

**U.S. Nuclear Regulatory Commission**

**Site-Specific RO Written Examination**

**Applicant Information**

Name:

Date: May 6, 2005

Facility/Unit: Quad Cities U1/U2

Region: III

Reactor Type: GE

Start Time:

Finish Time:

**Instructions**

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

## Part B: Written Examination Guidelines

1. **[Read Verbatim]** After you complete the examination, sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination.
2. To pass the examination, you must achieve an overall grade of 80.00 percent or greater, with 70.00 percent or greater on the SRO-only items, if applicable. If you only take the SRO portion of the exam (as a retake or with an upgrade waiver of the RO exam), you must achieve an overall grade of 80.00 percent or better to pass. SRO-upgrade applicants who do take the RO portion of the exam and score below 80.00 percent on that part of the exam can still pass overall, but may require remediation. Grades will not be rounded up to achieve a passing score. Every question is worth one point.
3. For an initial examination, the nominal time limit for completing the examination is 6 hours for the RO exam; 3 hours for the 25-question, SRO-only exam; 8 hours for the combined RO/SRO exam; and 4 hours for the SRO exam limited to fuel handling. Notify the proctor if you need more time.
4. You may bring pens, pencils, and calculators into the examination room; however, programable memories must be erased. Use black ink to ensure legible copies; dark pencil should be used only if necessary to facilitate machine grading.
5. Print your name in the blank provided on the examination cover sheet **and** the answer sheet. You may be asked to provide the examiner with some form of positive identification.
6. Mark your answers on the answer sheet provided, and do not leave any question blank. Use only the paper provided. If you are using ink and decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change. If you are recording your answers on a machine-gradable form that offers more than four answer choices (e.g., "a" through "e"), be careful to mark the correct column.
7. If you have any questions concerning the intent or the initial conditions of a question, do *not* hesitate to ask them before answering the question. Note that questions asked during the examination are taken into consideration during the grading process and when reviewing applicant appeals. Ask questions of the NRC examiner or the designated facility instructor *only*. A dictionary is available if you need it. When answering a question, do *not* make assumptions regarding conditions that are not specified in the question unless they occur as a consequence of other conditions that are stated in the question. For example, you should not assume that any alarm has activated unless the question so states or the alarm is expected to activate as a result of the conditions that are stated in the question. Similarly, you should assume that no operator actions have been taken, unless the stem of the question or the answer choices specifically state otherwise. Finally, answer all questions based on actual plant operation, procedures, and references. If you believe that the answer would be different based on simulator operation or training references, you should answer the question based on the *actual plant*.
8. Restroom trips are permitted, but only one applicant at a time will be allowed to leave. Avoid all contact with anyone outside the examination room to eliminate even the

appearance or possibility of cheating.

9. When you complete the examination, assemble a package that includes the examination cover sheet and your answer sheets and give it to the NRC examiner or proctor. Remember to sign the statement on the examination cover sheet indicating that the work is your own and that you have neither given nor received assistance in completing the examination. Leave all other materials at your desk.
10. After turning in your examination, leave the examination area as defined by the proctor or NRC examiner. If you are found in this area while the examination is still in progress, your license may be denied or revoked.
11. Do you have any questions?

QUESTION: 001 (1.00)

Unit 1 was operating at 100% reactor power when the 1B Reactor Recirc pump tripped.

All systems responded as designed to this event.

Complete the following statement regarding the INITIAL Reactor water level response.

Indicated reactor water level will \_\_ (1) \_\_ due to the \_\_ (2) \_\_.

- |    |              |     |  |
|----|--------------|-----|--|
| a. | (1) INCREASE | (2) | collapse of steam voids  |
| b. | (1) DECREASE | (2) | lack of coolant velocity to sweep voids into the steam separator |
| c. | (1) INCREASE | (2) | displacement of water by increased steam voiding                 |
| d. | (1) DECREASE | (2) | activation of the feedwater Level Control scram profile          |

QUESTION: 002 (1.00)

The following annunciators are received:

- 901-8 A9 125 V BATTERY CHARGER 1 TRIP
- 901-8 A10 250 V BATTERY CHARGER 1 TRIP
- 901-8 A5 480V SWGR BREAKER TRIP
- BUS 19 "live bus" mimic light is out.

Assume no operator action.

Turbine building bus 125 VDC bus 1A:

- a. remains energized from the Unit ONE 125 VDC battery.
- b. remains energized from the 1A 125VDC battery charger.
- c. is de-energized.
- d. remains energized from the Unit TWO 125 VDC battery.

QUESTION: 003 (1.00)

Unit 1 and Unit 2 were operating at full power when a transient occurred. After the transient the following conditions existed:

- Breaker indications for Busses 11 and 15 are EXTINGUISHED
- For ALL other Busses on Unit 1 AND Unit 2, the breaker indications are LIT
- 1A Reactor Recirc pump has coasted to a STOP
- All other Reactor Recirc pumps on Unit 1 and Unit 2 are still RUNNING

Note: this is not a complete list of conditions.

A loss of which of the following caused the listed conditions?

- a. 125 VDC Bus 1A-1
- b. 125 VDC Bus 1A-2
- c. 125 VDC Bus 1B-1
- d. 125 VDC Bus 1B-2

QUESTION: 004 (1.00)

Unit 1 was operating at 100% power when the Main Generator tripped on a loss of field.

Which of the following lists components that receive a trip signal directly from the 86 device?

- a. Stator Water Cooling pumps, Main Turbine and Main Generator Field Breaker
- b. Stator Water Cooling pumps, Main Generator Field Breaker, GCB 3-4 and OCB 4-6
- c. Stator Water Cooling pumps, Main Turbine, OCB 1-11 and OCB 10-11
- d. Hydrogen Seal Oil pump, Main Turbine and Main Generator Field Breaker

QUESTION: 005 (1.00)

Unit had been on-line for 345 days. At time 0910 an electrical transient resulted in a severe level transient; Reactor Level is -62 inches, stable.

It is now 0925.

Which of the following systems would most closely match the expected decay heat removal needs AND be available at this time?

- a. Main Turbine Bypass valves
- b. CRD
- c. RCIC
- d. RWCU

QUESTION: 006 (1.00)

An ammonia spill near the plant has caused several Control Room operators to become nauseated.

After donning SCBA air packs, the Operators must verify that the Control Room Ventilation System is \_\_ (1) \_\_.

If the Control Room Ventilation alignment can NOT be assured, and the ammonia concentration is INCREASING, the Operators are required to \_\_ (2) \_\_.

- a. (1) in SMOKE PURGE (2) enter QOA 0010-05, PLANT OPERATION WITH THE CONTROL ROOM INACCESSIBLE
- b. (1) in SMOKE PURGE (2) REMOVE the SCBA masks, THEN DON breathing air masks
- c. (1) ISOLATED (2) REMOVE the SCBA masks, THEN DON breathing air masks
- d. (1) ISOLATED (2) enter QOA 0010-05, PLANT OPERATION WITH THE CONTROL ROOM INACCESSIBLE

## QUESTION: 007 (1.00)

Foreign material has partially covered the tube sheet at the inlet to the on-line Stator Water heat exchanger. Complete statement below describing the system response, including the reason for the automatic actions.

