

Final Submittal

(Blue Paper)

CATAWBA 2008-301
RO Written EXAMINATION
12/10/2008

FINAL RO

WRITTEN EXAMINATION

AND REFERENCES

U.S. Nuclear Regulatory Commission

Site-Specific RO Written Examination

Applicant Information

Name:

Date: 12-10-2008

Facility/Unit: CATAWBA 2008-301

Region: I ☒ II ☐ III ☐ IV

Reactor Type: ☒ W ☐ CE ☐ BW ☐ GE

Start Time:

Finish Time:

Instructions

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

Applicant Certification

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

Applicant's Signature

Results

Examination Value _____ Points

Applicant's Score _____ Points

Applicant's Grade _____ Percent

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CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 1

(1 point)

Unit 1 is at 100% reactor power.

Four hours ago:

- PZR Level Select Switch was in the 3-2 position
- PZR level channel 1 failed HIGH
- All actions required by Technical Specifications were completed to allow continued unit operation.

Following the receipt of several annunciators, the following items are noted:

- 1EDC has lost power
- 1FO-1, B/6 (PZR Hi Level RX Trip) is LIT and RED
- DRPI indicates control bank position at 215 steps on Bank D
- Both RX TRIP BKR 1A and 1B red lights are LIT.

Which one of the following describes:

1. The current condition of the plant and
 2. The correct operator action to take for the above evolution?
- A. 1. Anticipated Transient Without Scram (ATWS)
 2. Manually trip the reactor
- B. 1. Anticipated Transient Without Scram (ATWS)
 2. Perform a shutdown per OP/1/A/6100/003 (Controlling Procedure for Unit Operation)
- C. 1. Reactor Protection System (RPS) failure
 2. Manually trip the reactor
- D. 1. Reactor Protection System (RPS) failure
 2. Perform a shutdown per OP/1/A/6100/003 (Controlling Procedure for Unit Operation)
-

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Question: 2

(1 point)

Initial Conditions

- Unit 1 was in Mode 3 cooling down for a refueling outage per OP/1/A/6100/002 (Controlling Procedure for Unit Shutdown)
- NC pressure is 1500 psig
- NC temperature is 500°F and slowly decreasing

Operators note the following:

- 1RAD-1, B/3 "1EMF41 AUX BLDG VENT HI RAD" - LIT
- 1AD-13, A/1 "ND & NS ROOMS SUMP LEVEL EMERG HI" - LIT
- "SAFETY INJECTION ACTUATED" status light - LIT

Which one of the following states the correct procedure flowpath that will address this event?

- A. AP/1/A/5500/027 (Shutdown LOCA)
AP/1/A/5500/019 (Loss of Residual Heat Removal System)
 - B. AP/1/A/5500/027 (Shutdown LOCA)
AP/1/A/5500/010 (Reactor Coolant Leak)
 - C. EP/1/A/5000/E-0 (Reactor Trip or Safety Injection)
EP/1/A/5000/E-1 (Loss of Reactor or Secondary Coolant)
EP/1/A/5000/ES-1.2 (Post LOCA Cooldown and Depressurization)
 - D. EP/1/A/5000/E-0 (Reactor Trip or Safety Injection)
EP/1/A/5000/E-1 (Loss of Reactor or Secondary Coolant)
EP/1/A/5000/ECA-1.2 (LOCA Outside Containment)
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Question: 3

(1 point)

Given the following events:

- A Large Break LOCA has occurred on Unit 2
- All equipment functioned as designed
- The OSM has declared an Alert
- A signed Emergency Notification Sheet has been handed to you for transmittal

Which of the following is a complete list of agencies required to be contacted within 15 minutes of the declaration of the Alert?

- A. State and county warning points and the NRC Operations Center
 - B. County warning points and NRC Operations Center
 - C. State warning points and NRC Operations Center
 - D. State and county warning points
-

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Question: 4
(1 point)

Given the following initial conditions:

- 1NV-294 (NV Pmps A&B Disch Flow Ctrl) in MANUAL
- 1NV-309 (Seal Water Injection Flow) in MANUAL
- pressurizer pressure is 2235 psig
- total seal water flow is 32 gpm
- charging line flow is 89 gpm

If pressurizer pressure is increased to 2300 psig, which one of the following sets of system parameter changes is correct?

- A. Charging line flow decreases and total seal water flow decreases
 - B. Charging line flow decreases and total seal water flow remains the same
 - C. Charging pump discharge header pressure increases and total seal water flow increases
 - D. Charging pump discharge header pressure increases and total seal water flow remains the same
-

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Question: 5

(1 point)

Unit 1 was in Mode 5 preparing to enter Mode 6.

Given the following:

- Both trains of ND have been lost.
- The crew entered AP/1/A/5500/019 (Loss of Residual Heat Removal System) but actions to restore cooling have failed.
- The OSM has determined an immediate need to take an action per 10CFR50.54(X).

Per the requirements of OMP 1-7 (Emergency/Abnormal Procedure Implementation Guidelines):

1. Is notification to the NRC Operations Center required prior to taking the action?
2. How many additional SROs (if any) are required to agree with the OSM prior to the action being taken?

- A. 1. Yes
2. None
- B. 1. Yes
2. One additional SRO
- C. 1. No
2. None
- D. 1. No
2. One additional SRO
-

David
[Signature]

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Question: 6
(1 point)

Unit 1 was operating at 100% with "A" Train KC in service. Given the following:

- An 86N relay actuated on 1ETB two minutes ago
- A major KC system piping leak has occurred in the Auxiliary Building non-essential header
- 1AD-10, A/1 "KC SURGE TANK A LO-LO LEVEL" - LIT
- 1AD-10, A/2 "KC SURGE TANK B LO-LO LEVEL" - LIT
- The crew has entered AP/1/A/5500/021 (Loss Of Component Cooling)

Assuming all automatic actions have occurred, which one of the following correctly lists the major KC headers that are currently being cooled?

- A. KC Train A essential header only
 - B. KC Train A essential header and the Reactor Building non-essential header
 - C. KC Train A essential header and KC Train B essential header
 - D. KC Train A essential header, KC Train B essential header and the Reactor Building non-essential header
-

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Question: 7
(1 point)

Given the following:

- The SSF has been manned due to a fire in the cable spreading room.
- During the course of SSF operations a head vent stuck in the open position for a short period of time and then reclosed.
- You have been directed to increase NC pressure using heaters.

1. Why is pressure recovery slower from the SSF than from the Control Room?
2. How are the heaters available from the SSF secured should Pzr level drop below 17%?

- A. 1. Only a portion of the D heaters are available from the SSF
 2. Automatically
- B. 1. Only a portion of the D heaters are available from the SSF
 2. Manually
- C. 1. Only A and B heaters are available from the SSF
 2. Automatically
- D. 1. Only A and B heaters are available from the SSF
 2. Manually
-

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Question: 8
(1 point)

Which one of the following is a complete list of breakers directed to be opened per EP/1/A/5000/FR-S.1 (Response to Nuclear Power Generation/ATWS) to trip the reactor locally?

1. Reactor Trip Breakers RTA and RTB
 2. Reactor Trip Bypass Breakers BYA and BYB
 3. CRD/MG "Motor" Breakers
 4. CRD/MG "Generator" Breakers
- A. 1 and 2 only
- B. 1, 2, and 3 only
- C. 1, 2, and 4 only
- D. 1, 2, 3, and 4
-

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Question: 9

(1 point)

Given the following:

- Unit 1 and 2 are operating at 100%
- One single steam generator tube fully shears on each unit
- The crews are responding per EP/1(2)/A/5000/E-3 (Steam Generator Tube Rupture), preparing to perform the initial reactor coolant system cooldown to the required core exit thermocouple temperature using steam dumps.

Based on the differences between Unit 1 and Unit 2 steam generator design:

1. Which unit would have a lower primary system equilibrium pressure?
2. Which unit will have a faster cooldown rate?

(Assume identical cores and steam dump performance.)

- A. Unit 1 would have a lower equilibrium pressure and Unit 1 would have a faster cooldown rate.
 - B. Unit 1 would have a lower equilibrium pressure and Unit 2 would have a faster cooldown rate.
 - C. Unit 2 would have a lower equilibrium pressure and Unit 1 would have a faster cooldown rate.
 - D. Unit 2 would have a lower equilibrium pressure and Unit 2 would have a faster cooldown rate.
-

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Question: 10

(1 point)

Unit 1 is operating at 100%. 1ERPA is lost. What effect does this have on VCT auto makeup capability and VCT level indication in the control room?

	<u>Auto Makeup</u>	<u>Level Indication</u>
A.	Available	Available
B.	Unavailable	Available
C.	Available	Unavailable
D.	Unavailable	Unavailable

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Question: 11

(1 point)

Given the following:

- 1ERPD has been de-energized due to a blown fuse on inverter 1EID.
- The crew has implemented AP/1/A/5500/029 (Loss of Vital or Aux Control Power).
- The fuse has been replaced and the CRS wishes to re-energize 1ERPD from 1EID.

