12.

Given the following plant conditions:

- Unit 1 has a stuck open PRZR Code Safety Valve.
- Appropriate operator response actions have been taken.
- RCS pressure is stable at 1345 psig
- Containment temperature is 160°F
- Actual PRZR level is 50%

The effect of RCS pressure at 1345 psig will cause the indicated PRZR level LI-459 to read **(a)** actual level; the effect of containment temperature at 160°F tends to make the indicated PRZR level read **(b)** than actual level.

A. (a) below (b) lower

B. (a) below (b) higher

C. (a) above (b) lower

D. (a) above (b) higher

13.

Given the following:

- The unit is at full power.
- A loss of ACCW occurs at 1432.
- The crew has entered AOP-18022-C, "Loss of Auxiliary Component Cooling Water" and is attempting to restore ACCW flow.
- RCP temperatures are below their immediate trip criteria but are slowly rising.
- RCP seal injection flow is ~ 9 gpm per RCP.

Which one of the following correctly describes:

(a) the MAXIMUM time allowed to trip the RCPs and

(b) the MINIMUM temperature setpoint for the **motor bearing** that requires RCP trip.

A. (a) 1437 (b) 195°F

B. (a) 1437 (b) 311°F

C. (a) 1442 (b) 195°F

D. (a) 1442 (b) 311°F

14.

Given the following:

- Small break LOCA in progress.
- A loss of all offsite power has occurred.
- DG1B is tagged out.
- The SAT is unavailable.
- The crew transitions to 19012-C, "Post LOCA Cooldown and Depressurization".
- The step for "Isolate SI Accumulators" is being performed.
- The UO has been dispatched to energize the SI Accumulator isolation valves (HV-8808A, B, C, D).

Which **ONE** of the following is **CORRECT** regarding isolation of the SI Accumulators?

A. **All** accumulator isolation valves can be energized.

Close **all** accumulator isolation valves, leave the valves **energized**.

B. **All** accumulator isolation valves can be energized.

Close **all** accumulator isolation valves, then **de-energize** the valves.

C. **Two** accumulator isolation valves cannot be energized.

Close energized accumulator isolation valves, vent **all** of the accumulators.

D. **Two** accumulator isolation valves cannot be energized.

Close energized accumulator isolation valves, vent **two** of the accumulators.

15.

Actual Pressurizer Code Safety Valve position indication can be read on the_____**(a)**_____which is / are powered from_____**(b)**_____.

A. **(a)** Plasma Displays A and B

(b) AY1A and BY1B, 120V AC Vital Instrument Panels

B. **(a)** Plasma Displays A and B

(b) NYR and NYS, 120V AC Regulated Instrument Panels

C. **(a)** Main Control Board Panel C

(b) AY1A and BY1B, 120V AC Vital Instrument Panels

D. **(a)** Main Control Board Panel C

(b) NYR and NYS, 120V AC Regulated Instrument Panels

16.

Given the following conditions / events on Unit 1:

* Reactor power is 100%.
* PRZR pressure control is selected to 457 / 456 position.
* PRZR pressure is at 2235 psig.
* 1PT-456 fails high.

Which **ONE** of the following is the **CORRECT** plant / system response?

A. PORV 1PV-455 opens.

Both spray valves remain closed and all PRZR heaters will energize.

Pressure will stabilize near 2185 psig.

B. PORV 1PV-456 opens.

Both spray valves remain closed and all PRZR heaters will energize.

Pressure will stabilize near 2185 psig.

C. PORV 1PV-455 opens.

Both spray valves open and all PRZR heaters turn off.

Pressure will continue to lower causing a Reactor Trip and Safety Injection.

D. PORV 1PV-456 opens.

Both spray valves open and all PRZR heaters turn off.

Pressure will continue to lower causing a Reactor Trip and Safety Injection.

17.

Given the following:

- A DBA LOCA is in progress on Unit 2.
- ECCS has been aligned for "cold leg recirculation".
- RHR pump 2A tripped 5 minutes after completing the recirculation alignment.
- All other components are functioning properly.

Which **ONE** of the operator actions would be **CORRECT** regarding the Safety Injection pumps (SIPs) and the Centrifugal Charging pumps (CCPs)?

A. Immediately stop both SIPs.

B. Immediately stop both CCPs.

C. Immediately stop CCP "A" and SIP "A".

D. Allow all CCPs and SIPs to continue running.

18.

Given the following:

- A HIGH failure (offscale high) of Pressurizer (PRZR) Pressure Channel PT-457 has occurred.

- Immediate Operator Actions of AOP-18001-C for failure of a Pressurizer Pressure channel have been taken.

- NO other actions have been taken.

Which **ONE** of the following identifies the **MINIMUM** additional channels needed to cause a:

a) Reactor Trip

b) Safety Injection

	Reactor Trip	**Safety Injection**
A.	1	1
B.	1	2
C.	2	1
D.	2	2

19.

A Turbine Driven Auxiliary Feed Water (TDAFW) Actuation has been generated.

- HV-5106, "TDAFW Pump Steam Supply Valve" has stroked open.

Which **ONE** of the following conditions is necessary to **RESET** the TDAFW actuation and close HV-5106?

A. At least ONE Main Feed Water Pump Turbine RESET.

B. RESET Safety Injection using both QMCB handswitches.

C. ALL Steam Generator levels above the Low-Low level setpoints.

D. ATWS Mitigation System Actuation Circuit (AMSAC) signal CLEAR.

20.

Given the following:

- A loss of all AC power has occurred.

- The crew is performing 19102, "Loss of All AC Power Recovery With SI Required".

- Both CCPs are stopped.

- All RCP Seal Injection Isolations are OPEN (HV-8103A, B, C, D)

- RCP seal temperatures are ~ 465°F

Which **ONE** of the following is the **CORRECT** mitigation strategy for restoration of charging flow and seal injection to cool the RCP seals?

A. Take HC-0182, Seal Injection Controller to minimum, start a CCP, throttle HC-0182 to establish a slow cooldown rate on the RCP seals.

B. Close all the HV-8103 valves, start a CCP, slowly throttle open the HV-8103 valves one at a time to establish a slow cooldown rate on the RCP seals.

C. Close the seal injection needle valves, start a CCP, slowly throttle open the seal injection needle valves to establish a slow cooldown rate on the RCP seals.

D. Close all the HV-8103 valves, start a CCP, perform a controlled cooldown of the RCS to cool the RCP seals, RCPs should not be started prior to a status evaluation.

21.

Given the following:

- The reactor is stable with critical data being taken.

- The crew is preparing to raise power to the POAH.

- 1BY1B, 120V Vital Instrument bus de-energizes.

Which **ONE** of the following describes the effects on the Intermediate Range indications and the reason for the indications?

A. IR N-35, remains energized and indication decreases.

IR N-36, remains energized and indication decreases.

B. IR N-35, remains energized with indication stable.

IR N-36, remains energized with indication stable.

C. IR N-35, remains energized and indication decreases.

IR N-36, will de-energize.

D. IR N-35, remains energized with indication stable.

IR N-36, will de-energize.

22.

Which of the following choices correctly identifies the expected equipment condition for the initial and current CNMT pressures? Assume no operator actions taken.

Initial CNMT pressure:

Ch I - 3.5 psig Ch II - 3.9 psig Ch III - 3.7 psig Ch IV - 3.6 psig

Current CNMT pressure:

Ch I - 21.3 psig Ch II - 21.7 psig Ch III - 20.9 psig Ch IV - 22.1 psig

A. **Initial** - Containment Cooler Lo Speed QMCB MLBs LIT.

Current - Containment Spray Pump QMCB handswitch RED lights LIT.

B. **Initial** - Containment Cooler Lo Speed QMCB MLBs LIT.

Current - Containment Spray Pump QMCB handswitch GREEN lights LIT.

C. **Initial** - Containment Cooler Lo Speed QMCB MLBs EXTINGUISHED.

Current - Containment Spray Pump QMCB handswitch RED lights LIT.