The temperature control valve, throttling \_\_ (1) \_\_, will reposition, to permit more flow \_\_ (2) \_\_ the heat exchanger.

- a. (1) Service Water (2) through
- b. (1) Service Water (2) around
- c. (1) Stator Water (2) around
- d. (1) Stator Water (2) through

## QUESTION: 008 (1.00)

Unit 2 is at 100% power with all condensate demins in service when an instrument air line ruptures in the Turbine building.

Assume:

- No operator actions taken
- Reactor Power and Level are so far unaffected.

With regards to the Condensate System:

The instrument air loss will cause hotwell level to \_\_\_\_\_

- a. RAISE and total flow through the Condensate Demins to INCREASE.
- b. LOWER and total flow through the Condensate Demins to INCREASE.
- c. LOWER and total flow through the Condensate Demins to DECREASE.
- d. RAISE and total flow through the Condensate Demins to DECREASE.

QUESTION: 009 (1.00)

Unit TWO (2) has been shutdown and decay heat was being removed via the 2A RHR Loop in Shutdown Cooling. The 2B loop of RHR is tagged out and drained.

The 2A RHR pump tripped and actions were initiated to restore Shutdown Cooling. Before an RHR pump could be started, Reactor pressure INCREASED to 130 psig.

Which of the following actions, if any, must be taken to reestablish Shutdown Cooling? (may not describe ALL required actions.)

- a. Reactor pressure must be reduced to < 100 psig, ONLY.
- b. The Containment Cooling Permissive (S-17) keylock switch must be placed in the ON position, AND the Group II isolation logic must be reset.
- c. Nothing must be done, SDC will operate under present conditions.
- d. Reactor pressure must be reduced to < 100 psig AND the Group II isolation logic must be reset.

QUESTION: 010 (1.00)

During refueling operations a mechanical failure in the mast results in an irradiated bundle dropping onto the fuel racks and being damaged.

Which one of the following will increase resultant contamination levels?

- a. Fuel pool temperature being at the HIGH end of the normal band.
- b. Fuel pool temperature being at the LOW end of the normal band.
- c. Skimmer surge tank level being at the LOW end of its normal band.
- d. Skimmer surge tank level being at the HIGH end of the band.

QUESTION: 011 (1.00)

Unit 1 was operating at 100% power when at 10:15:00 a.m., a LOCA occurred inside the Drywell.

All automatic actions occurred, but NO high pressure injection systems are available.

At 10:20:00, the following conditions existed:

-	Rx Level	-59"	slowly lowering
-	Rx Pressure	900 psig	slowly lowering
-	DW Pressure	10.0 psig	rising
-	Torus Pressure	9.0 psig	rising

It is now 10:21:00 and conditions have changed:

-	Rx Level	-70"	slowly lowering
-	Rx Pressure	875 psig	slowly lowering
-	DW Pressure	2.0 psig	rapidly lowering
-	Torus Pressure	2.0 psig	rapidly lowering

No operator actions have been taken.

Which statement below describes how ADS will respond?

- ADS will initiate at 10:28:30.
- ADS will NOT automatically initiate because DW pressure is BELOW the initiation setpoint.
- ADS will NOT automatically initiate because low pressure ECCS pumps are NOT injecting.
- ADS will initiate at 10:21:50.

QUESTION: 012 (1.00)

Which malfunction below, were it to occur during a LOCA, would be MOST LIKELY to cause containment failure?

- Consider each malfunction, independently, as the ONLY malfunction.
  - Assume that NO operator action is taken in response to the malfunction.
- a. The 3A Target Rock Valve bellows has a hole in it.
  - b. The Low Pressure Drywell Spray Interlock FAILS to actuate with sprays in operation.
  - c. The Reserve Auxiliary Transformer TRIPS and the U1 EDG fails to start.
  - d. Two Torus-to-DW vacuum breakers stick in the CLOSED position.

QUESTION: 013 (1.00)

Which statement below describes the operational basis for the automatic Reactor Recirc pump trip on high reactor pressure?

- a. Prevents loss of the main condenser integrity to assure availability as a heat sink during an overpower transient.
- b. Prevents loss of Reactor Pressure Vessel integrity as a fission product barrier due to an ATWS.
- c. Prevents Safety Relief Valve/Safety Valve operation due to a Group I isolation transient.
- d. Prevents damage to Reactor Recirc pump components due to a Turbine Trip without Bypass transient.

QUESTION: 014 (1.00)

Torus water temperature rises from 75°F to 95°F over several weeks due to summer heat.

Which of the following describes the effect of the rise in torus water temperature?

- a. Post-LOCA peak drywell pressure will be LOWER.
- b. Available NPSH for the ECCS pumps will be HIGHER.
- c. Post-LOCA peak drywell pressure will be HIGHER.
- d. The likelihood of vortexing in the ECCS pumps will be HIGHER.

QUESTION: 015 (1.00)

Drywell pressure and temperature are rising slowly due to unknown causes.

Drywell Pressure is 1.45 psig Drywell Temperature is 182°F

Which of the following statements describes whether or NOT the Drywell Coolers are required to be operated and the reason?

- a. Drywell coolers are REQUIRED to be operated because they will have LESS impact on continued plant operation than other methods of Drywell temperature reduction.
- b. Drywell Coolers are REQUIRED to be operated because they remove MORE heat than ALL other methods of Drywell temperature reduction.
- c. Drywell coolers MUST NOT be operated because they are REQUIRED to be TRIPPED.
- d. Drywell Coolers MUST NOT be operated because CONTAINMENT VENT and PURGE will control Drywell pressure AND temperature.

QUESTION: 016 (1.00)

The following conditions exist following a scram.

- Reactor Pressure is at 600 psig - DECREASING
- All Control Rods inserted
- Reactor Level is -125 in. - DECREASING
- Torus Level is 11.5 ft. - DECREASING
- Drywell pressure 13.2 psig - RISING
- Torus pressure 12.0 psig. - RISING

RCIC must be \_\_ (1) \_\_ because \_\_ (2) \_\_

- a. (1) immediately TRIPPED  
(2) the steam exhaust discharging into the Torus WILL cause the PCPL to be exceeded.
- b. (1) immediately TRIPPED  
(2) it should have automatically tripped.
- c. (1) allowed to inject  
(2) the steam exhaust discharging into the Torus will NOT cause the PCPL to be exceeded.
- d. (1) allowed to inject  
(2) ALL trips are bypassed.

QUESTION: 017 (1.00)

An ATWS is in progress on Unit 2:

- ALL ADS valve key-lock switches are in "Manual".
- RHR systems are injecting at rated flow.
- Reactor level was steady at -150 inches when ALL RPV level indications went upscale over a one minute period.
- ALL Acoustic Monitor AMBER AND GREEN lights are LIT and RED lights are EXTINGUISHED.
- Reactor pressure is 15 psig and DECREASING.