Per OP/1/A/6350/008 (125VDC/120VAC Vital Instrument and Control Power System), which one of the following correctly states the minimum acceptable wait time prior to inverter restart and the sequence for operation of inverter 1EID DC input breaker and AC output breaker?

- A.
 - 1. 5 seconds
 - 2. Close the DC input breaker and then close the AC output breaker
 - B.
 - 1. 5 seconds
 - 2. Close the AC output breaker and then close the DC input breaker
 - C.
 - 1. 60 seconds
 - 2. Close the DC input breaker and then close the AC output breaker
 - D.
 - 1. 60 seconds
 - 2. Close the AC output breaker and then close the DC input breaker
-

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Question: 12

(1 point)

Both units were at 100% with 2A RN Pump in service when the following annunciators were received:

- 1AD-12, E/2 "RN PIT A SWAP TO SNSWP" - LIT
- 2AD-12, E/2 "RN PIT A SWAP TO SNSWP" - LIT
- 1AD-12, B/1 "RN PUMP INTAKE PIT A LEVEL - LO" - LIT
- 2AD-12, B/1 "RN PUMP INTAKE PIT A LEVEL - LO" - LIT

What is the minimum time the crew must wait following receipt of these annunciators prior to operating RN equipment per AP/0/A/5500/020 (Loss of Nuclear Service Water) and what is the reason for that time delay?

- A. 2 minutes;
To allow sufficient time for all components to respond and allows the operator an opportunity to verify the signal is valid prior to any system realignments.
 - B. 2 minutes;
To prevent an automatic swap to the pond if RN pit level can be restored within 2 minutes.
 - C. 5 minutes;
To allow sufficient time for all components to respond and allows the operator an opportunity to verify the signal is valid prior to any system realignments.
 - D. 5 minutes;
To prevent an automatic swap to the pond if RN pit level can be restored within 5 minutes.
-

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Question: 13

(1 point)

Given the following:

- One RL turnaround valve is manually pinned in place for maintenance
- The crew has entered AP/0/A/5500/022 (Loss of Instrument Air)
- Operators have determined that the leak can be isolated but doing so will result in all RL turnaround valves losing VI.
- The CRS has directed that the leak be isolated.

Which one of the following correctly states the effect that this will have on the RL turnaround valves and the equipment cooled by RL.

- A. The unpinned RL turnaround valves will fail open resulting in more flow to the components supplied by RL.
 - B. The unpinned RL turnaround valves will fail closed resulting in more flow to the components supplied by RL.
 - C. The unpinned RL turnaround valves will fail open resulting in less flow to the components supplied by RL.
 - D. The unpinned RL turnaround valves will fail closed resulting in less flow to the components supplied by RL.
-

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Question: 14

(1 point)

Given the following:

- Unit 1 is at 100% power with power factor at 0.99 lagging.
 - Operators are controlling power factor in manual due to the auto voltage regulator not controlling properly.
 - A major grid disturbance causes power factor to increase to slightly leading.
1. Which button on the voltage regulator is operated to bring power factor back to its original value?
 2. What part of the generator is susceptible to overheating should power factor be erroneously adjusted to 0.8 lagging?

Reference provided

- A.
 1. The "LOWER" button
 2. The generator armature core end
 - B.
 1. The "RAISE" button
 2. The generator armature core end
 - C.
 1. The "LOWER" button
 2. The generator field
 - D.
 1. The "RAISE" button
 2. The generator field
-

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Question: 15

(1 point)

Unit 1 was operating at 100%. Given the following events and conditions:

- 0200 – reactor tripped due to a LOCA outside containment
- 0210 – crew enters ECA-1.2, (LOCA Outside Containment)
- 0220 – crew enters ECA-1.1, (Loss of Emergency Coolant Recirc)
- 0240 – The crew is at the step in ECA-1.1 to determine NC subcooling
- Current conditions:
 - NCS pressure is 1100 psig
 - 1B NC pump running
 - 1A, 1C, and 1D NC pumps secured
 - Reactor Vessel D/P is 20%
 - 1 NI pump running, indicating 220 gpm
 - 1 NV pump running, indicating 385 gpm
 - Both ND pumps off
 - No NS pumps running
 - Subcooling is 35°F

Which one of the following statements correctly describes the minimum required flow and which pump can be secured?

Reference provided

- A. 210 gpm, stop the running NV pump.
 - B. 210 gpm, stop the running NI pump.
 - C. 410 gpm, stop the running NI pump.
 - D. 410 gpm, neither pump may be secured at this time.
-

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Question: 16

(1 point)

A feedwater transient resulted in a reactor trip and the operating crew entered EP/1/A/5000/FR-H.1 (Response to Loss of Secondary Heat Sink) when all Auxiliary Feedwater flow was lost. Given the following:

- S/G 1A wide range level – 31%
- S/G 1B wide range level – 20%
- S/G 1C wide range level – 23%
- S/G 1D wide range level – 28%
- The BOP has just secured all the NC pumps
- The OATC notes NC system pressure is increasing

1. Why have NC pumps been secured?
 2. Why is NCS pressure increasing?
- A.
1. To begin NCS bleed and feed
 2. Due to NC temperature increase
- B.
1. To minimize heat input
 2. Due to letdown being secured
- C.
1. To begin NCS bleed and feed
 2. Due to letdown being secured
- D.
1. To minimize heat input
 2. Due to NC temperature increase
-

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Question: 17

(1 point)

The crew implemented EP/1/A/5000/ECA-1.2 (LOCA Outside Containment), determined the leak can not be isolated and transitioned to EP/1/A/5000/ECA-1.1 (Loss of Emergency Coolant Recirculation). Given the following:

- FWST level is 55%
- Subcooling is +7°F.

What actions, if any, are taken per EP/1/A/5000/ECA-1.1 to ensure the NV pumps maintain adequate suction until cold leg recirculation capability is restored?

- A. Terminate safety injection and establish normal charging from the VCT.
 - B. Remove power from 1NI-184B (ND Pump 1B Cont Sump Suct) and 1NI-185A (ND Pump 1A Cont Sump Suct)
 - C. Use "DEFEAT" buttons for "C-LEG RECIR FWST TO CONT SUMP SWAP TRN A" and "C-LEG RECIR FWST TO CONT SUMP SWAP TRN B"
 - D. None, a swap to the containment sump is blocked when sump level is less than 3.3 feet
-

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Question: 18

(1 point)

The crew entered EP/1/A/5000/ECA-2.1 (Uncontrolled Depressurization of All Steam Generators) following a unit trip. Given the following:

- Attempts to close any MSIV using its individual valve control board pushbutton have failed.
- Safety Injection has not been reset.
- 1AD-03, C/5 "SM ISOL TRN A" - LIT
- 1AD-03, D/5 "SM ISOL TRN B" – LIT
- 1AD-03, E/5 "SM ISOL VLVs NOT FULLY OPEN" - DARK

1. What additional action is taken per this procedure to attempt to close any MSIV?
2. If an MSIV can be closed, what plant parameter is monitored to determine when this procedure can be exited?

- A.
 1. Maintenance is dispatched to isolate air to the MSIVs
 2. NC loop T-hots
 - B.
 1. Both trains of Main Steam Isolation are manually initiated
 2. NC loop T-hots
 - C.
 1. Maintenance is dispatched to isolate air to the MSIVs
 2. S/G pressure
 - D.
 1. Both trains of Main Steam Isolation are manually initiated
 2. S/G pressure
-

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Question: 19

(1 point)

Given the following events and conditions on Unit 1:

- NC system is at full temperature and pressure.
- "A" Shutdown Bank control rods are fully withdrawn.
- CRD BANK SELECT switch is in the "SBB" position.
- The OATC is withdrawing "B" Shutdown Bank control rods with the current bank position at 64 steps withdrawn.
- The OATC releases the ROD MOTION switch but "B" Shutdown Bank control rods continue to withdraw.

1. What is the current plant Mode of Operation?
2. Which of the following describes the first required action(s) for this situation per AP/1/A/5500/015 (Rod Control Malfunction)?

- A.
 1. Mode 2
 2. Immediately trip the reactor.
 - B.
 1. Mode 3
 2. Immediately trip the reactor.
 - C.
 1. Mode 2
 2. Immediately place CRD BANK SELECT switch IN MANUAL; if rods continue to move then trip the reactor.
 - D.
 1. Mode 3
 2. Immediately place CRD BANK SELECT switch IN MANUAL; if rods continue to move then trip the reactor.
-

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Question: 20

(1 point)

Unit 1 was operating at 100% power with Control Rod Bank D at 216 steps withdrawn on DRPI when an OTDT runback occurred for approximately 30 seconds and cleared.

When conditions stabilized, the following indications were noted:

- Control Rod Bank D demand counters are indicating 190 steps.
- Control Rod Bank D rod D4 indicates 216 steps withdrawn on DRPI.
- All other Control Rod Bank D rods indicate 188 steps withdrawn on DRPI.