D. **Initial** - Containment Cooler Lo Speed QMCB MLBs EXTINGUISHED.

Current - Containment Spray Pump QMCB handswitch GREEN lights LIT.

23.

A failure of a flow transmitter has resulted in the following annunciators:

- RCP SEAL WATER INJ LO FLOW
- REGEN HX LETDN HI TEMP
- LETDN HX OUT HI TEMP
- CHARGING LINE HI/LO FLOW

All other plant parameters are normal.

Which **ONE** of the following actions would **CORRECTLY** mitigate this event?

A. Throttle open HV-0182 (seal flow control).

B. Throttle closed HV-0182 (seal flow control).

C. Throttle open FV-0121 (charging flow control).

D. Throttle closed FV-0121 (charging flow control).

24.

Given the following conditions:

- The Reactor was shutdown to Mode 3 conditions 28 days ago.
- Core reload has just been completed.
- Unit 1 is in midloop operation.
- All HL and CL nozzle dams are in place.
- A total loss of RHR cooling has occurred.
- RCS temperature was 100°F when the loss of cooling event initiated.

Calculate the amount of time it will take from the loss of RHR until saturated conditions are reached in the RCS **AND** the amount of time until core uncovery occurs.

REFERENCE PROVIDED

	Time Until Saturated	**Time Until Core Uncovery**
A.	38 minutes	145 minutes
B.	38 minutes	228 minutes
C.	58 minutes	145 minutes
D.	58 minutes	228 minutes

25.

Which **ONE** of the following describes the transition process for the **Containment Spray** system from the injection flow path to the recirculation flow path after a LOCA?

A. At the RWST LO-LO Level of 29%, the operator manually realigns the flow path.

B. At the RWST LO-LO Level of 29%, the flow path semi-automatically realigns.

C. At the RWST EMPTY level of 8%, the operator manually realigns the flow path.

D. At the RWST EMPTY level of 8%, the flow path semi-automatically realigns.

26.

Initial conditions:

- 457 / 456 position selected for PRZR pressure control.

- All channels are reading 2235 psig.

Current conditions:

PT-455(Ch I)	PT-456(Ch II)	PT-457(Ch III)	PT-458(Ch IV)
2190 psig	2190 psig	Offscale High	2285 psig

- Immediate actions to stabilize PRZR pressure have been completed.

- AOP 18001-C, section C for PRZR Pressure Instrumentation, is in effect.

- The step to select controlling channels and recorders is being performed.

Which **ONE** of the following would be the **CORRECT** controlling channels to choose and the reason why?

Channel Selection	**Reason for Channel Selection**
A. 455 / 456	Defeat input to the Reactor Protection System.
B. 455 / 456	Swap to operable control channel inputs.
C. 455 / 458	Defeat input to the Reactor Protection System.
D. 455 / 458	Swap to operable control channel inputs.

27.

Given the following:

- CNMT H2 concentration has remained > 4% following a LOCA.

- An SO has been dispatched for local operation of 1-1508-U4-012, "POST LOCA PURGE CTB ISO VALVE".

In accordance with SOP 13130-1, Post-Accident Hydrogen Control", to protect the SO from radiation exposure, which one of the following correctly describes:

The proper sequence of actions and the location where the SO will manipulate the local valve?

A. First action - UO opens the Post LOCA valves on HVAC panel.

   Next action - SO opens the valve on the Equipment Building roof.

B. First action - UO opens the Post LOCA valves on HVAC panel.

   Next action - SO opens the valve in the Equipment Building ground level.

C. First action - SO opens the valve on the Equipment Building roof.

   Next action - UO opens the Post LOCA valves on HVAC panel.

D. First action - SO opens the valve in the Equipment Building ground level.

   Next action - UO opens the Post LOCA valves on HVAC panel.

28.

Given the following conditions:

- Both Reactor Trip Breaker red lights are illuminated.
- Both Reactor Trip Breaker green lights are extinguished.
- The OATC momentarily places the reactor trip handswitch in the TRIP position and Reactor Trip Breaker indications **DO NOT CHANGE**.

Which of the following choices describes the actions that **should have occurred** when the OATC placed the handswitch to TRIP?

A. The Undervoltage coils energized.

The Shunt coils energized.

B. The Undervoltage coils de-energized.

The Shunt coils energized.

C. The Undervoltage coils energized.

The Shunt coils de-energized.

D. The Undervoltage coils de-energized.

The Shunt coils de-energized.

29.

Given the following:

- The unit is at 100% power.

- CNMT pressure is 0.2 psig.

- CNMT Mini-Purge is in service for respirable air quality control.

- A Safety Injection occurs.

Which one of the following is correct regarding the Containment Purge System damper status **prior to** the SI and the signal that will close the dampers?

A. Only the Mini-Purge exhaust dampers were open.

The dampers would receive a direct auto close signal from CIA.

B. Only the Mini-Purge exhaust dampers were open.

The dampers would receive a direct auto close signal from CVI.

C. The Mini-Purge exhaust and supply dampers were open.

The dampers would receive a direct auto close signal from CIA.

D. The Mini-Purge exhaust and supply dampers were open.

The dampers would receive a direct auto close signal from CVI.

30.

Given the following conditions:

- Unit 1 core reload is in progress.
- Source Ranges N-31 and N-32 are reading significantly different.
- I & C determines the power supply for detector N-31 has failed high.
- N-32 is selected for Audio Count Rate in Containment and Control Room.

Due to this power supply failure, N-31 is reading_____(a)_____than it should.

The Operator At The Controls is_____(b)_____.

A. (a) lower (b) required to suspend core alterations

B. (a) lower (b) not required to suspend core alterations

C. (b) higher (b) required to suspend core alterations

D. (b) higher (b) not required to suspend core alterations

31.

Unit 2 Refueling Outage is in progress:

- Fuel shuffle is in progress in the Spent Fuel Pool (SFP) with the gate to the Containment currently closed.
- SPENT FUEL PIT LOW LEVEL annunciator illuminates in Control Room.
- SFP level lowers to 22 feet 10 inches above the fuel due to a leak
- The SS has directed a makeup to the SFP in accordance with SOP-13719-2, "Spent Fuel Pool Cooling and Purification System".

Which **ONE** of the following describes whether SFP level is above or below the Tech Spec limit, and the source of makeup for this condition, in accordance with SOP-13719-2.

SFP level is...

A. BELOW the minimum required by Technical Specifications.

   Makeup from the Demin Water Storage Tank (DWST).

B. BELOW the minimum required by Technical Specifications.

   Makeup from the Refueling Water Storage Tank (RWST).

C. ABOVE the minimum required by Technical Specifications.

   Makeup from the Demin Water Storage Tank (DWST).

D. ABOVE the minimum required by Technical Specifications.

   Makeup from the Refueling Water Storage Tank (RWST).

32.

Given the following:

- The unit is at 100% power.

- **Loop # 3** Inboard MSIV (HV-3016A) goes fully closed.

Given this condition AND before manual or automatic operation of any other system.

- **Loop # 2** SG steam FLOW would_____**(a)**_____ and

- **Loop # 3** SG LEVEL initially would rapidly_____**(b)**_____.

A. **(a)** rise **(b)** rise

B. **(a)** rise **(b)** lower

C. **(a)** lower **(b)** rise

D. **(a)** lower **(b)** lower

33.

Which one of the following choices for the SG code safeties:

(a) lists all the correct lift setpoints (psig), and

(b) describes the technical specification bases for these valves?

A. **(a)** 1185, 1200, 1210, 1220, 1235.

(b) limits secondary pressure to $\leq$ 110% design pressure during a full power turbine trip without steam dump.

B. **(a)** 1185, 1200, 1215, 1225, 1235.

(b) limits secondary pressure to $\leq$ 110% design pressure during a full power turbine trip without steam dump.

C. **(a)** 1185, 1200, 1210, 1220, 1235.

(b) provide an alternate method for cooling the unit to RHR entry conditions whenever the preferred heat sink via the steam dumps to the condenser is unavailable.