Which of the following statements describes core cooling status and the basis for the description?

- a. Core cooling IS assured because core submergence is confirmed by the increasing Reactor water level trend.
- b. Core cooling IS assured because RHR systems are injecting at rated flow.
- c. Core cooling IS assured because sufficient steam flow is confirmed by the decreasing Reactor pressure.
- d. Core cooling is NOT assured because neither core submergence or sufficient core flow can be assured.

QUESTION: 018 (1.00)

Unit 1 was operating at 100% power when all Reactor Feedpumps tripped.

- Reactor Manual scram pushbuttons A AND B were depressed
- Mode Switch was placed in SHUTDOWN
- ALL APRM Downscale lights are EXTINGUISHED
- FOUR RPS lights (on the LEFT) are ILLUMINATED
- FOUR RPS lights (on the RIGHT) are EXTINGUISHED
- ALL individual, blue scram lights are EXTINGUISHED

The NEXT action REQUIRED is:

- a. Dispatch an Operator to the REACTOR BUILDING to VENT the scram air header.
- b. At the 901-3 panel, RUN the Reactor Recirc pumps to MINIMUM SPEED
- c. At the 901-5 panel, ARM and DEPRESS the ARI pushbuttons.
- d. INSIDE the 901-15 AND 901-17 PANELS, REMOVE the scram fuses.

QUESTION: 019 (1.00)

Performing the actions of QGA 400 Radioactivity Release Control will...

- a. SACRIFICE Turbine Building habitability to protect members of the general public.
- b. MAINTAIN habitability in the reactor building to facilitate accident response.
- c. MINIMIZE the potential increase of the risk of cancer in members of the general public.
- d. PREVENT radioactive releases from affecting areas outside the site fence.

QUESTION: 020 (1.00)

With the Fire Water system in standby lineup, which ONE of the following situations would cause an automatic start of BOTH Fire Diesels?

Do NOT assume any additional malfunctions.

- a. Spurious actuation of the sudden pressure relay on T-22
- b. Smoke detector actuation in the Simulator
- c. Heat sensor actuation in the U2 Emergency Diesel Generator Room
- d. A spurious closure signal to MO 1/2 3906, FIRE PROT SW SPLY VLV

QUESTION: 021 (1.00)

Given:

- Unit 2 was operating at 50% reactor power when it scrammed due to a loss of EHC
- After the scram RPV water level was at 35" and LOWERING with feed flow indication of ZERO when ALL Reactor Feed Pumps TRIPPED due to a faulty low suction pressure switch
- At -40" RPV water level, the NSO restarted the A RFP and manually OPENED the B Main FRV
- At 42" the B Main FRV was manually CLOSED with its controller
- Two minutes later the NSO notes that RPV water level is 55" and the A RFP is TRIPPED

What caused RPV level to reach this level?

- a. Decay heat is affecting the water injected.
- b. LOW pressure ECCS pumps are injecting.
- c. The FWLC system is holding the A Main FRV OPEN.
- d. HIGH pressure ECCS pumps are injecting.

QUESTION: 022 (1.00)

Which of the following describes the reason for monitoring Drywell radiation levels during accident situations with elevated Drywell pressure?

Drywell Rad Monitor readings are used by Control Room Operators to determine \_\_\_\_\_

- a. that fission product barriers may have failed.
- b. if the core is submerged.
- c. offsite release rate.
- d. if the Reactor is shutdown following a scram.

QUESTION: 023 (1.00)

You are the Unit 1 NSO and notice the following indications:

- Reactor power on the APRMs is slowly rising.
- Main Generator load is rising.

Which of the following would account for this set of indications?

- a. #2 Main Turbine Bypass Valve OPEN
- b. 1D3 Extraction Bypass Valve CLOSED
- c. 1B ADS Valve is OPEN
- d. 1A1 Heater level HIGH

QUESTION: 024 (1.00)

QCGP 2-3, REACTOR SCRAM directs the NSO, under some circumstances, to place the RWM mode switch to "BY".

This action, when performed under those circumstances, bypasses \_\_ (1) \_\_, to allow rods to be \_\_ (2) \_\_.

- |    |                                 |              |
|----|---------------------------------|--------------|
| a. | (1) the RPIS INOP block         | (2) INSERTED |
| b. | (1) the TIMER MALFUNCTION block | (2) SELECTED |
| c. | (1) rod INSERT blocks           | (2) INSERTED |
| d. | (1) rod SELECT blocks           | (2) SELECTED |

QUESTION: 025 (1.00)

Unit 1 is starting up following a maintenance outage. At 0730, Reactor pressure is 700 psig when the B CRD pump trips. Charging header pressure drops to 700 psig.

At 0750, while preparations are being made to start the A CRD pump, four accumulator alarms are received.

TWO of the Control Rods with accumulator alarms are at position 48, ONE is at position 24, and ONE is at position 00.

What actions are required?

- IF the listed conditions still exist at 0810, THEN BYPASS the RWM and INSERT the rods with accumulator alarms to position 00.
- IF the listed conditions still exist at 0810, THEN PLACE the Reactor Mode switch in SHUTDOWN.
- IMMEDIATELY PLACE Reactor Mode switch in SHUTDOWN.
- IMMEDIATELY BYPASS the RWM and INSERT the rods with accumulator alarms to position 00.

QUESTION: 026 (1.00)

While executing actions in QGA 100 the US determined that HPCI is needed for core cooling. Ten seconds after starting, HPCI alarm 901-3 E11, HPCI TURBINE RUPTURE DISC HIGH PRESSURE came in and immediately CLEARED.

Currently the following conditions exist:

- HPCI is injecting at 3500 gpm
- 901-3 C12, HPCI STEAM LINE HIGH DP is LIT
- 901-3 F12, HPCI PUMP AREA HI TEMP is LIT
- 901-3 H2, AREA HI TEMP STEAM LEAK DETECTION is LIT
- HPCI room temperature is 175°F and RISING slowly

Which of the following is true concerning HPCI operation and what actions should be taken?

- a. HPCI should have tripped but NOT isolated. Immediately TRIP HPCI and leave the isolation valves OPEN.
- b. HPCI should have isolated. Immediately ISOLATE HPCI.
- c. HPCI piping MAY have ruptured. Let HPCI CONTINUE to inject until visual verification of a leak can be obtained.
- d. HPCI should have isolated. Let HPCI CONTINUE to inject until it is no longer needed for adequate core cooling.

QUESTION: 027 (1.00)

During the execution of the QGAs the US has ordered the ANSO to vent the containment due to high hydrogen concentrations. The US has stated that it is "OK to exceed release rate limits".

Currently torus level is 25 feet and torus pressure is 17 psig.

Complete the following statement.

The ANSO is required to FIRST attempt to vent the.....