1. What is the first immediate action of the Abnormal Procedure that will address this issue?
2. What are the modes of applicability for the corresponding Technical Specification?

- A.
 1. Verify only one rod – MISALIGNED.
 2. MODE 1, MODE 2 with $k_{eff} \geq 1.0$
 - B.
 1. Verify only one rod – MISALIGNED.
 2. MODE 1, MODE 2
 - C.
 1. Ensure “CRD BANK SELECT” switch – IN MANUAL.
 2. MODE 1, MODE 2 with $k_{eff} \geq 1.0$
 - D.
 1. Ensure “CRD BANK SELECT” switch – IN MANUAL.
 2. MODE 1, MODE 2
-

CATAWBA NUCLEAR STATION

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Question: 21

(1 point)

Given the following:

- Unit 1 is in Mode 5
- BAT temperature is 60° F.
- FWST temperature is 70° F.

Assuming any required pumps are operable, which one of the following correctly states a combination of equipment which will satisfy the requirements of SLC 16.9-7 Boration System Flowpaths – Shutdown?

- A. BAT to NV Pump
 - B. FWST to NI Pump via 2 cold leg lines
 - C. FWST to NV Pump
 - D. FWST to ND Pump via 2 cold leg lines
-

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Question: 22

(1 point)

Given the following conditions and sequence of events:

- During the last calibration of N-35, an IAE technician improperly adjusted the compensating voltage to a value slightly lower than required by procedure.
- N-36 failed 3 hours ago, the crew entered AP/1/A/5500/016 (Malfunction of Nuclear Instrumentation), Case III (Intermediate Range Malfunction).
- All actions required by AP/1/A/5500/016 have been completed.
- A feedwater transient occurs resulting in a reactor trip.

How does this adjustment error affect the reading on N-35 and how will this condition affect when the source range instruments automatically energize?

- A. N-35 will indicate higher than the actual value.
The source ranges instruments will energize at a lower actual neutron flux.
 - B. N-35 will indicate higher than the actual value.
The source ranges instruments will energize at the same actual neutron flux.
 - C. N-35 will indicate lower than the actual value.
The source ranges instruments will energize at the same actual neutron flux.
 - D. N-35 will indicate lower than the actual value.
The source ranges instruments will energize at a higher actual neutron flux.
-

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Question: 23

(1 point)

Given the following:

- Unit 1 is operating with a known 0.6 GPD S/G tube leak
- 1A CF pump tripped and results in a plant runback.
- The crew has stabilized the plant at the runback target per AP/1/A/5500/003 (Load Rejection)
- The transient has caused the tube leak to increase to 12 GPD.

Which one of the following indications will provide the best indication (most sensitive and timely) that the S/G tube leak has increased?

- A. Observing 1EMF-26, 27, 28 and 29 (Steamline 1A – 1D)
 - B. Comparing S/G feed flow to steam flow mismatch
 - C. Observing 1EMF-33 (Condenser Air Ejector Exhaust)
 - D. Observing 1EMF-71, 72, 73, 74 (S/G A-D leakage)
-

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Question: 24

(1 point)

S/G depressurization to atmospheric pressure has been performed in EP/1/A/5000/FR-C.1 (Response to Inadequate Core Cooling).

1. What are the NC temperature and RVLIS level limits that allow the crew to transition out of this procedure?
 2. Why are these conditions more restrictive than earlier transition conditions?
- A.
1. Two NC Thots less than 328 deg F, RVLIS level greater than 41%
 2. To ensure a hard bubble does not block natural circulation flow
- B.
1. Two NC Thots less than 328 deg F, RVLIS level greater than 41%
 2. Due to the NC system being depressurized
- C.
1. Two NC Thots less than 350 deg F, RVLIS level greater than 61%
 2. To ensure a hard bubble does not block natural circulation flow
- D.
1. Two NC Thots less than 350 deg F, RVLIS level greater than 61%
 2. Due to the NC system being depressurized
-

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Question: 25

(1 point)

Unit 1 was conducting refueling operations in mode 6. Given the following events and conditions:

- The containment purge (VP) system is in operation in the REFUEL mode.
- Both trains of SSPS are in "TEST".
- The refueling crew dropped a fuel assembly into the refueling cavity.
- 1RAD-1 A/2 "1EMF-39 CONTAINMENT GAS HI RAD" - LIT
- 1RAD-3 D/2 "1EMF-17 REACTOR BLDG REFUEL BRIDGE" - LIT
- The crew has implemented AP/1/A/5500/025 (Damaged Spent Fuel).

1. Based on the above conditions, what was the status of the VP system when AP/1/A/5500/025 was entered?

2. What is the reason for establishing closure prior to VP being secured?

- A.
 - 1. The VP system was running
 - 2. To prevent an unmonitored release
 - B.
 - 1. The VP system was running
 - 2. To prevent an excessive negative pressure in containment
 - C.
 - 1. The VP system has tripped
 - 2. To prevent an unmonitored release
 - D.
 - 1. The VP system has tripped
 - 2. To prevent an excessive negative pressure in containment
-

CATAWBA NUCLEAR STATION

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Question: 26

(1 point)

Unit 1 was operating at 100% power when a small break LOCA occurred. Given the following events and conditions:

- Cooldown and depressurization is in progress in ES-1.2 (Post Cooldown and Depressurization)
- NC system pressure has stabilized at 410 psig
- NC temperature has stabilized at 325°F
- FWST level is 70% and slowly decreasing
- The operators attempt to place 1A ND train in the RHR mode
- 1ND-1B and 1ND-2A (ND Pump 1A Suct from Loop B) will not open

Which one of the following statements correctly describes why 1ND-1B and 1ND-2A will not open?

- A. ECCS has not been reset
 - B. The NC system pressure is too high
 - C. 1NI-147B (NI Pumps Recirc to FWST Isol) is open
 - D. 1NI-185A (ND pump 1A Suct from CNMT Sump) is closed
-

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Question: 27

(1 point)

Given the following conditions and sequence of events:

- One hour ago, a fault in the Unit 1 main generator resulted in a complete loss of offsite power.
- The crew entered EP/1/A/5000/ES-0.2 (Natural Circulation Cooldown).
- The OSM determined that a transition to EP/1/A/5000/ES-0.3 (Natural Circulation Cooldown With Steam Void in Vessel) was required.
- The crew has transitioned to ES-0.3 and is preparing to depressurize the NC system.

1. What condition would require stopping the depressurization of the NC system during this cooldown?

2. What is the basis for stopping the depressurization?

- A.
 - 1. PZR Level greater than 70%
 - 2. To prevent loss of natural circulation
 - B.
 - 1. RVLIS Level less than 73%
 - 2. To prevent loss of natural circulation
 - C.
 - 1. PZR Level greater than 70%
 - 2. To ensure normal pressurizer pressure control response
 - D.
 - 1. RVLIS Level less than 73%
 - 2. To ensure normal pressurizer pressure control response
-

CATAWBA NUCLEAR STATION

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Question: 28

(1 point)

Unit 1 is in the process of performing a reactor startup. Given the following conditions and sequence of events:

- Control Bank "A" is at 28 steps withdrawn
- 1AD-6, A/5 "NCP HI VIBRATION" - LIT
- 1AD-6, B/5 "NCP HI-HI VIBRATION" - LIT
- The BOP validates that the 1C NC Pump vibration level on the frame is at 6.5 mils using the NC Pump vibration monitor panel.

Which one of the following selections is the list of the correct actions based on this situation?

- A. Trip 1C NC Pump.
Go to AP/1/A/5500/004 (Loss of Reactor Coolant Pump).
 - B. Reinsert Control Bank "A" rods.
Trip 1C NC Pump.
Go to AP/1/A/5500/004 (Loss of Reactor Coolant Pump).
 - C. Pump trip criteria is not yet met.
Go To AP/1/A/5500/008 (Reactor Coolant Pump Malfunction).
 - D. Trip the reactor.
Trip 1C NC Pump.
Go to EP/1/A/5000/E-0 (Reactor Trip or Safety Injection).
-

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Question: 29

(1 point)

Unit 1 is at 75% power and decreasing in preparation for entering a refueling outage. Given the following conditions and sequence of events:

- There is confirmed failed fuel on Unit 1.
- 1AD-07, F/3 "LETDN HX OUTLET HI TEMP" - LIT
- The BOP notes that letdown temperature has trended to 132°F and appears to have stabilized.

1. What minimum actions are required to reduce activity level per AP/1/A/5500/018 (High Activity in Reactor Coolant)?
2. What is the applicability of Tech Spec 3.4.16 (RCS Specific Activity)?