D. **(a)** 1185, 1200, 1215, 1225, 1235.

(b) provide an alternate method for cooling the unit to RHR entry conditions whenever the preferred heat sink via the steam dumps to the condenser is unavailable.

34.

A rapid power reduction per AOP 18013-C was completed to stabilize condenser vacuum. Rods were inserted below the rod insertion limit (RIL) during the power reduction. An Emergency Boration is in progress and the OATC is withdrawing rods to restore rods above the RIL.

Which **ONE** of the following is **CORRECT** regarding:

a) whether SS permission is required for Control Rod insertion during the downpower?

and

b) when Emergency Boration may be terminated?

	Control Rod Insertion	**Emergency Boration Termination**
A.	SS permission is **NOT** required.	When Rod Bank LO Limit alarm clears.
B.	SS permission is **NOT** required.	When Rod Bank LO-LO Limit alarm clears.
C.	SS permission **IS** required.	When Rod Bank LO Limit alarm clears.
D.	SS permission **IS** required.	When Rod Bank LO-LO Limit alarm clears.

35.

Given the following:

- At 1330 hours a Loss of All AC Power occurred.

- Restoration of AC power is not anticipated until 1730 hours.

Which **ONE** of the following describes the **CORRECT** action required by 19100-C, "Loss of All AC Power" as 1E bus battery voltage decays over time and why?

A. When voltage < 105 VDC, open the battery breaker after its inverters are shutdown.

   To prevent damaging the battery cells due to cell reversal.

B. When voltage < 120 VDC, open the battery breaker after its inverters are shutdown.

   To prevent damaging the battery cells due to cell reversal.

C. When voltage < 105 VDC, open the battery breaker after its inverters are shutdown.

   To prevent a possible explosion due to excessive hydrogen production.

D. When voltage < 120 VDC, open the battery breaker after its inverters are shutdown.

   To prevent a possible explosion due to excessive hydrogen production.

36.

Given the following:

- The unit is at 100% power.

- The loop seal between stages on the in-service SJAE has been lost.

Which **ONE** of the following is **CORRECT** regarding the effect of losing the SJAE loop seal on Main Condenser pressure and Main Turbine MW Output?

	Main Condenser Pressure (psia)	**Main Turbine MW Output**
A.	Rises	Rises
B.	Lowers	Rises
C.	Rises	Lowers
D.	Lowers	Lowers

37.

Initial Conditions:

- Safety Injection occurs due to an RCS LOCA
- Train "A" SI has been reset
- Train "B" SI is still actuated
- Both SI pumps are injecting

Current conditions:

- A loss of both RATs occurs
- Both DG's re-energize their respective busses

Which **ONE** of the following would be **CORRECT** regarding the SI pumps flow and amp responses?

A. SIP "A" - flow and amps lower, then return to previous values automatically.

SIP "B" - flow and amps lower, then return to previous values automatically.

B. SIP "A" - flow and amps lower, then have to be manually restored.

SIP "B" - flow and amps lower, then have to be manually restored.

C. SIP "A" - flow and amps lower, then return to previous values automatically.

SIP "B" - flow and amps lower, then have to be manually restored.

D. SIP "A" - flow and amps lower, then have to be manually restored.

SIP "B" - flow and amps lower, then return to previous values automatically.

38.

Given the following:

- The Unit is at 70% power.

- VCT level is at 46%.

- A loss of a 120VAC Essential bus has occurred.

- VCT auto makeup immediately starts on the bus failure.

Which **ONE** of the following **CORRECTLY** describes...

a) The VCT level channel failure.

b) The effects on VCT auto swapover capability.

A. **a)** LT-112 (VCT level) fails LOW.

b) VCT auto swapover will occur on actual VCT lo-lo level.

B. **a)** LT-185 (VCT level) fails LOW.

b) VCT auto swapover will occur on actual VCT lo-lo level.

C. **a)** LT-112 (VCT level) fails HIGH.

b) VCT auto swapover will NOT occur on actual VCT lo-lo level.

D. **a)** LT-185 (VCT Level) fails HIGH.

b) VCT auto swapover will NOT occur on actual VCT lo-lo level.

39.

The plant is 100% power, all systems in normal alignment.

- ALB04, window D04 for BAT CHARGERS 1CD1CA 1CD1CB TROUBLE illuminates.
- 1CD1B battery amperage reading is 0 amps
- Channel III TSLB status lights are extinguished.

Which **ONE** of the following is **CORRECT** regarding the 125V DC bus 1CD1 status?

A. One battery charger tripped — the battery is supplying 1CD1

B. Both battery chargers tripped — the battery is supplying 1CD1

C. Both battery chargers tripped — 1CD1 is completely de-energized

D. One battery charger tripped — 1CD1 is supplied by the other charger

40.

Given the following:

- The unit is at 90% power.
- All Main Feedwater (MFW) system controls in AUTO.
- A **low** failure of PT-508 (Feedwater Header Pressure) occurs.

Both MFPT speeds should_____**(a)**_____due to the_____**(b)**_____.

A. **(a)** raise

(b) lower indicated delta P

B. **(a)** raise

(b) higher indicated delta P

C. **(a)** lower

(b) lower indicated delta P

D. **(a)** lower

(b) higher indicated delta P

41.

Initial conditions:

- MFPT "A" is operating.
- MFPT "B" is tripped.
- All SG levels are stable, AFW flows to all SG's are ~ 225 gpm
- The following annunciator window is **extinguished**.
- ALB16, window F05 "AFW AUTO START MFPT TRIP RLY CNTL PWR LOSS"

Current conditions:

- The UO manually trips MFPT "A".

Which **ONE** of the following is the **CORRECT** plant response and actions to take?

A. AFW flows remain as is, SG levels remain stable.

Reset MFPT "A", restart MFPT "A".

B. AFW flows remain as is, SG levels remain stable.

Reset MFPT "B", startup MFPT "B".

C. AFW flows increase, SG levels begin to rise.

Throttle AFW valves closed before they fully open.

D. AFW flows increase, SG levels begin to rise.

Allow AFW valves to stroke fully open, then throttle.

42.

The unit is at 100% power when a Reserve Auxiliary Transformer (RAT) switcher trips open. Reactor power rises above 100%.

Auxiliary Feedwater flow indications are:

- SG # 1 - 650 gpm SG # 2 - 350 gpm SG # 3 - 350 gpm SG # 4 - 650 gpm

The sequence of actions the UO should take in AOP-18031, "Loss of Class 1E Electrical Systems" is to...

A. Reduce Turbine load to reduce Reactor power to $\leq$ 100%.

   Then throttle TDAFW speed and MDAFW pump "A" discharge valves.

B. Reduce Turbine load to reduce Reactor power to $\leq$ 100%.

   Then throttle TDAFW speed and MDAFW pump "B" discharge valves.

C. Throttle TDAFW speed and MDAFW pump "A" discharge valves.

   Then reduce Turbine load to reduce Reactor power to $\leq$ 100%.

D. Throttle TDAFW speed and MDAFW pump "B" discharge valves.

   Then reduce Turbine load to reduce Reactor power to $\leq$ 100%.

43.

Given the following:

- Loss of All AC power occurs, 19100-C, "Loss of All AC Power" is in effect.

- Power is restored to AA02 via DG1A.

Which **ONE** of the following is the **CORRECT** action regarding restoration of the NSCW system to service?

A. Verify NSCW discharge valves go closed to prevent water hammer.

   Manually start 2 pumps.

B. Verify NSCW discharge valves go closed to prevent water hammer.

   Verify 2 pumps start automatically.

C. Verify NSCW discharge valves are open to prevent high starting currents.

   Manually start 2 pumps.

D. Verify NSCW discharge valves are open to prevent high starting currents

   Verify 2 pumps start automatically.

44.

The "Maintenance / Normal" switch located on the QEAB for a 4160V AC bus has been placed in the "Maintenance" position to support bus inspection.