- a. drywell through the hardened vent.
- b. drywell through the reactor building vents.
- c. torus through the hardened vent.
- d. torus through the reactor building vents.

QUESTION: 028 (1.00)

Unit 1 is operating at 75% reactor power when the jockey fill pump trips and cannot be restarted.

Which of the following is the correct operator action with regards to the Unit 1 RHR system?

- a. Align RHR pump suction to the CCSTs.
- b. Align clean demin to the discharge piping of the jockey fill pump.
- c. Align condensate transfer to the discharge piping of the jockey fill pump.
- d. Perform the vent verification surveillance every 24 hours.

QUESTION: 029 (1.00)

With the U-1 EDG OOS a LOCA and loss of offsite power occurred on Unit 1. The ANSO started and loaded the U-1 SBO to Bus 14-1.

Which RHR pumps are available for shutdown cooling?

- a. All.
- b. A and B only.
- c. None.
- d. C and D only.

QUESTION: 030 (1.00)

After 320 days of full power operation, Unit 2 scrammed due to a total loss of EHC pressure. The ANSO started HPCI for pressure control with a flowpath from the CCSTs back to the CCSTs. While monitoring the ECCS systems the ANSO sees all four RHR pumps and both Core Spray pumps automatically start on a VALID signal.

At the time of the LP ECCS pump start, conditions were as follows:

- RPV water level 35" and STEADY
- RPV pressure 885 psig and LOWERING at 2 psig per minute.

What is the expected RPV pressure response over the next several minutes?

RPV pressure will...

- a. LOWER THEN RAISE until the Turbine Bypass valves OPEN at their pressure setpoint.
- b. CONTINUE TO LOWER at the same rate then rapidly LOWER to approximately 50 psig.
- c. CONTINUE TO LOWER at the same rate.
- d. LOWER THEN RAISE until the relief valves OPEN at their pressure setpoint.

QUESTION: 031 (1.00)

With the unit operating at full power, what is the sequence required to time the Core Spray injection valves 1-1402-24A(B) and 1-1402-25A(B)?

- a. Close the 1-1402-25, open and close the 1-1402-24 and then open the 1-1402-25.
- b. Close the 1-1402-24, open and close the 1-1402-25 and then open the 1-1402-24.
- c. Close and open the 1-1402-24 then open and close the 1-1402-25.
- d. Close and open the 1-1402-25 then open and close the 1-1402-24.

QUESTION: 032 (1.00)

Unit 1 was operating at full power when the Main Turbine tripped. When the reactor scrammed several rods failed to insert.

Under which of the following instances will the reactor stay shutdown under ALL conditions?

- a. Two control rods at position 06 and one at position 48 with no Boron injected.
- b. 12 control rods at position 06 and the SBLC tank level has dropped from 89% to 60%.
- c. Two control rods at position 48 with the IRMs on Range 7 and no Boron injected.
- d. 12 control rods at position 48 and the SBLC tank level has dropped from 89% to 32%.

QUESTION: 033 (1.00)

Which of the following would be a possible impact of APRM #4 indicating lower than actual reactor power?

- a. RBM #7 may enforce rod blocks EARLIER than required.
- b. RBM #8 may enforce rod blocks EARLIER than required.
- c. APRM #4 High High may send trips to RPS EARLIER than required.
- d. OPRM #4 and #6 may NOT send trips to RPS when required.

QUESTION: 034 (1.00)

Which of the following would cause a 1/2 or Full Reactor Scram?

- a. The IRM #18 Mode Selector Switch in STANDBY with the Reactor Mode Switch in STARTUP/HOT STANDBY.
- b. The C Inboard and Outboard MSIVs FULL CLOSED with Reactor power at 23%.
- c. Turbine Stop Valves #1 and #2 FULL CLOSED with Reactor power at 23%.
- d. SRM #21 High-High with the reactor Mode Switch in STARTUP/HOT STANDBY and all 4 shorting links INSTALLED.

## QUESTION: 035 (1.00)

Unit 2 is shutting down for a refueling outage. When the SRMs were inserted, the OUT light for SRM 22 position extinguished but the IN light never lit. The bulbs were replaced with no change in indication. The IN lights for all other SRMs are lit.

Predict the impact, if any, the given indications will have on the refueling and, if there is an impact, state what must be done to correct it.

- a. The refueling MAY continue but fuel can be moved in THREE quadrants ONLY. Prevent fuel moves in the associated quadrant until SRM 22 is within Tech Spec limits.
- b. The refueling CANNOT continue since no fuel moves are allowed. Prevent ALL fuel moves until the SRM LCO is satisfied.
- c. The refueling MAY continue and fuel moves MAY be performed in ALL quadrants because the remaining SRMs satisfy the SRM LCO.
- d. The refueling MAY continue but fuel can be moved in ONE quadrant ONLY. Prevent fuel moves in the associated AND adjacent quadrants.

## QUESTION: 036 (1.00)

The Unit 2 NSO receives an LPRM High alarm. When the condition clears, how is the indication cleared at the:

- |    | (1) full core display? | (2) 902-37 panel? |
|----|------------------------|-------------------|
| a. | (1) automatically      | (2) automatically |
| b. | (1) automatically      | (2) manually      |
| c. | (1) manually           | (2) automatically |
| d. | (1) manually           | (2) manually      |

QUESTION: 037 (1.00)

Given:

- A Group I isolation and reactor scram has occurred
- RCIC was manually started and is injecting at 400 gpm
- No other high pressure injection is available
- ADS has been inhibited
- The ANSO is cycling ADS valves to maintain reactor pressure 800-1000 psig
- Reactor vessel level is 38" and rising at 1" per minute

With no additional operator action, predict the response of reactor water level.

Reactor water level will...

- a. continue to rise to the height of the main steam lines.
- b. rise to 48" then drop until recovered by low pressure ECCS systems.
- c. rise to 48", drop to 44" and then rise.
- d. rise to 48", drop to -59" and then rise.

QUESTION: 038 (1.00)

Unit 2 has experienced a transient. The ANSO is controlling pressure with relief valves. While monitoring PI 2-1340-6, TURBINE INLT PRESS, the ANSO notes that the indication is 700 psig and LOWERING at 2 psig per minute. When the ANSO opens a relief valve the rate of pressure decrease on the PI 2-1340-6 TURBINE INLT PRESS does NOT change.

Which one of the following could be the cause for the pressure indication?

- a. Inboard MSIVs being CLOSED
- b. The RCIC turbine running
- c. RCIC turbine exhaust pressure of 30 psig
- d. RCIC room temperature of 180°F

QUESTION: 039 (1.00)

The 1-203-3B, ADS RELIEF VALVE, Keylock Switch is in OFF.

Predict how the 1-203-3B valve will respond to reactor pressure rising to 1125 psig.

The 1-203-3B will...

- a. remain CLOSED.
- b. OPEN then CLOSE at approximately 60 psig.
- c. OPEN then CLOSE at approximately 940 psig.
- d. OPEN then CLOSE at approximately 1070 psig.