- A.
 1. Ensure at least one mixed bed demineralizer in service only.
 2. Modes 1, 2, and 3.
 - B.
 1. Ensure at least one mixed bed demineralizer in service only.
 2. Modes 1 and 2, Mode 3 with $T_{avg} \geq 500^{\circ}\text{F}$.
 - C.
 1. Reduce letdown temperature to clear the alarm and then place additional demineralizers in service.
 2. Modes 1, 2, and 3.
 - D.
 1. Reduce letdown temperature to clear the alarm and then place additional demineralizers in service.
 2. Modes 1 and 2, Mode 3 with $T_{avg} \geq 500^{\circ}\text{F}$.
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 30
(1 point)

Unit 1 is operating at 100%. Given the following initial conditions and sequence of events:

- Excess letdown is in service to the VCT to repair a leak on the letdown line.
- A PZR pressure channel failure causes 1NC-32B (PZR PORV) and 1NC-36B (PZR PORV) to open.
- 1NC-36B does not re-close and the BOP closed its isolation valve.
- Minimum NC pressure reached during the event was 1820 psig.
- Current NC pressure is 2145 psig and increasing.

Assuming no operator actions other than isolating 1NC-36B:

1. What tank other than the VCT can excess letdown be directed to by 1NV-125B (Excess Letdn Hx Otlt Ctrl)?
2. Is excess letdown currently flowing to the VCT?

- A. PRT; no
 - B. PRT; yes
 - C. NCDT; no
 - D. NCDT; yes
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 31

(1 point)

1ND-1B (ND Pump 1A Suct Frm Loop B) and 1ND-37A (ND Pump 1B Suct Frm Loop C) have been aligned to their alternate power supplies.

1. What impact (if any) will aligning the alternate power supply have on the interlocks associated with these valves?
 2. How are these valves positioned electrically in the current alignment?
-
- A.
 1. Interlocks operate normally
 2. From the main control boards
 - B.
 1. Interlocks operate normally
 2. From the face of the alternate MCC breaker
 - C.
 1. Interlocks are removed
 2. From the main control boards
 - D.
 1. Interlocks are removed
 2. From the face of the alternate MCC breaker
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 32

(1 point)

At 1200, Unit 1 was addressing an NC system leak per AP/1/A/5500/010 (Reactor Coolant Leak) when the leak began to increase. Given the following:

	Time	<u>1200</u>	<u>1206</u>	<u>1212</u>	<u>1218</u>	<u>1224</u>
NC system pressure (psig)		2130	1950	5	5	5
Containment pressure (psig)		0.5	1.3	2.8	4.2	2.5
FWST level (%)		98	97	80	60	35

What is the earliest time that KC flow is automatically aligned to the ND heat exchangers?

- A. 1206
 - B. 1212
 - C. 1218
 - D. 1224
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 33

(1 point)

The crew is performing actions of AP/1/A/5500/010 (Reactor Coolant Leak) due to an increase in charging flow required to maintain pressurizer level.

You have just completed an evaluation of PRT conditions and noted the following:

- PRT pressure is 12 psig and slowly increasing
- PRT temperature is 140°F and slowly increasing

The CRS directs you to monitor inputs to the PRT per Enclosure 13 (Possible NC System Leakage Paths to PRT).

Assuming a single valve is leaking by its seat, which valve could have caused the noted PRT indications?

- A. 1NC-5 (Loop A Lo Point Drn)
 - B. 1NC-250A (Rx Head Vent Block)
 - C. 1NC-25A (Rx Head Gasket Leakoff Isol)
 - D. 1NV-87 (NC Pumps Seal Return Hdr Inside Relief)
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 34

(1 point)

Unit 1 is in Mode 3 with all shutdown banks withdrawn in preparation for startup when the following occur:

- 1AD-6 E/3 "NCP THERMAL BARRIER KC OUTLET HI/LO FLOW" - LIT
- OAC indicates KC flow to NCP 1C Thermal Barrier HX is 75 gpm.

What effects will this have on NCP 1C and what action should be taken to address the alarm?

- A. NCP 1C seal cooling is being maintained. Verify 1KC-345A (NC Pump 1C Therm Bar Otlt) closes after a 30 second time delay.
 - B. NCP 1C seal cooling is being maintained. Verify 1KC-345A (NC Pump 1C Therm Bar Otlt) closes immediately.
 - C. All seal cooling to NCP 1C is lost. Open the #1 seal bypass valve to restore seal cooling.
 - D. All seal cooling to NCP 1C is lost. Secure NCP 1C to prevent further seal damage.
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 35

(1 point)

Unit 2 is in Mode 5 with alignment of the KC system for parallel operations per OP/1/A/6400/005 (Component Cooling System). Given the following conditions and events:

- 2A1, 2B1, and 2B2 KC Pumps are in service.
- Both 2ETA and 2ETB are aligned to Unit 1 offsite power
- An 86S relay actuates on 2ETB
- All systems respond appropriately in automatic.

Assuming no operator actions, which Unit 2 KC pumps are in service?

- A. 2A1 KC pump only
 - B. 2A1 and 2A2 KC pumps only
 - C. 2A1, 2B1, and 2B2 KC pumps only
 - D. 2A1, 2A2, 2B1 and 2B2 KC pumps
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 36
(1 point)

Given the following sequence of events and conditions:

- A pressurizer PORV opens spuriously and will not close
- 3 minutes after the PORV opens, the block valve is closed.
- NC pressure is 1500 psig
- NC temperature is 550 °F
- PRT pressure is 45 psig

What is the approximate pressurizer PORV tailpipe temperature?

Reference provided

- A. 270 °F
 - B. 290 °F
 - C. 310 °F
 - D. 320 °F
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 37
(1 point)

Given the following conditions and sequence of events:

- Unit 1 was operating at 100% power.
- The crew has entered AP/1/A/5500/016 (Malfunction of Nuclear Instrumentation System) due to N-42 lower detector failing LOW
- IAE has not yet placed the required bistables in the trip condition per AP/1/A/5500/016.
- A complete loss of 1ERPD occurs

What procedure takes priority for these conditions?

- A. Continue in AP/1/A/5500/016
 - B. Enter AP/1/A/5500/029 (Loss of Vital or Aux Control Power)
 - C. Enter AP/1/A/5500/003 (Load Rejection)
 - D. Enter EP/1/A/5000/E-0 (Reactor Trip or Safety Injection)
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 38

(1 point)

Which one of the following selections correctly matches the reactor trip signals to their limiting accident/protection?

	<u>Reactor Trip Signal</u>	<u>Limiting Accident/Protection</u>
A.	OPDT OTDT Pzr High Level Pzr Low Pressure	DNB Excessive fuel centerline temperature NC system integrity DNB
B.	OPDT OTDT Pzr High Level Pzr Low Pressure	Excessive fuel centerline temperature DNB DNB NC system integrity
C.	OPDT OTDT Pzr High Level Pzr Low Pressure	Excessive fuel centerline temperature DNB NC system integrity DNB
D.	OPDT OTDT Pzr High Level Pzr Low Pressure	NC System integrity Excessive fuel centerline temperature DNB DNB

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 39

(1 point)

Initial Conditions:

- Unit 1 was performing a heatup following a refueling outage
- NC Temperature was 400 °F
- NC pressure was 1600 psig
- "A" and "B" shutdown banks were withdrawn
- Containment Pressure Channel II failed high

Current Conditions:

- 1ERPD has lost power
- Containment pressure channels read:
 - Channel I: 0 psig
 - Channel II: +5 psig
 - Channel III: 0 psig
 - Channel IV: -5 psig

Which of the following statements explains the impact on the Engineered Safeguards Features (ESF) system and expected operator actions?

- A. Only Train "A" safety injection actuates.
Implement AP/1/A/5500/005, Reactor Trip or Inadvertent S/I Below P-11.
 - B. Only Train "A" safety injection actuates.
Implement EP/1/A/5000/E-0, Reactor Trip or Safety Injection.
 - C. Train "A" and "B" safety injection actuates.
Implement AP/1/A/5500/005, Reactor Trip or Inadvertent S/I Below P-11.
 - D. Train "A" and "B" safety injection actuates.
Implement EP/1/A/5000/E-0, Reactor Trip or Safety Injection.
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 40

(1 point)

Which one of the following is the type of power supplied to the YV Chillers?

- A. 600V unit power
 - B. 4160 V essential power
 - C. 4160 V blackout power
 - D. 6900 V unit power
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 41
(1 point)

Given the following:

- 1AD-13, D/8 "GLYCOL EXPANSION TNK LO-LO LVL" - LIT
- BOP notes that the Unit 1 NF containment isolation valves have closed

Where does the bypass valve for pressure relief between the isolation valves relieve to and from what location may the Glycol Expansion Tank Lo-Lo Level interlock be bypassed?

- A. Glycol Expansion Tank / local NF control panel
 - B. Glycol Expansion Tank / main control room
 - C. Glycol Mixing and Storage Tank / local NF control panel
 - D. Glycol Mixing and Storage Tank / main control room
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 42
(1 point)

Given the following:

- A large break LOCA has occurred.
- Containment pressure is 3.2 psig and slowly decreasing.
- The crew has just transitioned to EP/1/A/5000/ES-1.3 (Transfer to Cold Leg Recirculation)

What is the minimum containment sump level that will support operation of all ECCS pumps and the NS pumps?