When placed in the "Maintenance" position, this switch...

A. bypasses the time delay on the overcurrent trips on the bus **supply** breakers.

B. bypasses the time delay on the overcurrent trips on the bus **load** breakers.

C. bypasses the instantaneous overcurrent trips on the bus **supply** breakers.

D. bypasses the instantaneous overcurrent trips on the bus **load** breakers.

45.

The plant is in Mode 3 controlling Tave with the ARVs when 125V DC panel 1AD1 de-energizes due to a ground fault. Loop 4 ARV was ~ 10% open.

Regarding operation of the ARV, list:

(a) the failure mode on loss of DC power, and

(b) where the ARV can be operated.

A. **(a)** as is

(b) locally using the hand pump station

B. **(a)** as is

(b) from Shutdown Panel A

C. **(a)** closed

(b) locally using the hand pump station

D. **(a)** closed

(b) from Shutdown Panel A

46.

The plant is in Mode 1.

A leak has developed in the DG1A Fuel Oil Storage Tank (FOST). The FOST level decrease is noted by the following times.

- at 1730 level is 90.9% (78,200 gallons)

- at 1745 level is 86.9% (74,800 gallons)

- at 1800 level is 82.9% (71,350 gallons)

- at 1815 level is 78.9% (67,900 gallons)

- at 1830 level is 74.9% (64,500 gallons)

Which ONE of the following is the EARLIEST discovery time that DG1A is inoperable in accordance with Technical Specifications?

A. 1745

B. 1800

C. 1815

D. 1830

47.

Given the following initial conditions:

- The unit is at 340°F, RCS cooldown in progress.
- RHR Train A is in the shutdown cooling mode.
- A loss of instrument air occurs.
- The RHR system AOVs all go to the failure mode for loss of air.

Current conditions:

- Instrument air has been restored.
- No Control Room or local actions have been performed for RHR.

Which **ONE** of the following is **CORRECT** regarding:

- RCS cooldown rate response **after** instrument air is **restored**.
- RHR system flow rate response **after** instrument air is **restored**.

	RCS cooldown rate	**RHR system flow rate**
A.	raises	raises
B.	raises	lowers
C.	lowers	raises
D.	lowers	lowers

48.

Unit 1 Control Room has been evacuated due to a fire.

- 18038-1, "Operation From Remote Shutdown Panels" is in effect.

- Two ARVs have been placed in the "Fire Emergency" mode of operation.

Which **ONE** of the following are the **fire event qualified** ARVs and the **method** to control RCS temperature in the Fire Emergency mode?

A. ARVs # 1 and # 4 are fire event qualified.

Using the auto-manual controllers located on the front of the shutdown panels.

B. ARVs # 2 and # 3 are fire event qualified.

Using the auto-manual controllers located on the front of the shutdown panels.

C. ARVs # 1 and # 4 are fire event qualified.

Using a 4 to 20 mA current source connected with banana jacks inside the panels.

D. ARVs # 2 and # 3 are fire event qualified.

Using a 4 to 20 mA current source connected with banana jacks inside the panels.

49.

A gaseous release is in progress in accordance with SOP-13202, "Gaseous Releases".

Considering the following events which occur **during the release**, determine if the release would be allowed to continue or require termination for each of the following:

a) A-RE-0014 Radiation Monitor fails low

b) precipitation (rain, snow, sleet, etc.) is occuring.

A. a) terminate the release.

   b) terminate the release.

B. a) terminate the release.

   b) continue the release.

C. a) continue the release.

   b) terminate the release.

D. a) continue the release.

   b) continue the release.

50.

Given the following:

- A rapid power reduction (> 15% in 1 hour) is in progress to comply with the actions of AOP-18009-C, a "Steam Generator Tube Leakage".

- Radiation is indicated on RE-0724 Steam Line monitor.

Which **ONE** of the following is **CORRECT** regarding:

- when RE-0724 would indicate a Steam Generator Tube leak

- the source of radiation detected.

A. only when the reactor is at power.

N-16

B. only when the reactor is at power.

I-131

C. any time the SJAE is in service.

N-16

D. any time the SJAE is in service.

I-131

51.

Given the following:

- The plant is at 100% power.
- NSCW Train B tagged out for repair.
- NSCW Train A pump # 3 trips.
- NSCW Train A pump # 5 cannot be started.
- AOP-18021-C, "Loss of Nuclear Service Cooling Water" has been entered.
- No other operator actions have been taken.

Which **ONE** of the following is the **CORRECT** crew action(s)?

A. Place all Train A NSCW pumps in PTL, Emergency Trip DG1A.

Shutdown to Mode 3 per UOP-12004-C, "Power Operations" within 72 hours.

B. Place all Train A NSCW pumps in PTL, Emergency Trip DG1A.

Trip the Reactor and go to E-0, align NSCW Train A for single pump operations.

C. Allow NSCW Pump # 1 to continue running, DG1A should be left in AUTO.

Shutdown to Mode 3 per UOP-12004-C, "Power Operations" within 72 hours.

D. Allow NSCW Pump # 1 to continue running, DG1A should be left in AUTO.

Trip the Reactor and go to E-0, align NSCW Train A for single pump operations.

52.

The plant is at 100% power.

- RHR pump A is running for an IST surveillance.

- CCP "A" is running.

The following annunciator illuminates on the QMCB.

- NSCW TRAIN A LO HDR PRESS

- Various other Train A NSCW low flow annunciators illuminate.

Approximately 10 seconds later the UO notes the following:

- 3 NSCW pumps on Train A red lights are illuminated.

- NSCW Train A return flow is 0 gpm.

- NSCW Train A supply flow is significantly higher than 17,500 gpm.

Which **ONE** of the following is the **CORRECT** initiating event and **next** action to take?

	Initiating Event	**Next action**
A.	Pump sheared shaft	Stop one of the running Train A NSCW pumps.
B.	Catastrophic break	Place all NSCW Train A pump handwitches in PTL.
C.	Catastrophic break	Stop RHR pump A and CCP A, then isolate letdown.
D.	Pump sheared shaft	Verify the 3rd Train A NSCW pump discharge valve opens.

53.

Following a controlled unit shutdown for a refueling outage, degassification of the RCS is in progress via chemical addition.

Shortly following the chemical addition, a crud burst occurs as expected.

Which **ONE** of the following radiation monitors would be expected to alarm?

A. RE-0005, Containment - High Range

B. RE-0007A, Rad Chem Lab

C. RE-00011, Seal Table Room

D. RE-48000, CVCS Letdown

54.

Given the following **initial** conditions:

- The unit is at 100% power.

- DG1A is paralleled to the grid for surveillance testing at 6500 kW.

Current condtions:

- AOP-18017-C, "Abnormal Grid Disturbances/Loss of Grid" section A has been entered.

- Grid frequency has lowered below 60 Hz.

Which **ONE** of the following would be **CORRECT** regarding

- the initial conditions of the DG.

- the effects of the abnormal grid disturbance on the DG.

A. DG speed is used to adjust kW.

The governor would throttle open on the fuel racks to attempt to raise DG speed.

B. DG speed is used to adjust kW.

The governor would throttle closed on the fuel racks to attempt to lower DG speed.

C. DG speed is used adjust kVARS.

The governor would throttle open on the fuel racks to attempt to raise DG speed.

D. DG speed is used adjust kVARS.

The governor would throttle closed on the fuel racks to attempt to lower DG speed.

55.

Given the following:

- Unit 1 is at 100% power.
- Air compressor # 4 is tagged out.
- An LOSP results in de-energization of 2 of the 3 remaining compressors.
- A slow decrease in air header pressure has occurred.
- Power has now been **restored** to the 2 previously de-energized compressors.
- Instrument Air Header pressure dropped as low as 82 psig.
- Instrument Air Header pressure is now 97 psig and slowly rising.

Which **ONE** of the following is **CORRECT** regarding the current status of the Instrument Air system?