QUESTION: 040 (1.00)

Unit 1 is operating at 100% power with TIP machine B inserting into the core in preparation for a scan when a reactor scram occurs. Reactor water level drops to -10". Ten seconds later, Reactor water level is 0" and RISING.

What is the response of the TIP system to the level transient?

- a. The TIP Shear Valve fires, cutting the detector cable and sealing the TIP tubing.
- b. The TIP detector is withdrawn to the in-shield position and the TIP Ball Valve closes.
- c. The TIP will continue to insert and perform its trace.
- d. The TIP detector is withdrawn until Reactor water level rises above 0", it then re-inserts.

QUESTION: 041 (1.00)

What is the NORMAL power supply to the Unit 1 ADS valve solenoids?

- a. 120 VAC Essential Service Bus
- b. 120 VAC Instrument Bus
- c. 125 VDC Turbine Building Bus 1B-1
- d. 125 VDC Reactor Building Distribution Panel 1

QUESTION: 042 (1.00)

The Unit 1 NSO is monitoring RPV water level after a Group I isolation occurred from full reactor power. Several minutes after the Group I, indicated RPV water level rises 12" for several seconds then returns to a level slightly lower than before.

What could have caused the indicated level transient?

- a. Reference leg FLASHING
- b. Reference leg NOTCHING
- c. One or more ADS valves OPENING then CLOSING on their pressure setpoint
- d. One or more Turbine Bypass valves OPENING then CLOSING due to pressure set

QUESTION: 043 (1.00)

Unit 1 is at full power with FWLC in 3-element with a setpoint of 30" when the B RFP flow transmitter signal drops by 2 Mlbm/hr over 3 minutes.

How will RPV water level respond over the next 5 minutes?

- a. Drop to the low level reactor scram setpoint.
- b. Rise until the RFPs trip.
- c. Rise then return to 30".
- d. Drop and then return to 30".

QUESTION: 044 (1.00)

Two hours ago a LOCA occurred on Unit 1. The US has ordered the ANSO to swap SBTG trains. When the trains were swapped the 1/2 7504B TURB BLDG CLG AIR DMFR did NOT reposition.

Which of the following describes the adverse effect of this failure?

- a. Excess flow through the A train may result in damage to internal components.
- b. Inadequate flow through the B train may result in the release of radioactive iodine.
- c. Excess flow through the B train may result in damage to internal components.
- d. Inadequate flow through the A train may result in the release of radioactive iodine.

QUESTION: 045 (1.00)

When synchronizing the Main Generator, QCGP 1-1 directs the operator to adjust the voltage regulator to "bring incoming volts slightly higher than running volts." This is done so that the Main generator will pick up \_\_ (1) \_\_ .

When is the voltage comparison made? \_\_ (2) \_\_

- a. (1) VARS. (2) When the synchroscope is at the 12 o'clock position.
- b. (1) MWe. (2) When the synchroscope is at the 12 o'clock position.
- c. (1) MWe. (2) It can be compared regardless of synchroscope position.
- d. VARS. (2) It can be compared regardless of synchroscope position.

QUESTION: 046 (1.00)

Given:

- Unit 1 scrambled due to receipt of a LOCA signal
- Alarm 901-8 G12 4KV BUS 14-1 VOLTAGE DEGRADED is LIT
- NO other unexpected alarms are lit
- Bus 14-1 voltage is 3700 VAC
- Bus 14 to Bus 14-1 current is 300 amps

Predict the impact of the above conditions and state what actions are to be taken to correct them.

- a. Bus 14-1 should have tripped on overcurrent. IMMEDIATELY OPEN the Bus 14 to Bus 14-1 crosstie breaker and VERIFY the EDG starts, but does NOT load.
- b. In five minutes, Bus 14-1 will load shed and the Unit 1 EDG will autostart. Transfer Bus 14 back to T-11. If voltage CANNOT be restored within 5 minutes, VERIFY Bus 14-1 load sheds and the U1EDG starts and loads.
- c. Bus 14-1 should have tripped on undervoltage. IMMEDIATELY OPEN the Bus 14 to Bus 14-1 crosstie breaker and verify the EDG starts and loads.
- d. In five minutes, Bus 14-1 will load shed and the Unit 1 EDG will autostart. IMMEDIATELY OPEN the Bus 14 to Bus 14-1 crosstie breaker and VERIFY the EDG starts AND loads.

QUESTION: 047 (1.00)

If the Unit 1 ESS inverter would fail what would be supplying power to the ESS Bus?

- a. Bus 18
- b. Bus 26
- c. Bus 17
- d. MCC 18-2

QUESTION: 048 (1.00)

Unit 1 was operating at full power when a loss of offsite power occurred. Current conditions are as follows:

- RPV water level is 25" and STEADY
- DW pressure is 4 psig and STEADY
- HPCI was trip-latched when DW pressure was 1.7 psig and RISING
- RCIC running and injecting

Which one of the loads listed below will have the greatest impact on the discharge rate of the Unit 1 Safety Related 250VDC battery?

- a. Main Turbine Emergency Bearing Oil pump
- b. HPCI Emergency Oil pump
- c. HPCI Auxiliary Oil pump
- d. RCIC Barometric Condenser Condensate pump

QUESTION: 049 (1.00)

Unit 1 is operating at full power when the B Starting Air Receiver for the Unit 1 EDG ruptures.

How will the EDG start capabilities be impacted by this failure?

If a start signal is received, the EDG will...

- a. start in the required time frame.
- b. NOT receive any starting air.
- c. receive starting air but the EDG start time will be longer than required.
- d. receive starting air but it will be insufficient to start the EDG.

QUESTION: 050 (1.00)

You are the NSO performing QCOS 6600-42, Unit 2 Diesel Generator Load Test. The EDG is running loaded in parallel with the normal feed when the normal feed breaker opens.

Predict the impact of this transient and state what action(s) must be done to correct the situation.

- a. EDG load will potentially exceed the limit due to the speed droop setting. Slowly adjust the speed droop to zero while monitoring EDG loading.
- b. If a LOCA were to occur, the LOCA load shed would NOT function, potentially overloading the EDG. Manually trip all nonessential loads, set the speed droop to zero and allow the EDG to remain loaded.
- c. The undervoltage load shed will NOT occur, potentially overloading the EDG. Place the EDG output breaker in PTL, set the speed droop to zero, adjust EDG frequency and voltage then place the EDG output breaker to AUTO.
- d. EDG load will be reduced potentially causing it to overspeed. Using the governor control switch lower load to 900 kw.

QUESTION: 051 (1.00)

Which of the following is a use for the Instrument Air system?

- a. To sparge the SBLC tank before sample
- b. To power pneumatic tools
- c. A backup to Drywell Pneumatics with the DW deinerted
- d. To purge the offgas piping after a unit scram

QUESTION: 052 (1.00)

Given:

- RBCCW pumps 1A and 1/2C were running
- 1/2C was being fed from Bus 29
- Unit 1 received an ECCS signal from high drywell pressure
- The US has directed you to start the previously running RBCCW pumps.