- A. 0.5 ft
 - B. 2.5 ft
 - C. 3.3 ft
 - D. 5.0 ft
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 43
(1 point)

Given the following sequence of events:

- 1200 Unit 1 reactor tripped from 100% power due to a large break LOCA
- 1236 FWST level is 36%
Containment pressure is 3.8 psig
- 1240 1NI-185A (ND Pump 1A Cont Sump Suct) is not open and efforts to open it from the control room have failed.
- 1241 1A ND pump is secured.
- 1245 NLOs have been dispatched to manually open 1NI-185A.
- 1300 NLOs report 1NI-185A is fully open.
- 1301 1A ND pump is started.
- 1305 FWST level is 16%
Containment pressure is 3.1 psig

Which one of the following describes the status of the 1A NS pump at 1245 and what is the earliest time that ND Aux Spray can be placed in service?

- A. 1A NS pump was running; 1250
 - B. 1A NS pump was running; 1301
 - C. 1A NS pump was off; 1250
 - D. 1A NS pump was off; 1301
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 44
(1 point)

Given the following conditions and sequence of events:

- Unit 1 is manually tripped due to a loss of normal feedwater.
- NLOs have manually isolated CA flow to 1B S/G and level is noted to be 96% on NR level gauges.

Which of the following consequences have increased risk for 1B S/G based on the current water level in that S/G?

1. Failure of S/G PORV to actuate
 2. Failure of SM safety valves to reseal following an actuation
 3. Water hammer upon initiation of steam flow
 4. Mechanical failure of the main steam lines
- A. 1 and 2 only
- B. 3 and 4 only
- C. 1, 2 and 3
- D. 2, 3 and 4
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 45
(1 point)

Unit 1 is at 75% power when a plant trip occurs due to P-14 actuation. Given the following events and conditions:

- The plant is currently stable.
- The steam dumps have just closed at no-load Tave.
- Steam generator NR levels are 35% in unaffected steam generators and 80% in the affected steam generator.

What action must the operator take to reset CF isolation?

- A. Lower the affected steam generator level, cycle the reactor trip breakers and depress the CF isolation reset pushbuttons.
 - B. Lower the affected steam generator level and cycle the reactor trip breakers.
 - C. Cycle the reactor trip breakers and depress the CF isolation reset pushbuttons.
 - D. Cycle the reactor trip breakers only.
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 46
(1 point)

Given the following:

- Unit 2 was operating at 100% power.
- 2A steamline ruptured inside containment resulting in containment pressure rapidly increasing to 3.7 psig.
- Current containment pressure is 2.4 psig and slowly decreasing.
- The crew has just verified that total CA flow is greater than 450 gpm per step 18.a of EP/2/A/5000/E-0 (reactor Trip or Safety Injection).

Within what operating band should the BOP be attempting to control S/G N/R levels?

- A. Between 11% and 50%
 - B. Between 29% and 50%
 - C. Between 9% and 62%
 - D. Between 21% and 62%
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 47
(1 point)

Given the following:

- 2B D/G automatically started due to the incoming breaker to 2ETB spuriously opening.
- While checking D/G operating parameters, the crew notes that D/G 2B "VOLTS" is 4300 V.
- At the direction of the CRS, the BOP adjusts voltage to normal.

How will D/G 2B output "AMPS" and "P/F" indications respond to this adjustment?

	<u>AMPS</u>	<u>P/F</u>
A.	increase	less lagging
B.	increase	stay the same
C.	decrease	less lagging
D.	decrease	stay the same

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 48
(1 point)

Which of the following receives power from 250VDC Auxiliary Power System?

- A. D/G Fuel Oil Booster Pump
 - B. Reactor Trip Switchgear Control
 - C. Unit 1 Turbine Emergency Bearing Oil Pump
 - D. Power Operated Relief Valves Solenoids (both NC and SV systems)
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 49
(1 point)

Unit 1 was operating at 10% power preparing to roll the turbine. Given the following sequence of events:

0200 – 1A D/G Battery Charger 1DGCA fails.
0700 – D/G 1A Panel, E/5 “LOSS OF DC CONTROL POWER” - LIT
0900 - A tornado results in a complete loss of the switchyard.

Assuming no actions have been taken to address the failed charger, which one of the following statements correctly describes the operating status of the 1A D/G and the reason for this status?

- A. The 1A D/G starts because the auto-start function is not dependent on DC control power.
 - B. The 1A D/G starts because the control power is supplied from vital power through auctioneering diode 1VADA.
 - C. The 1A D/G started but did not tie to the bus because the sequencer has lost all control power.
 - D. The 1A D/G did not start because it has lost all control power.
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 50
(1 point)

Given the following conditions and sequence of events:

- Unit 2 was operating at 100% power when a LOCA occurred
- Containment pressure peaked at 2.6 psig and is slowly decreasing
- ~~2~~1A CA Pump failed to start
- "A" train ECCS and D/G load sequencer was reset
- ~~2~~1A CA Pump was manually started
- A complete loss of switchyard occurs

Assuming no operator actions since the loss of the switchyard, which of the following is a complete list of the ECCS pumps currently in service?

- A. 2A NV, 2A NI, 2A ND, 2B NV, 2B NI, 2B ND
 - B. 2A NV, 2B NV, 2B NI, 2B ND
 - C. 2B NV, 2B NI, 2B ND
 - D. 2A NV, 2B NV
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 51
(1 point)

Unit 1 is operating at 100% power. A plant operator reports the following:

- D/G 1A Panel, B/8 "LOW VG AIR TANK PRESS" - LIT
- VG receivers starting air pressure is stable at 149 psig

Which one of the following statements correctly describes the state of readiness of the 1A D/G?

- A. The D/G can be manually started and is capable of one or two starts.
 - B. The D/G can be automatically started and is capable of one or two starts.
 - C. The D/G can be manually or automatically started and is capable of five starts.
 - D. The D/G cannot be manually or automatically started until the VG receiver is repressurized.
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 52

(1 point)

Given the following:

- Unit 1 is operating at 8% power preparing to place the turbine online
- A VQ release is in progress
1EMF-39L (CONTAINMENT GAS (LO RANGE)) detector fails causing a Trip 2 alarm
- 1RAD-1, A/2 "1EMF-39 CONTAINMENT GAS HI RAD" is LIT
- 1RAD-1, F/5 "CABINET 1-2 TROUBLE" is LIT

1. What is the status of the Unit 1 Containment Evacuation alarm?
 2. What is/are the minimum action(s) required to reinitiate the air release from containment?
-
- A.
 1. The Containment Evacuation alarm has actuated.
 2. Bypass the failed EMF detector per OP/0/A/6500/080 (EMF RP86A Output Modules) and then RESET the safety signal per OP/1/B/6100/010X (Annunciator Response for Radiation Monitoring Panel 1RAD-1)
 - B.
 1. The Containment Evacuation alarm has NOT actuated.
 2. Bypass the failed EMF detector per OP/0/A/6500/080 (EMF RP86A Output Modules) and then RESET the safety signal per OP/1/B/6100/010X (Annunciator Response for Radiation Monitoring Panel 1RAD-1)
 - C.
 1. The Containment Evacuation alarm has actuated.
 2. RESET the safety signal only per OP/1/B/6100/010X per (Annunciator Response for Radiation Monitoring Panel 1RAD-1)
 - D.
 1. The Containment Evacuation alarm has NOT actuated.
 2. RESET the safety signal only per OP/1/B/6100/010X per (Annunciator Response for Radiation Monitoring Panel 1RAD-1)
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 53
(1 point)

1A RN pump is normally powered from:

- A. 4160V bus 1ETA
 - B. 4160V bus 1FTA
 - C. 6900V bus 1TA long side
 - D. 6900V bus 1TC long side
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 54
(1 point)

Unit 2 is in Mode 3 with charging and letdown in normal alignment.

What affect does a total loss of VI have on the NV system?

- A. Charging flow increases; letdown flow increases
 - B. Charging flow increases; letdown flow decreases
 - C. Charging flow decreases; letdown flow increases
 - D. Charging flow decreases; letdown flow decreases
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 55

(1 point)

Unit 1 is operating at 100% power with a routine containment air release in progress through 1VQ-10 (VQ Fans Disch To Unit Vent).

1. At what containment pressure will 1VQ-10 first receive a "CLOSE" signal?
 2. What is the basis for closing 1VQ-10 at that pressure?
- A.
 1. -0.08 psig
 2. Non-compliance with technical specification on containment pressure
 - B.
 1. -0.08 psig
 2. Unexpected opening of ice condenser inlet doors
 - C.
 1. 0 psig
 2. Non-compliance with technical specification on containment pressure
 - D.
 1. 0 psig
 2. Unexpected opening of ice condenser inlet doors
-

DELETED
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CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 56

(1 point)

Unit 1 was in Mode 3 with shutdown banks withdrawn in preparation for startup.
Given the following:

- 1TD short side incoming breaker trips
- 1TD tie breaker does not automatically close

Which MG set(s) has/have a power supply available and what is the current status of the shutdown banks?