A. PV-9375, Service Air Isolation valve is OPEN.

All 3 available air compressors are running.

B. PV-9375, Service Air Isolation valve is OPEN.

2 of 3 available air compressors are running.

C. PV-9375, Service Air Isolation valve is CLOSED.

All 3 available air compressors are running.

D. PV-9375, Service Air Isolation valve is CLOSED.

2 of 3 available air compressors are running.

56.

Given the following:

- Unit 1 at 25% power, Unit 2 at 100% power.

- The only two available air compressors on each unit are running (4 total).

- Air compressor # 4 is aligned to Unit 2.

Unit 1 has the following indications:

- SERVICE AIR LO PRESS annunciator lit.

- QMCB Service Air Pressure meter - 0 psig

- QMCB Instrument Air Pressure meter - 72 psig and lowering.

Annunciator window INST AIR EQUIP LO PRESS illuminates several minutes later.

Which **ONE** of the following is the **CORRECT** action the operators should perform in response to the annunciator?

A. Align the swing air compressor from Unit 2 to Unit 1.

B. Open the cross tie valve to supply Unit 1 air header from Unit 2.

C. Trip the Unit 1 Turbine and isolate Turbine Building Instrument Air.

D. Trip the Unit 1 Reactor and enter E-0 while taking actions to restore air pressure.

57.

Given the following:

- The fire alarm computer goes into alarm.

- The Outside Area Operator reports a fire on RAT "A"

You note the following on the QPCP.

- Pressure gauge "Fire Pump CPI - 7918" pressure lowers to 92 psig, then recovers.

Which **ONE** of the following is **CORRECT** regarding how many fire pumps are running and **WHERE** this can be determined?

A. ONLY the Motor Driven Fire pump is running.

QPCP and local observation.

B. ONLY the Motor Driven Fire pump is running.

Local observation ONLY.

C. The Motor Driven pump and one Diesel Fire pump are running.

QPCP and local observation.

D. The Motor Driven pump and one Diesel Fire pump are running.

Local observation ONLY.

58.

Given the following:

- The unit is at full power.

- A small air leak inside Containment is causing a slow rise in Containment pressure.

- Containment pressure is currently reading 1.9 psig.

Containment pressure is_____**(a)**_____

To relieve Containment pressure, flow must pass through a restrictive orifice until containment pressure is_____**(b)**_____, then the normal flow path may be aligned.

A. **(a)** within Technical Specification LCO limits.

(b) less than +0.3 psig

B. **(a)** within Technical Specification LCO limits.

(b) less than -0.3 psig

C. **(a)** in violation of Technical Specification LCO limits.

(b) less than +0.3 psig

D. **(a)** in violation of Technical Specification LCO limits.

(b) less than -0.3 psig

59.

Given the following conditions.

- The OATC has manually actuated Containment Spray using_____(a)_____on 1 of 2 QMCB locations.
- As a result of the manual action, the annunciator window(s) for _____(b)_____ should illuminate.

A. (a) 1 of 2 handswitches

(b) CNMT SPRAY ACTUATION only

B. (a) 2 of 2 handswitches

(b) CNMT SPRAY ACTUATION only

C. (a) 1 of 2 handswitches

(b) both CNMT SPRAY ACTUATION and CNMT VENT ISO ACTUATION

D. (a) 2 of 2 handswitches

(b) both CNMT SPRAY ACTUATION and CNMT VENT ISO ACTUATION

60.

Given the following:

- Control Room is being evacuated due to a fire.

The OATC (RO) should report to Remote Shutdown Panel_____.

In accordance with 18038-1/2, "Operation From Remote Shutdown Panels" the preferred method of communications to co-ordinate in plant activities with personnel outside the control room is via_____.

A. "A" , sound powered phones plugged into dedicated channels (red jacks).

B. "B" , bridge network phone extension # 3145 using codes # 123 or # 234.

C. "A" , bridge network phone extension # 3145 using codes # 123 or # 234.

D. "B" , sound powered phones plugged into dedicated channels (red jacks).

61.

You are performing a lineup verification for valves in various positions:

Which **ONE** of the following is **CORRECT** performance of the lineup verification in accordance with NMP-OS-002, "Verification Policy"?

A. A valve is required to be closed.

   Turn valve slightly in the open direction, using reasonable force, reclose the valve.

B. A valve is required to be throttled 2 turns open.

   Turn valve in closed direction, count turns to ensure correct, re-open valve 2 turns.

C. A valve is found not in the required lineup position.

   Align valve in the required position, notify the SS once the valve is properly aligned.

D. A valve position cannot be determined by local observation.

   Leave valve as is, use remote handswitch light indications to verify valve position.

62.

Given the following:

- Control Room has been evacuated.

- An LOSP has occurred.

- The crew is preparing to close a DG1A output breaker (1AA02-19).

Which **ONE** of the following is **CORRECT** regarding where and how the DG output breaker is closed?

A. At Remote Shutdown Panel A.

   Take local control of the DG output breaker, then close the breaker handswitch.

B. On the front of DG1A Generator panel.

   Take the handswitch located on the front of DG1A Generator panel to close.

C. At the 4160V 1E Switchgear local control panel (1AA02-00).

   Take local control of the DG output breaker, then close the breaker handswitch.

D. On the front of the DG output breaker at 4160V 1E Switchgear 1AA02.

   Take the handswitch located on the front of the DG output breaker to close.

63.

Which one of the following describes the meaning of an OPERATING PERMIT TAG hanging on a component as described in NMP-AD-003, Equipment Clearance and Tagging?

A. • The component position can NOT be changed until the tag is cleared.
   • The component is under the control of a Tagout Holder.

B. • The component position can NOT be changed until the tag is cleared.
   • The component has been designated as an isolation boundary for personnel safety.

C. • The component position can ONLY be changed with permission of the Tagout Holder.
   • The component is under the control of a Tagout Holder.

D. • The component position can ONLY be changed with permission of the Tagout Holder.
   • The component has been designated as an isolation boundary for personnel safety.

64.

Given the following:

- Reactor power is 30%
- A reactor shutdown is in progress
- A high failure of IR NIS channel N-36 occurs

Which **ONE** of the following is **CORRECT** regarding the effects of this failure as reactor shutdown progresses?

	Power < P-10	**Power < P- 6**
A.	Reactor trip occurs	SR High flux trip automatically unblocks
B.	Reactor trip occurs	SR High flux trip must be manually unblocked
C.	Reactor does **NOT** trip	SR High flux trip automatically unblocks
D.	Reactor does **NOT** trip	SR High flux trip must be manually unblocked

65.

Given the following:

- Waste Monitor Tank (WMT) # 9 release is in progress.
- The control room HIGH RADIATION annunciator illuminates.
- 1-RE-0018, Liquid Waste Effluent radiation monitor, has failed high.
- WMT 9 discharge flow transmitter, FT-1085A, indicates 35 gpm.

Per ARP 17213-1 for the PLPP annunciator window for WATER DISCH LINE HI RAD, the Auxiliary Building SO should...

A. fail air to RV-0018.

   OR

   close manual discharge valves to the environment.

B. fail air to RV-0018.

   OR

   using the local manual handwheel, close RV-0018.

C. close RV-0018 locally on the PLPP.

   OR

   close manual discharge valves to the environment.

D. close RV-0018 locally on the PLPP.

   OR

   using the local manual handwheel, close RV-0018.

66.

Given the following:

- The unit is at 100% power.
- A containment entry is to be performed per 00303-C, "Containment Entry" for an RCS leak inspection.

The area inside the bioshield should be posted as a_____**(a)**_____.

Entry into _____**(b)**____ is prohibited.

A. **(a)** Very High Radiation Area (Grave Danger)

(b) the Preaccess Filter Unit area (260 ft elevation).

B. **(a)** High Radiation Area

(b) the Preaccess Filter Unit area (260 ft elevation).

C. **(a)** Very High Radiation Area (Grave Danger)

(b) The elevator.