What must you do to start the pumps?

- a. Bypass the LOCA signal and verify the 1A RBCCW pump restarts. The 1/2C RBCCW pump is still running.
- b. Bypass the LOCA signal and manually restart the 1A RBCCW pump. The 1/2C RBCCW pump is still running.
- c. Bypass the LOCA signal and manually restart both the 1A and 1/2C RBCCW pumps.
- d. Manually restart both the 1A and 1/2C RBCCW pumps.

QUESTION: 053 (1.00)

Given:

Unit 1 is at eight percent reactor power with the Rx Mode Switch in STARTUP/HOT STANDBY  
Unit 2 has all rods in with the RX Mode Switch in SHUTDOWN Both Units are at 880 psig  
reactor pressure Bus 31 is DEENERGIZED and CANNOT be reenergized

With regards to the SSMP system, the LCO is met on...

- a. Unit 1 only.
- b. both units.
- c. Unit 2 only.
- d. neither unit.

QUESTION: 054 (1.00)

Unit 2 is operating at 50% reactor power when a total loss of ESS occurs. An NLO reports the ESS Bus is damaged and CANNOT be re-energized. Subsequently the STA reports the Unit is operating in ICA Region II.

Which of the following is the appropriate response?

- a. Select and insert the CRAM rods using Emergency Rod In since the Rod Movement Control Switch has no power.
- b. Insert a manual scram since control rods CANNOT be selected.
- c. Select and insert the CRAM rods using the Rod Movement Control Switch since the RMCS is NOT affected.
- d. Insert a manual scram since the Rod Motion Control Timer has no power.

QUESTION: 055 (1.00)

With Unit 1 at full power the NSO selects a control rod for withdrawal. The move is from position 12 to position 24.

The NSO positions the Rod Out Notch Override switch to NOTCH OVERRIDE and the Rod Motion Control switch to ROD OUT. When the control rod reaches position 21, the NSO releases both switches.

What is the expected CRD Drive Water Flow response from the time the switches are initially moved until they are released?

The drive water flow will go from 0 gpm to...

- a. 4 gpm to 0 gpm.
- b. 4 gpm to 2 gpm to 0 gpm.
- c. 2 gpm to 4 gpm to 0 gpm.
- d. 2 gpm to 0 gpm.

QUESTION: 056 (1.00)

Given:

- A Unit 1 reactor startup is in progress.
- You note that on the RWM rod G-9 is RED in color and indicates position 32.

Why is the control rod position indication red and can the rod be moved with the RMCS?

Control rod G-9 has...

- a. a substitute position entered and CANNOT be inserted OR withdrawn.
- b. been withdrawn past its target out position and can be inserted ONLY.
- c. been selected out of sequence and CANNOT be inserted OR withdrawn.
- d. been taken OOS and can be inserted ONLY.

QUESTION: 057 (1.00)

Unit 1 was operating at full power when DW pressure began to rise requiring a manual scram. After the reactor scram the RWCU system isolated. The crew has determined that the DW pressure rise was caused by a leak in the A feedwater header. The MO 1-3205A, 1A RX FW INLT VLV, was CLOSED and DW pressure STOPPED rising.

The following lists the current conditions:

- RBCCW and DW coolers are running
- DW pressure is 2.8 psig and lowering slowly
- Reactor pressure is 825 psig and steady
- Reactor water level is 30" and steady

If the ISOL VLV RESET switch on the 901-5 panel is taken to INBD and OUTBD can the RWCU system be restarted? If yes, what will be the effect? If no, why not?

- a. Yes, DW pressure will rise.
- b. Yes, there will be excessive thermal stress to the B FW piping.
- c. No, adequate flow cannot be obtained due to the MO 1-3205A being closed.
- d. No, a Group III isolation signal is still present.

QUESTION: 058 (1.00)

Unit 2 is operating at 80% power. The Unit 2 NSO is withdrawing control rods during a reactor startup when the signal from flow converter #1 is lost to the RBM system ONLY.

Predict the effect of this failure and state the actions that must be taken to continue control rod withdrawal?

- a. RBM #7 trip setpoints are NON-CONSERVATIVE. Bypass RBM #7.
- b. RBM #7 trip setpoints are CONSERVATIVE. Bypass RBM #7.
- c. RBM #8 trip setpoints are NON-CONSERVATIVE. Bypass RBM #8.
- d. RBM #8 trip setpoints are CONSERVATIVE. Bypass RBM #8.

QUESTION: 059 (1.00)

Given:

- Unit 1 has experienced a transient requiring entry into QGA 500-1
- Torus water temperature is 103°F and RISING at 1°F every 10 minutes
- Reactor pressure is 15 psig and LOWERING at 1 psig per minute
- Drywell temperature is 245°F and STEADY
- Drywell and torus pressures are 6 psig and rising at 1 psig every 10 minutes
- Flow on B loop of RHR is SPLIT between torus cooling and drywell sprays
- Flow on A loop of RHR is injecting into the vessel
- The 1-1001-19B, RHR XTIE, valve is closed
- RPV level is -120" and RISING at 1" per minute

What would be the MOST LIKELY effect if torus cooling flow was RAISED on B loop of RHR?

- a. The drywell could exceed its design pressure.
- b. The reactor core could become uncovered.
- c. Reactor water level instruments could become unavailable.
- d. Torus pressure could go negative, cycling the DW to Torus vacuum breakers.

QUESTION: 060 (1.00)

The Unit 1 refueling platform is traveling in the reverse direction over the Unit 1 reactor core with the main hoist loaded. The Reactor Mode Switch is in REFUEL.

What limitations would there be on the refueling platform if the Refueling Interlock Check pushbutton in the Aux Electric Room was depressed?

Bridge reverse motion would be...

- a. STOPPED and the main hoist CAN be lowered.
- b. STOPPED and the main hoist CANNOT be lowered.
- c. ALLOWED and the main hoist CANNOT be lowered.
- d. ALLOWED and the main hoist CAN be lowered.

QUESTION: 061 (1.00)

A startup is in progress on Unit 2. The ANSO preparing to roll the main turbine has determined that a MEDIUM startup rate is appropriate. The ANSO depresses the MEDIUM pushbutton at the EHC panel at 0407 and verifies the turbine begins accelerating.

Which of the following would indicate the turbine is accelerating at the proper rate?

- a. 360 rpm at 0413
- b. 450 rpm at 0412
- c. 480 rpm at 0411
- d. 540 rpm at 0410

QUESTION: 062 (1.00)

Unit 2 is operating at full power with all generator parameters normal.

How will the loss of BOTH the Main Seal Oil and Emergency Seal Oil pumps affect main generator casing pressure?

Main generator casing pressure will...

- a. NOT change because the combination of the generator mechanical seals and oil remaining in the seals will prevent leakage.
- b. NOT change because the Emergency Bearing Oil Pump is still in service.
- c. DECREASE due to leakage past the seals and stabilize near turbine bearing oil pressure.
- d. DECREASE to atmospheric pressure due to the loss of all seal oil flow.