- A. Only 1A MG set; shutdown banks are inserted
 - B. Only 1A MG set; shutdown banks are withdrawn
 - C. 1A and 1B MG sets; shutdown banks are inserted
 - D. 1A and 1B MG sets; shutdown banks are withdrawn
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 57

(1 point)

Initial conditions at 1300:

- Unit 2 was at 50% power
- Pressurizer level was at program level
- 2NV-312A (Chrg Line Cont Isol) spuriously closed and could not be reopened
- Operators have taken the following actions per AP/2/A/5500/012 (Loss of Charging or Letdown), Case I (Loss of Charging):
 - Secured letdown
 - Total charging flow has been reduced to 32 gpm
- Excess letdown can not be established

At approximately what time will the pressurizer become inoperable per Tech Spec 3.4.9 (Pressurizer)?

Reference provided

- A. 1434
 - B. 1608
 - C. 1651
 - D. 1825
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 58
(1 point)

Unit 1 was operating at 70% when 1C S/G MEDIAN SELECTED Wide Range (WR) Level output to the Digital Feedwater Control System (DFCS) fails low.

How will the DFCS respond to this event?

- A. DFCS will switch 1C S/G CF reg valve and CF bypass reg valve to MANUAL.
 - B. DFCS will substitute another S/G's WR level input into "C" loop.
 - C. DFCS will generate a "DFCS TROUBLE" alarm only.
 - D. DFCS will reduce S/G 1C WR level to 50%.
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 59
(1 point)

Unit 1 was operating at 100% power when a loss of offsite power caused a reactor trip. The crew has verified natural circulation in ES-0.1 (Reactor Trip Response). Ten minutes later, the operator notes that the thermocouple input to both plasma displays is malfunctioning.

Which one of the following correctly describes a valid indication that natural circulation is continuing?

- A. S/G pressures are decreasing and T_{cold} is at S/G saturation temperature.
 - B. S/G saturation temperatures are decreasing and REACTOR VESSEL UR LEVEL indication is greater than 100%.
 - C. S/G pressures are decreasing and REACTOR VESSEL D/P indication is greater than 100%.
 - D. S/G pressure is at saturation pressure for T_{cold} and REACTOR VESSEL D/P indication is greater than 100%.
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 60
(1 point)

Unit 1 was operating at 100% when a design basis LOCA occurred. Radiation monitoring teams at the site boundary report that Iodine 131 dose is 5 Rem.

Which one of the following statements correctly describes the condition of the VE filters that would result in the dose readings noted at the site boundary?

- A. 1A VE train failed to start on the safety injection
 - B. The prefilter/demisters are saturated
 - C. The charcoal filters are saturated
 - D. The HEPA filters are saturated
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 61
(1 point)

Unit 1 is in Mode 5 following refueling. All S/Gs were drained and have just been refilled with condensate water per Chemistry request.

The following conditions existed during the filling operation and have been verified to be the current conditions:

Primary conditions:

- 1A ND Hx inlet temperature 185 °F
- 1B ND Hx inlet temperature 185 °F
- NC pressure 218 psig

Secondary conditions:

- S/G 1A CF inlet temperature 71 °F
- S/G 1B CF inlet temperature 72 °F
- S/G 1C CF inlet temperature 68 °F
- S/G 1D CF inlet temperature 71 °F
- All S/Gs pressures are 0 psig.

Based on the reported conditions, what is the action required by Selected License Commitments?

- A. Increase 1C S/G secondary temperature to greater than 70 °F within 30 minutes.
 - B. Increase 1C S/G secondary temperature to greater than 70 °F within 1 hour.
 - C. Reduce NC pressure to less than or equal to 200 psig within 30 minutes.
 - D. Reduce NC pressure to less than or equal to 200 psig within 1 hour.
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 62

(1 point)

Unit 1 is operating at 100% power.

1. How is EHC Emergency Manual Mode selected?
 2. How do the control valves respond to a manual runback under the above conditions?
-
- A.
 1. automatically
 2. the control valves will operate per the valve curves
 - B.
 1. automatically
 2. the control valves will NOT operate per the valve curves
 - C.
 1. manually
 2. the control valves will operate per the valve curves
 - D.
 1. manually
 2. the control valves will NOT operate per the valve curves
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 63

(1 point)

Which one of the following Shutdown Waste Gas Decay Tanks (SWGDTs) is maintained at a low pressure per the limits and precautions of OP/0/A/6500/003A (Gaseous Waste System (Normal Operations)) and what maximum pressure does it specify?

- A. SWGDT A; less than 5 psig
 - B. SWGDT A; less than 30 psig
 - C. SWGDT B; less than 5 psig
 - D. SWGDT B; less than 30 psig
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 64

(1 point)

VI system pressure is 98 psig.

Which one of the following statements correctly describes the sequence and position of VI system valves in response to a loss of VI header pressure as pressure continues to decrease?

- A. VS-78 (VS supply to VI) opens at 80 psig
VI-500 (VI supply to VS) opens at 76 psig
 - B. VS-78 (VS supply to VI) closes at 80 psig
VI-500 (VI supply to VS) opens at 76 psig
 - C. VI-500 (VI supply to VS) closes at 80 psig
VS-78 (VS supply to VI) opens at 76 psig
 - D. VI-500 (VI supply to VS) closes at 80 psig
VS-78 (VS supply to VI) closes at 76 psig
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 65

(1 point)

Given the following conditions and sequence of events:

- 2A D/G auto-started due to a blackout on 2ETA
- The control room crew notes all loads were sequenced on as required
- A fuel oil line leak occurs resulting in a major fire in the 2A D/G room

Assuming no operator actions since the D/G auto-started:

1. How long will it take for the Cardox system to discharge once the fire is detected?
2. What is the status of the 2A D/G emergency ventilation after the Cardox system discharges?

- A.
 1. 6.5 minutes
 2. Running due to sequencer actuation
 - B.
 1. 6.5 minutes
 2. Secured due to Cardox actuation
 - C.
 1. 1.5 minutes
 2. Running due to sequencer actuation
 - D.
 1. 1.5 minutes
 2. Secured due to Cardox actuation
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 66

(1 point)

During a control board walkdown, the crew notes that over the last 10 minutes turbine load has decreased from 1209 MW to 1207 MW while reactor power has increased from 99.87% to 100.05%. They suspect a steam leak.

Which set of the following indications could be used to confirm their suspicions?

1. % Steam flow
2. Steam pressure
3. Containment pressure
4. Containment humidity

- A. 1, 2, 3
- B. 1, 2, 4
- C. 1, 3, 4
- D. 2, 3, 4
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 67

(1 point)

Terrorists have broken through the security fence and set both Unit 1 main transformers on fire. Security has notified the operating crew that several terrorists are enroute to the control room.

What instructions are provided to the NLO dispatched to the 1ETA switchgear room and which procedure provides that guidance?

- A. Perform a partial transfer to the SSF per AP/1/A/5500/017 (Loss of Control Room)
 - B. Transfer control to the SSF per AP/1/A/5500/017 (Loss of Control Room)
 - C. Perform a partial transfer to the SSF per AP/0/A/5500/045 (Plant Fire)
 - D. Transfer control to the SSF per AP/0/A/5500/045 (Plant Fire)
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 68
(1 point)

During a power increase to 100% power per OP/1/A/6100/003 (Controlling Procedure for Unit Operation), the "C" Heater Drain Pumps are placed in service at a minimum power level of _____. The purpose of this is to prevent the potential for _____.

- A. 50% / excessive main feedwater pump discharge pressure
 - B. 70% / excessive main feedwater pump discharge pressure
 - C. 50% / deadheading of hotwell and booster pumps
 - D. 70% / deadheading of hotwell and booster pumps
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 69
(1 point)

Unit 1 is at 4% power, conducting a plant startup. Given the following events and conditions:

- One control bank "A" rod drops fully into the core
- NCS temperature decreases to 550°F

Which one of the following statements correctly describes an action that is required within 30 minutes by Technical Specifications?

- A. Be in mode 2 with K_{eff} less than 1.0.
 - B. Restore rod group within alignment limits.
 - C. Verify shutdown margins within the limits specified in the COLR.
 - D. Adjust power range N/Is to increase reactor power so that reactor power and thermal power best estimate are equal.
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 70
(1 point)

A Unit 1 containment purge is in progress using OP/1/A/6450/015. Given the following events and conditions:

- 1EMF-39(L) (CONTAINMENT GAS (LO RANGE)) spiked to a Trip 2 condition then cleared

Which one of the following statements correctly describes the action required?