D. **(a)** High Radiation Area

(b) The elevator.

67.

Given the following:

- IPC computer is unavailable, CSFST monitoring must be performed manually.
- You are assigned 19200-C, "Critical Safety Function Status Tree" monitoring and are making your first pass through the CSFSTs.

Critical Safety Function Status Trees indicate the following:

- Subcriticality	GREEN
- Core Cooling	ORANGE
- Heat Sink	Not performed yet
- Integrity	Not performed yet
- Containment	Not performed yet
- Inventory	Not performed yet

Which **ONE** of the following describes the:

(a) proper performance of CSFST monitoring on the first pass through.
(b) your responsibilities for CSFST monitoring in accordance with 19200-C and

A. **(a)** Immediately tell the SS to transition to Core Cooling, then continue the first pass through the status trees.

   (b) Continuous monitoring is required.

B. **(a)** Complete the first pass through the status trees, then inform the SS to transition to the highest priority FRP.

   (b) Continuous monitoring is required.

C. **(a)** Immediately tell the SS to transition to Core Cooling, then continue the first pass through the status trees.

   (b) Monitor every 10 to 15 minutes unless a change in status occurs.

D. **(a)** Complete the first pass through the status trees, then inform the SS to transition to the highest priority FRP.

   (b) Monitor every 10 to 15 minutes unless a change in status occurs.

68.

Given the following:

- Control Room has been evacuated due to a fire.
- AOP-18038-1, "Operation From Remote Shutdown Panels" is in effect.
- The operators have just aligned components per Attachment I, "Control Switch Required Positions".

Attachment I is performed at _____**(a)**_____in order to align _____**(b)**_____.

A. **(a)** both Remote Shutdown Panels

(b) Fire event qualified equipment to prevent spurious actuations.

B. **(a)** both Remote Shutdown Panels

(b) switches with maintained contacts to prevent changing status on transfer.

C. **(a)** Remote Shutdown Panel "B" only

(b) Fire event qualified equipment to prevent spurious actuations.

D. **(a)** Remote Shutdown Panel "B" only

(b) switches with maintained contacts to prevent changing status on transfer.

69.

The Emergency Director (ED) has directed you to perform an ENN roll call in accordance with 91002-C, "Emergency Notifications", checklist 4 "Directions for ENN Communicators".

- Burke County and State of Georgia have failed to respond to the initial roll call.

Which **ONE** of the following is the **CORRECT** actions to perform?

A. Transmit the notification message to the agencies that responded, inform the ED that two agencies couldn't be notified.

   Southern Linc would be the next priority to establish communications.

B. Transmit the notification message to the agencies that responded, inform the ED that two agencies couldn't be notified.

   The Back-up ENN Bridge would be next priority to establish communications.

C. Promptly notify the ED of the agencies that failed to respond to the initial roll call.

   Southern Linc would be the next priority to establish communications.

D. Promptly notify the ED of the agencies that failed to respond to the initial roll call.

   The Back-up ENN Bridge would be next priority to establish communications.

70.

Given the following plant conditions:

- The Reactor has tripped and Safety Injection has actuated.
- 19012-C, "Post LOCA Cooldown and Depressurization" is in progress.
- The crew is performing an RCS cooldown in accordance with the procedure.

The following is a plot of the cooldown:

Time	RCS Tcold	Time	RCS Tcold
1400	549°F	1545	427°F
1415	532°F	1600	397°F
1430	522°F	1615	384°F
1445	507°F	1630	366°F
1500	500°F	1645	342°F
1515	480°F	1700	312°F
1530	449°F	1715	282°F

Which **ONE** of the following is **CORRECT** regarding the Tech Spec cooldown limits?

A. The crew is in compliance with Tech Spec cooldown limits.

B. The Tech Spec cooldown limits were first exceeded at 1530.

C. The Tech Spec cooldown limits were first exceeded at 1600.

D. The Tech Spec cooldown limits were first exceeded at 1715.

71.

Which **ONE** of the following are components / parameters for a potential source of RCS leakage that are specifically checked for in 19112-C, "LOCA Outside Containment" and the **main concern** if this flow path is not isolable?

A. Safety Injection pump Cold Leg injection valves and RHUT level.

Loss of emergency coolant recirculation due to rupture of low pressure piping.

B. Safety Injection pump Cold Leg injection valves and RHUT level.

Unmonitored radioactive release to environment via the Auxiliary Building HVAC.

C. RHR pump Cold Leg injection valves and Reactor Coolant System pressure.

Loss of emergency coolant recirculation due to rupture of low pressure piping.

D. RHR pump Cold Leg injection valves and Reactor Coolant System pressure.

Unmonitored radioactive release to environment via the Auxiliary Building HVAC.

72.

RCS Feed and Bleed has been initiated in accordance with 19231-C, "Response to Loss of Secondary Heat Sink".

- All SG WR levels are 8% and lowering.
- "HI CNMT PRESS SI RX TRIP ADVERSE CNMT" alarm is lit.
- Core Exit TC temperatures are rising rapidly.
- Condensate Pump # 1 is running.

The **CORRECT** strategy the crew should use to re-establish feed to...

A. all SG's and feed at 30 -100 gpm until WR level is > 31%.

B. a selected SG and feed at 30 -100 gpm until NR level is > 32%.

C. all SG's and feed with no flow restrictions until WR level is > 31%.

D. a selected SG and feed with no flow restrictions until NR level is > 32%.

73.

Initial conditions:

- **Core Cooling** CSFST is **ORANGE**.

- 19222-C, "FRP-C.2 Degraded Core Cooling" has been implemented.

- Steam Generator depressurization to 200 psig per 19222-C is in progress.

Current conditions:

- **RCS Integrity** CSFST **RED** status has been validated.

- The CSFST status tree path points to 19241-C, "Response to Imminent Pressurized Thermal Shock (PTS).

- The SS continues with the actions of 19222-C.

Which **ONE** of the following is **CORRECT** regarding the SS decision during performance of this procedure?

A. The RED condition on Integrity is expected due to the SI accumulators injecting causing rapid lowering of cold leg temperatures, the SS should complete 19222-C.

B. Transitions from FRPs cannot be made until completed or procedurally directed.

C. Transitions to other procedures is prohibited until ECCS termination criteria is met.

D. The RED condition on Integrity is expected due to the SI accumulators injecting, causing a rapid rise in RCS pressure, the SS should complete 19222-C.

74.

Given the following:

- 19241-C, "Pressurized Thermal Shock (PTS)", is in effect.
- An RCS temperature instrument failure occurs.
- The OATC places both trains of COPS to the ARM position without noticing the instrument failure.
- PORV-455 opens.

The temperature instrument which failed is a...

A. NR Thot

B. WR Thot

C. NR Tcold

D. WR Tcold

75.

Given the following:

- Reactor trip with LOSP in progress.

- The SS has directed the crew to perform a natural circulation cooldown using one of the two following procedures.

- 19002-C, "Natural Circulation Cooldown"

OR

- 19003-C, "Natural Circulation Cooldown With Void In Vessel (With RVLIS)"

Which **ONE** of the following is **CORRECT** regarding cooldown rate, the procedure to utilize, and why?

A. If a cooldown rate of 50°F per hour is preferred, use 19002-C.

A lower cooldown rate will help prevent reactor vessel head void formation.

B. If a cooldown rate of 50°F per hour is preferred, use 19003-C.

A lower cooldown rate will help prevent reactor vessel head void formation.