QUESTION: 063 (1.00)

Unit 2 is operating at 100% reactor power when the B Main Steam Line radiation monitor loses power.

Which of the following power supplies has been lost.

- a. RPS A
- b. RPS B
- c. ESS
- d. Instrument Bus

QUESTION: 064 (1.00)

Unit 1 was operating at 75% power when a transient occurred resulting in an elevated fission product release. The following conditions exist:

- The 1-1735A, RX BLDG VENT CH A, high light is LIT
- The 1-1735B, RX BLDG VENT CH B, high light is EXTINGUISHED

The ANSO checks the status of the RB vents and finds the vent fans running and the isolation dampers open with 1/2 B SBTG train running.

Considering only the above conditions what, if anything, should be done and why?

- a. STOP the 1/2 B SBTG train because running it in conjunction with the RB vents may cause damage to the train.
- b. TRIP the RB supply and exhaust fans and CLOSE the isolation dampers to prevent an unfiltered release of radioactive particles.
- c. Leave both systems RUNNING to ensure the Secondary Containment pressure remains negative.
- d. TRIP the RB supply and exhaust fans and leave the isolation dampers OPEN to ensure all effluent is processed through SBTG.

QUESTION: 065 (1.00)

Unit 2 is in an outage performing the Vessel In-Service Leak Test after 22 EFPY of operation. The following lists SOME of the parameters recorded during the test:

Time	Rx Pressure	Rx Metal Temp
1200	600 psig	150 <del>F</del>
1230	800 psig	140 <del>F</del>
1300	1025 psig	140 <del>F</del>
1330	1025 psig	135 <del>F</del>
1400	1025 psig	135 <del>F</del>
1430	1025 psig	130 <del>F</del>
1500	1025 psig	130 <del>F</del>

Which one of the following statements is correct concerning the Reactor Coolant System?

- RPV pressure vs. temperature limits have been violated and the reactor requires pressure reduction immediately.
- RPV pressure vs. temperature limits have been violated and the reactor requires pressure reduction within 30 minutes.
- RPV pressure vs. temperature limits are within specifications.
- RPV pressure vs. temperature limits are satisfied but the reactor requires heatup to complete the test.

QUESTION: 066 (1.00)

With the Unit in MODE 1, which of the following conditions would require Tech Spec actions to be taken in 1 hour or less? Consider each condition INDIVIDUALLY.

- One inservice RPS EPA inoperable.
- Reactor steam dome pressure of 1020 psig.
- One Control Rod Accumulator Inoperable.
- Shutdown Margin NOT within limits.

QUESTION: 067 (1.00)

A faulty card in the digital recirc system caused reactor power to drop by 620 MWth in 1 minute. Currently reactor power is 36%, core flow is 52 Mlb/hr, both are now STABLE. What action is required FIRST?

- a. Immediately scram the reactor.
- b. Initiate an Issue Report.
- c. Notify Chemistry and BPO.
- d. Insert control rods to exit ICA Region II.

QUESTION: 068 (1.00)

Which of the following is NOT an appropriate configuration management tool for CONTROLLING an off-normal position of a component in a safety related system?

- a. An Equipment Status Tag.
- b. A Clearance Order Danger Tag.
- c. A Control Room Log Entry.
- d. A Clearance Order Information Tag.

QUESTION: 069 (1.00)

Which of the following conditions would indicate a Safety Limit has been violated?

- a. Reactor bottom head pressure of 1350 psig.
- b. Reactor steam dome pressure of 800 psig, core flow at 12% of rated and MCPR of 1.08.
- c. Reactor vessel water level of -135".
- d. Reactor steam dome pressure of 780 psig, core flow at 8% of rated and reactor power of 22%.

QUESTION: 070 (1.00)

Per QCFHP 0100-01, MASTER REFUELING PROCEDURE, who controls refueling activities with the potential for affecting core reactivity?

- a. The Nuclear Station Operator (NSO)
- b. The Unit Supervisor (US)
- c. The Fuel Handling Supervisor (SRO / LSRO)
- d. The Shift Manager (SM)

QUESTION: 071 (1.00)

Containment hydrogen concentration is 5% and containment oxygen concentration is 4%. What additional condition is necessary to allow primary containment venting?

- a. Nitrogen purge of the Drywell must be initiated and maximized.
- b. Off-site release rates are expected to stay below Tech Spec LCO limits.
- c. Drywell sprays must be initiated.
- d. Reactor water level must be above the Group II isolation setpoint.

QUESTION: 072 (1.00)

Which of the following approaches to performing a job are required to be used based on ALARA considerations for total collective dose?

- a. Two individuals installing temporary shielding in a 90 mrem/hr field for 20 minutes and then performing the job in a 12 mrem/hr field for 20 minutes.
- b. One individual performing the job in a 90 mrem/hr field for 45 minutes.
- c. Two individuals performing the job in a 90 mrem/hr field for 20 minutes.
- d. One individual installing temporary shielding in a 90 mrem/hr field for 40 minutes and then performing the job in a 12 mrem/hr field for 60 minutes.

QUESTION: 073 (1.00)

Unit 1 is holding load at 100% power.

Offgas radiation has risen to the point that alarm 901-3 C2, OFF GAS HIGH HIGH RADIATION has come in for both channels.

If offgas radiation levels continue to rise what action(s) is (are) required to be taken?

- a. Hold reactor power constant until the cause of the elevated radiation readings can be determined.
- b. Perform an emergency load drop to within the capacity of the turbine bypass valves and trip the main turbine.
- c. Depress the OFF GAS TRIP LOGIC RESET and verify one light on at the OFF GAS RELAY TEST JACK.
- d. Isolate the offgas system, scram the reactor and close the MSIVs.

QUESTION: 074 (1.00)

Unit 1 was operating at 80% power when T-12 tripped. The crew entered and is carrying out the actions of QOA 6100-01, Loss of Transformer 12 During Power Operation. Several minutes later the reactor scrammed due to a spurious Group I isolation and the crew entered QCGP 2-3 Reactor Scram.

The following conditions exist:

- Reactor water level is being maintained between 0" and 48" with HPCI.
- A cooldown is in progress with ADS valves, reactor pressure is 825 psig.
- Torus temperature is 97°F and rising.
- Neither EDG started automatically or manually.

No other actions have been taken to restore electrical power.

Which of the following actions are required?

- a. Exit QOA 6100-01, continue with the actions of QCGP 2-3 and enter QGA 200 Secondary Containment Control. Do NOT enter any other QOAs or QCOAs.
- b. Continue with the actions of QOA 6100-01 and QCGP 2-3 and enter QGA 200 Secondary Containment Control and QCOA 6100-04 Station Blackout.
- c. Exit QOA 6100-01 and QCGP 2-3 and enter QGA 200 Secondary Containment Control. Do NOT enter any other QOAs or QCOAs.
- d. Continue with the actions of QOA 6100-01 and QCGP 2-3 and enter QGA 200 Secondary Containment Control and QCOA 6100-03 Loss of Offsite Power.