- A. The VP release may not be reinitiated until RP draws a new containment air activity sample.
 - B. The VP release may be reinitiated after the spike clears. If 1EMF-39 spikes a second time, the release may also be reinitiated.
 - C. The VP release may be reinitiated after the spike clears. If 1EMF-39 spikes a second time, the release cannot be reinitiated without RP sampling containment air for activity.
 - D. The VP release may be reinitiated if grab samples are taken of Unit Vent activity during subsequent reinitiation.
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 71
(1 point)

While performing a valve lineup in the boric acid mixing room, an air line failure caused a severe airborne beta contamination problem. A worker received both internal and external contamination that was detected upon attempting to exit the RCA.

Which one of the exposures would exceed the 10CFR20 limit for the worker's annual shallow dose equivalent (SDE) exposure?

- A. 55 Rem external dose to the lens of the eye.
 - B. 55 Rem external dose to the leg below the knee.
 - C. 17 Rem internal dose equivalent to the lens of the eye.
 - D. 17 Rem internal dose to the right forearm.
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 72

(1 point)

A radiation worker is repairing a valve in a contaminated area, which has the following radiological characteristics:

- The worker's present exposure is 1938 mrem for the year
- The RWP states:
 - General area dose rate = 30 mrem/hr
 - Airborne contamination concentration = 10.0 DAC

The job will take 2 hours if the worker wears a full-face respirator. It will only take 1 hour if the worker does not wear the respirator.

If the RP Manager grants all applicable dose extensions, which one of the following choices for completing this job would maintain the worker's exposure within the station administrative requirements?

- A. The worker should not wear the respirator.
The dose received wearing a respirator will exceed site annual personnel dose limits.
 - B. The worker should not wear the respirator.
The calculated TEDE dose received will be less than if he does wear one.
 - C. The worker should wear the respirator.
The calculated TEDE dose received will be less than if he does not wear one.
 - D. The worker should wear the respirator.
He could exceed DAC limits.
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 73
(1 point)

The crew is responding to a spurious safety injection. Given the following validated CSF status tree indications:

- Subcriticality – GREEN
- Core Cooling – GREEN
- Heat Sink – GREEN
- NC Integrity – GREEN
- Containment – GREEN
- NC Inventory - YELLOW

Per OMP 1-7 (Emergency/Abnormal Procedure Implementation Guidelines):

1. Which control room crew position, by title, has primary responsibility for monitoring Critical Safety Function (CSF) status trees during EOP usage?
 2. Based on current conditions how frequent should CSF status trees be monitored?
- A. 1. OSM
 2. monitor every 10-20 minutes
- B. 1. OSM
 2. monitor continuously
- C. 1. STA
 2. monitor every 10-20 minutes
- D. 1. STA
 2. monitor continuously
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 74

(1 point)

Which one of the following sets of critical safety functions (CSFs):

- is listed in the correct order per the CSF status trees from highest to lowest priority

AND

- forms the bases for protection of the fuel and fuel cladding?

- | | | | |
|----|-------------------|-------------------|-----------------|
| A. | 1. Heat Sink | 2. Core Cooling | 3. Integrity |
| B. | 1. Core Cooling | 2. Heat Sink | 3. NC Inventory |
| C. | 1. Heat Sink | 2. Subcriticality | 3. NC Inventory |
| D. | 1. Subcriticality | 2. Heat Sink | 3. Integrity |
-

CATAWBA NUCLEAR STATION

2008 RO NRC Examination

Question: 75

(1 point)

An offsite release is occurring due to a stuck open S/G PORV on 2C S/G which has a significant tube leak.

Which one of the following states:

1. The emergency facility that assumes responsibility for communications with offsite agencies including the NRC once it is activated?
 2. What is the lowest classification level that requires this facility's activation?
-
- A.
 1. Technical Support Center (TSC)
 2. Alert
 - B.
 1. Technical Support Center (TSC)
 2. Unusual Event
 - C.
 1. Operations Support Center (OSC)
 2. Alert
 - D.
 1. Operations Support Center (OSC)
 2. Unusual Event
-

Reference List for: 2008 RO NRC Examination

Databook Figure 43 (Generator Capability Curve)

EP/1/A/5000/ECA-1.1 (Step 19)

EP/1/A/5000/ECA-1.1 (Enclosure 5)

ASME Steam Tables

Pressurizer volume (gal) to level (%) graph

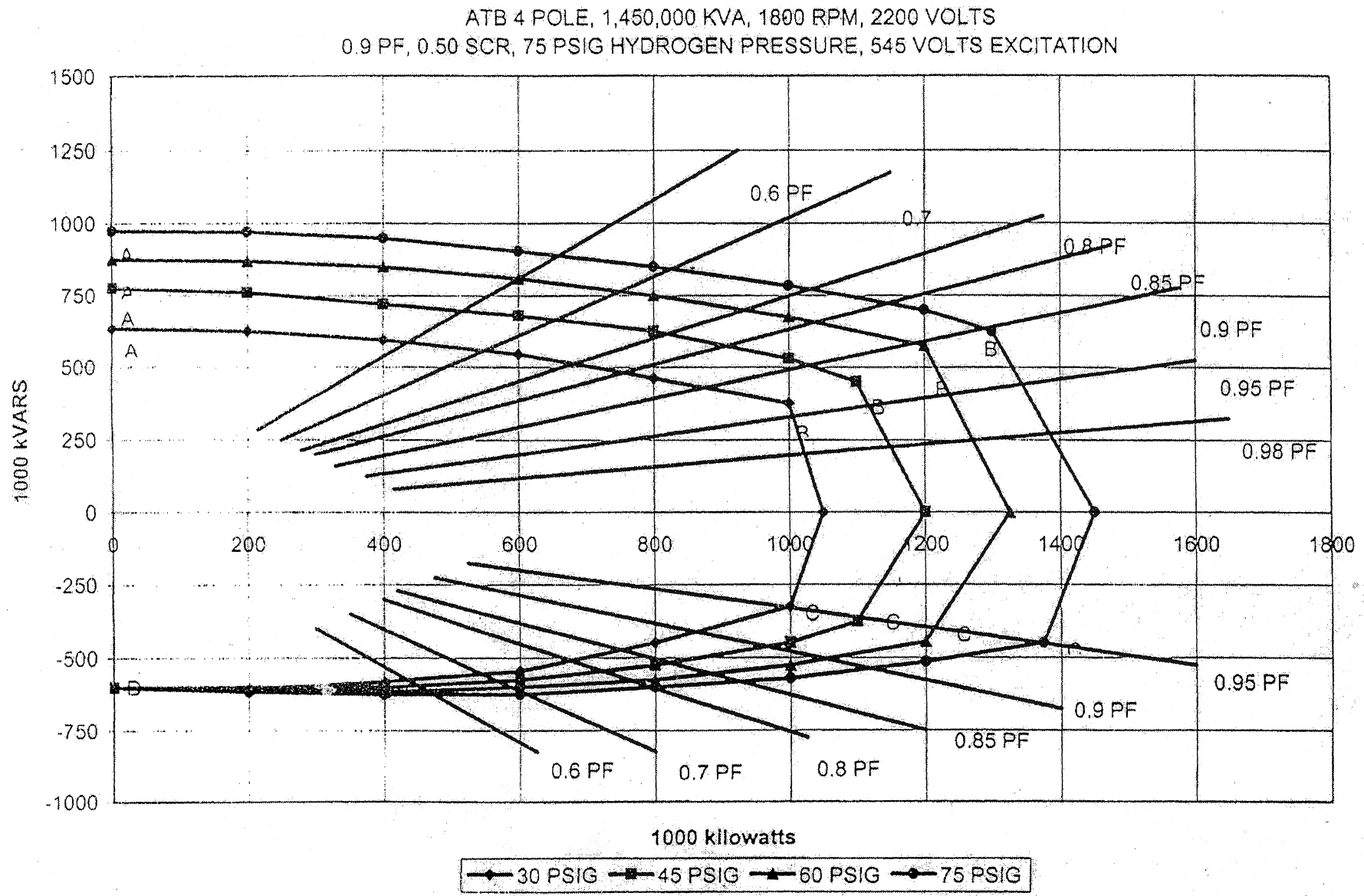


Figure 43 - Generator Capability Curves

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

19. Verify S/I termination criteria as follows:

- a. Verify RVLIS indication is adequate as follows: a. **GO TO** Step 26.