C. If a cooldown rate of 100°F per hour is preferred, use 19002-C.

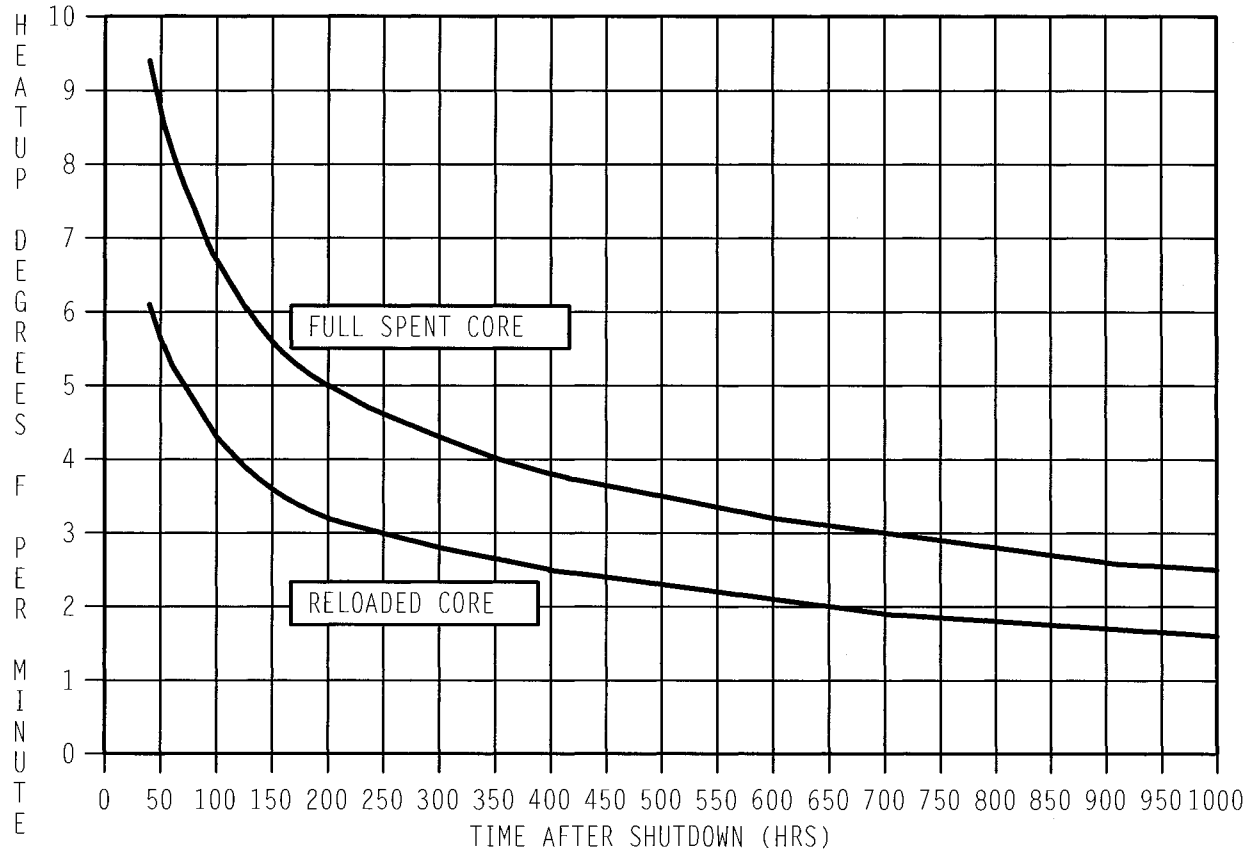
A higher cooldown rate will help prevent reactor vessel head void formation.

D. If a cooldown rate of 100°F per hour is preferred, use 19003-C.

A higher cooldown rate will help prevent reactor vessel head void formation.

Sheet 1 of 1

RCS HEAT-UP RATE



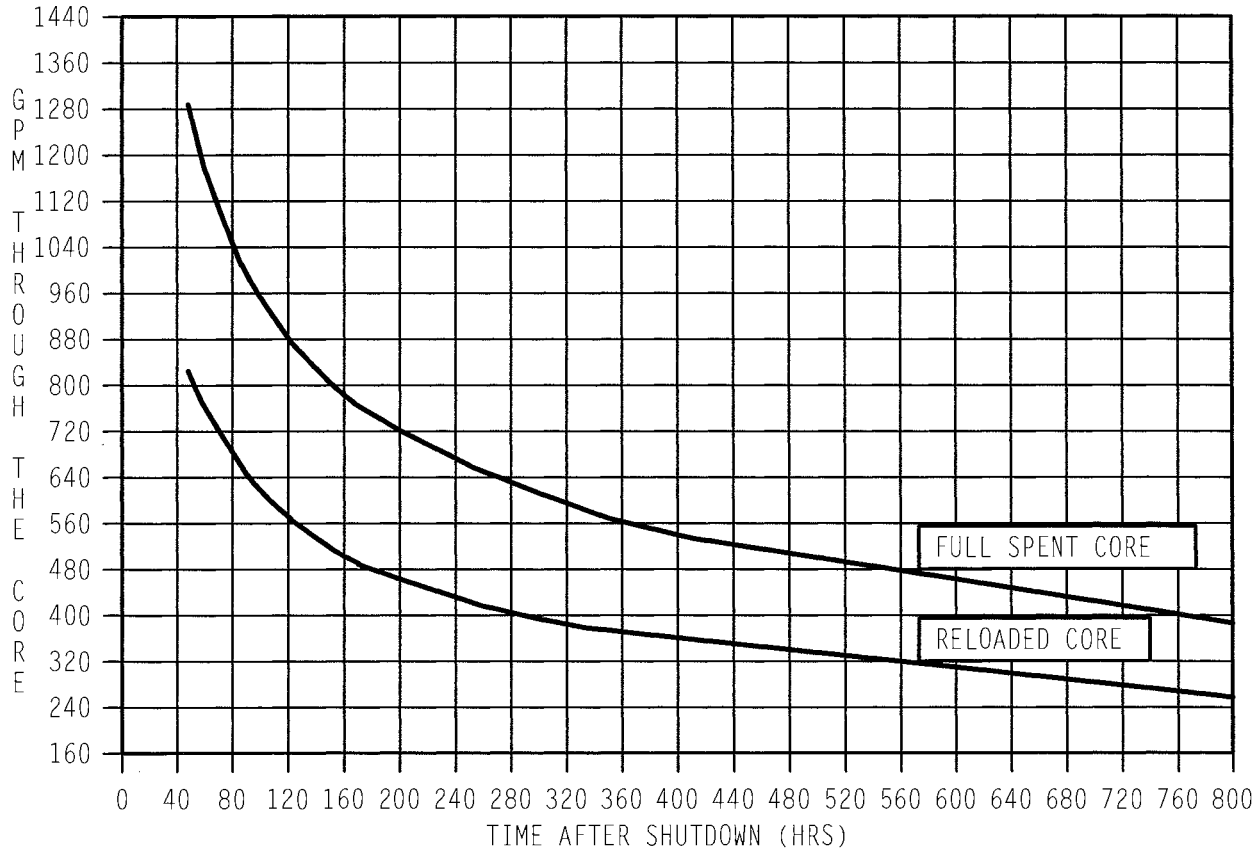
Assumptions:

1) Mid Loop Conditions
2) RCS Vented To Atmosphere With or Without Loop Dams

FIGURE 1

Sheet 1 of 1

CORE FLOW TO MAINTAIN 195 Deg F vs.
TIME AFTER REACTOR SHUTDOWN



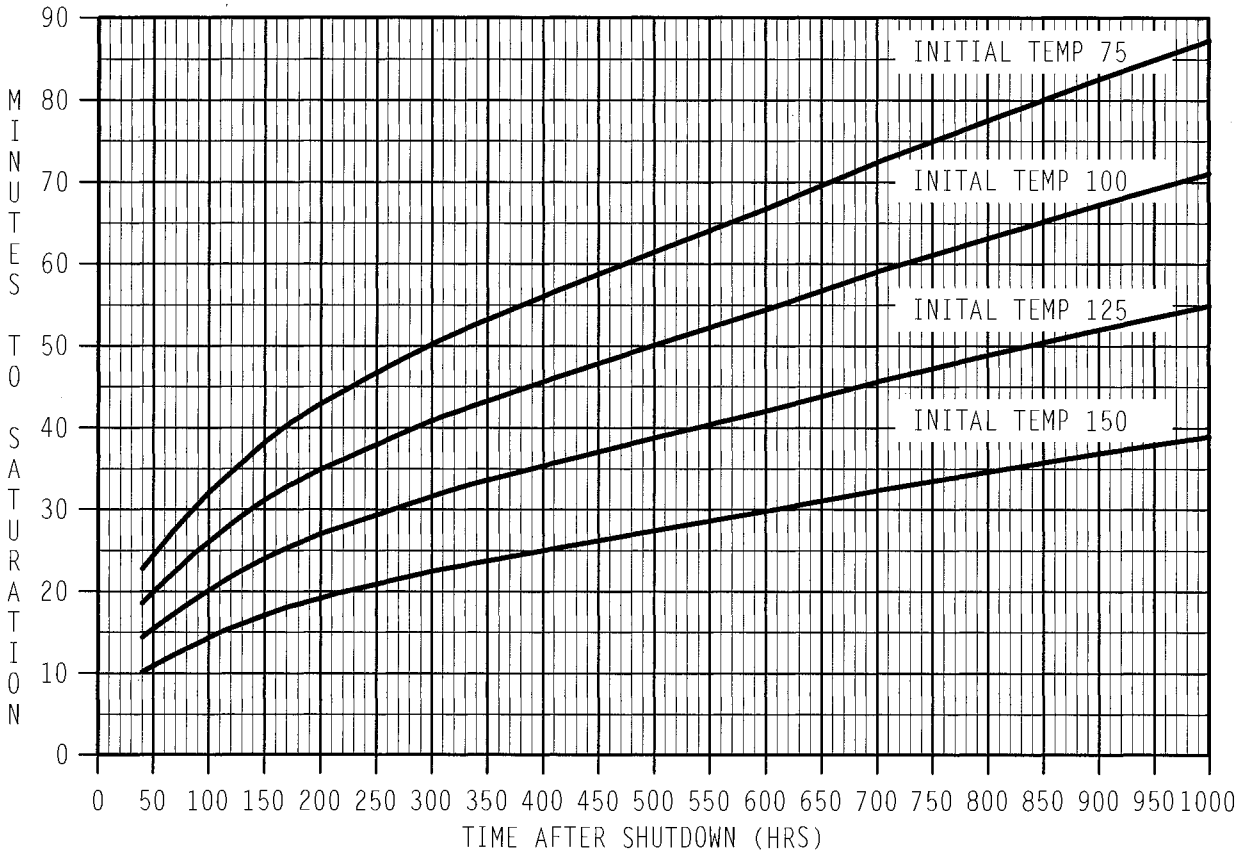
Assumptions:

1) Mid Loop Conditions
2) RCS Vented To Atmosphere
3) Injection Flow Assumed a 100 Degrees F From RWST

FIGURE 2

Sheet 1 of 1

RCS TIME TO BOILING
(RELOADED CORE)



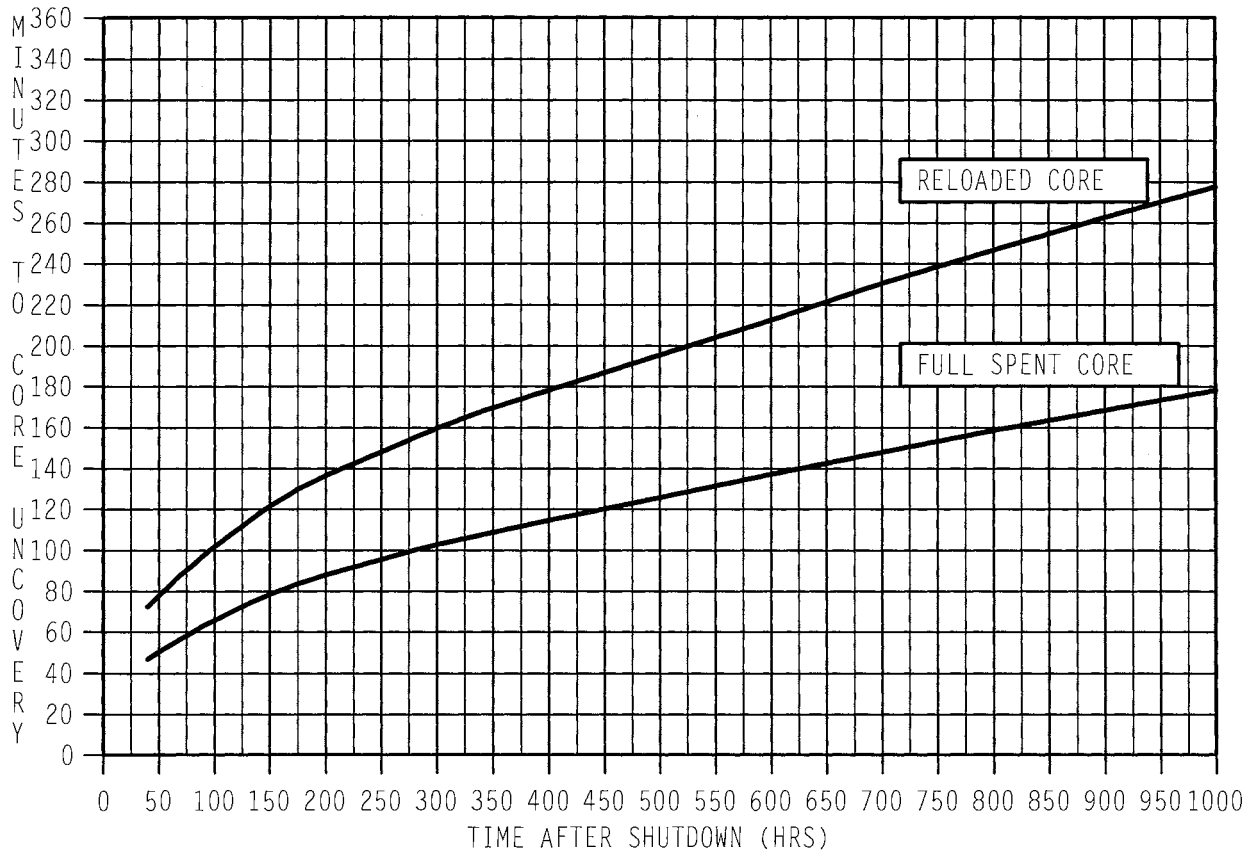
Assumptions:

1) Reloaded Core Heat Load
2) Mid Loop Conditions
3) RCS Vented To Atmosphere With or Without Loop Dams

FIGURE 4

Sheet 1 of 1

TIME TO CORE UNCOVERY
(RCS TEMPERATURE AT SATURATION)



Assumptions:

1) Initial RCS Temperature is 212 Degrees F
2) Initial RCS Level at Mid-Loop
3) RCS Vented to Atmosphere With or Without Loop Dams

FIGURE 5

Date: 06-26-2009
VEGP NRC SRO Examination Answer Sheet

Student Name: _____

1. A	26. B	51. B	76. B
2. D	27. C	52. B	77. C
3. B	28. B	53. D	78. A
4. B	29. D	54. A	79. A
5. D	30. C	55. A	80. A
6. B	31. B	56. D	81. C
7. B	32. B	57. C	82. C
8. B	33. A	58. C	83. D
9. B	34. B	59. D	84. A
10. B	35. A	60. D	85. C
11. B	36. C	61. C	86. C
12. D	37. D	62. A	87. A
13. C	38. A	63. C	88. A
14. D	39. D	64. B	89. D
15. A	40. A	65. C	90. C
16. B	41. D	66. C	91. A
17. D	42. C	67. B	92. A
18. B	43. B	68. B	93. A
19. D	44. A	69. D	94. B
20. D	45. C	70. C	95. C
21. C	46. C	71. C	96. C
22. C	47. D	72. D	97. B
23. C	48. D	73. A	98. B
24. D	49. B	74. B	99. C
25. C	50. A	75. A	100. C

start SRO segment

End RO Segment