- **IF** all NC pumps are off, **THEN** verify "REACTOR VESSEL LR LEVEL" - GREATER THAN 61%.
- **IF** at least one NC pump is on, **THEN** verify "REACTOR VESSEL D/P" - GREATER THAN REQUIRED D/P FROM TABLE BELOW:

Number of NC Pumps On	Required "REACTOR VESSEL D/P"			
	TRN A With NC Pump 1A		TRN B With NC Pump 1C	
	On	Off	On	Off
4	80%	N/A	80%	N/A
3	60%	32%	60%	32%
2	45%	20%	45%	20%
1	35%	14%	35%	14%

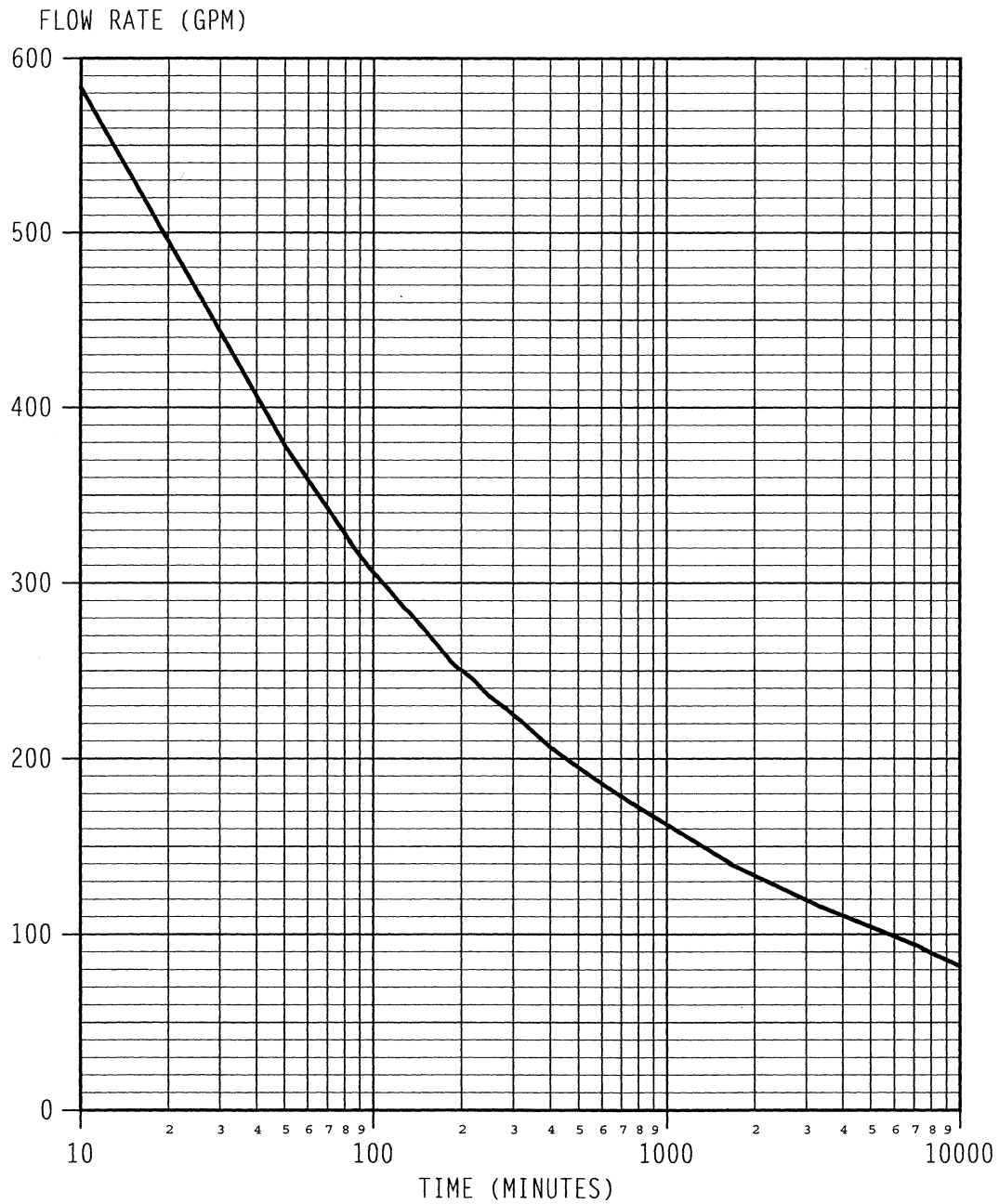
- b. NC subcooling based on core exit T/Cs - GREATER THAN 50°F.

- b. Perform the following:

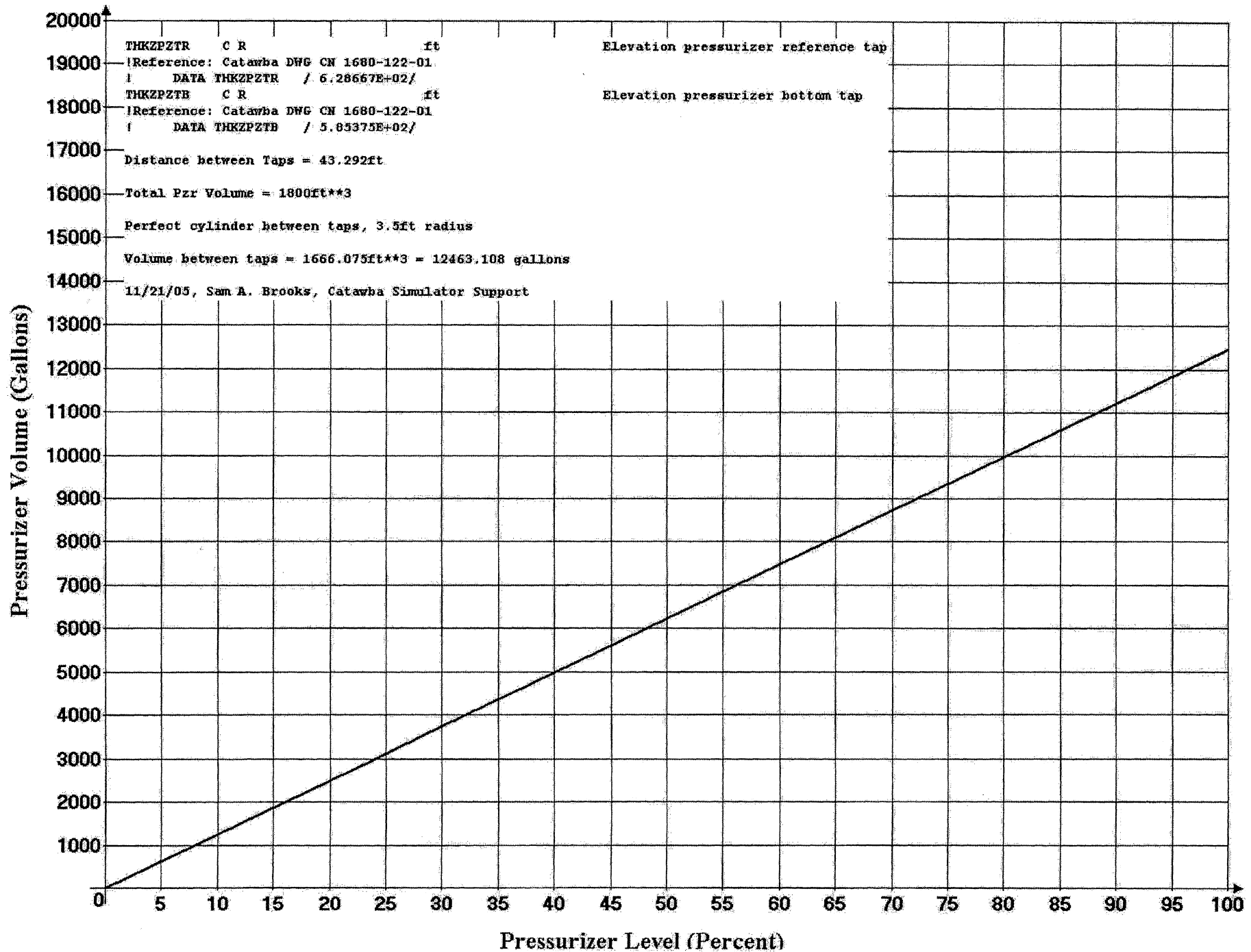
- 1) Determine minimum S/I flow required. **REFER TO** Enclosure 5 (Minimum S/I Flowrate Versus Time After Trip).
- 2) Stop S/I pumps as required to obtain the following:
- Minimize S/I flow
- Maintain S/I flow greater than or equal to the flow required by Enclosure 5 (Minimum S/I Flowrate Versus Time After Trip).

- 3) **GO TO** Step 26.

S/I FLOW REQUIRED TO MATCH DECAY HEAT



Pressurizer Level Vs Volume



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KEY ID

(A) (B) (C) (D)

SCORING & PRINTING OPTIONS:

☐ RESCORE

☐ MULTIPLE ANSWER SCORING

☐ CORRECT ANSWER

☐ MARK X

☐ TOTAL ONLY

MARK ONLY ONE

FEED IN THIS DIRECTION

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SCORE	
RESCORE	

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	<input type="checkbox"/> TOTAL ONLY	

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COMBINED POINTS EARNED	
COMBINED PERCENT CORRECT	
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SCORE	
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Examination KEY for: 2008 SRO NRC

QUESTION 1-75 BO QUESTIONS

76-100 - SRO QUESTIONS

Question
Number

Answer

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5	D DELETED A
6	A
7	B
8	D
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Examination KEY for: 2008 SRO NRC

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Examination KEY for: 2008 SRO NRC

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