QUESTION: 075 (1.00)

Unit 2 was operating at 75% power when a complete loss of TBCCW occurred.

When the RO inserted a manual scram, 38 control rods did NOT insert.

Given the above conditions, which of the following lists loads that are required to be secured at this time?

- a. EHC pumps, Circulating Water pumps and CRD pumps
- b. Reactor Feedwater pumps, Condensate pumps and Sparge Air compressors
- c. Reactor Feedwater pumps, EHC pumps and Circulating Water pumps
- d. Condensate pumps, Sparge Air compressors and CRD pumps

(\*\*\*\*\* END OF EXAMINATION \*\*\*\*\*)

ANSWER: 001 (1.00)  
 c.  
 REFERENCE:  
 QCOP 0202-21, Unit 1  
 Reactor Recirculation system  
 Shut Down of One pump  
 MEMORY  
 BANK  
 295001K301 ..(KA's)

ANSWER: 002 (1.00)  
 a.  
 REFERENCE:  
 QOP 6900-02  
 HIGHER  
 BANK  
 295003A104 ..(KA's)

ANSWER: 003 (1.00)  
 b.  
 REFERENCE:  
 QOA 6900-10  
 MEMORY  
 NEW  
 295004A202 ..(KA's)

ANSWER: 004 (1.00)  
 a.  
 REFERENCE:  
 Lesson plan LN-6000 page  
 15 of 35  
 MEMORY  
 NEW  
 295005.2.1 ..(KA's)

ANSWER: 005 (1.00)  
 c.  
 REFERENCE:  
 UFSAR 5.4-21  
 HIGHER  
 NEW  
 295006K101 ..(KA's)

ANSWER: 006 (1.00)  
 d.  
 REFERENCE:  
 QOA 5750-13, TOXIC AIR  
 OR SMOKE IN THE  
 CONTROL ROOM step D1,  
 D6  
 MEMORY  
 NEW  
 295016K203 ..(KA's)

ANSWER: 007 (1.00)  
 d.  
 REFERENCE:  
 Lesson Plan LIC-5300,  
 Generator Auxiliaries  
 HIGHER  
 NEW  
 295018K306 ..(KA's)

ANSWER: 008 (1.00)  
 b.  
 REFERENCE:  
 QOA 4700-06, TOTAL LOSS  
 OF INSTRUMENT AIR  
 Lesson Plans LIC-3200,  
 LN-5500  
 HIGHER  
 NEW  
 295019K207 ..(KA's)

ANSWER: 009 (1.00)  
 d.  
 REFERENCE:  
 QCOA 1000-02  
 MEMORY  
 BANK  
 295021A102 ..(KA's)

ANSWER: 010 (1.00)  
 a.  
 REFERENCE:  
 QCOA 1900-02  
 MEMORY  
 NEW  
 295023A203 ..(KA's)

ANSWER: 011 (1.00)  
 d.  
 REFERENCE:  
 QCAN 901(2)-3 B-13  
 HIGHER  
 NEW  
 295024A108 ..(KA's)

ANSWER: 012 (1.00)  
 b.  
 REFERENCE:  
 EPG Bases  
 HIGHER  
 NEW  
 295024.2.1 ..(KA's)

ANSWER: 013 (1.00)  
 b.  
 REFERENCE:  
 UFSAR page 7.8-1  
 MEMORY  
 BANK  
 295025K102 ..(KA's)

ANSWER: 014 (1.00)  
 c.  
 REFERENCE:  
 UFSAR page 6.2-2  
 HIGHER  
 NEW  
 295026K206 ..(KA's)

ANSWER: 015 (1.00)  
 a.  
 REFERENCE:  
 EPG Bases  
 MEMORY  
 NEW  
 295028K304 ..(KA's)

ANSWER: 020 (1.00)  
 a.  
 REFERENCE:  
 Lesson plan LN-4100  
 MEMORY  
 NEW  
 600000K201 ..(KA's)

ANSWER: 025 (1.00)  
 c.  
 REFERENCE:  
 QCOA 0300-01  
 HIGHER  
 MODIFIED  
 295022K102 ..(KA's)

ANSWER: 016 (1.00)  
 c.  
 REFERENCE:  
 BWROG EPGs/SAGs  
 Appendix B  
 MEMORY  
 NEW  
 295030A102 ..(KA's)

ANSWER: 021 (1.00)  
 a.  
 REFERENCE:  
 QCOP 1000-05  
 HIGHER  
 NEW  
 295008A205 ..(KA's)

ANSWER: 026 (1.00)  
 b.  
 REFERENCE:  
 QCAN 901(2) C-12  
 MEMORY  
 NEW  
 295032A102 ..(KA's)

ANSWER: 017 (1.00)  
 d.  
 REFERENCE:  
 QCAP 0200-10, QGA 101  
 HIGHER  
 BANK Applicant provided with  
 QGAs with entry conditions  
 removed  
 295031A204 ..(KA's)

ANSWER: 022 (1.00)  
 a.  
 REFERENCE:  
 EP-AA-1006 App. 3, QGA  
 500-4 Lesson Plan, QCOA  
 0201-01  
 MEMORY  
 NEW  
 295010K303 ..(KA's)

ANSWER: 027 (1.00)  
 d.  
 REFERENCE:  
 QCOP 1600-13  
 HIGHER  
 NEW  
 500000.2.1 ..(KA's)

ANSWER: 018 (1.00)  
 c.  
 REFERENCE:  
 Strategies for Successful  
 Transient Mitigation rev 11a.  
 QGA 101  
 HIGHER  
 MODIFIED  
 295037.2.1 ..(KA's)

ANSWER: 023 (1.00)  
 d.  
 REFERENCE:  
 QCOA 3500-01  
 HIGHER  
 MODIFIED  
 295014K207 ..(KA's)

ANSWER: 028 (1.00)  
 c.  
 REFERENCE:  
 QCOP 1400-03, QCAN  
 901(2)-3 B-15  
 MEMORY  
 NEW  
 203000K103 ..(KA's)

ANSWER: 019 (1.00)  
 c.  
 REFERENCE:  
 EPG pages 2-9-1 and 2-9-6  
 MEMORY  
 NEW  
 295038K101 ..(KA's)

ANSWER: 024 (1.00)  
 c.  
 REFERENCE:  
 Lesson plan LIC-0207, page  
 33 of 46  
 MEMORY  
 BANK  
 295015K301 ..(KA's)

ANSWER: 029 (1.00)  
 a.  
 REFERENCE:  
 QOM 1-6500-T04 and T06  
 HIGHER  
 NEW  
 205000K201 ..(KA's)

ANSWER: 030 (1.00)  
 d.  
 REFERENCE:  
 QCOP 2300-06 and QCOA  
 2300-01  
 HIGHER  
 NEW  
 206000K302 ..(KA's)

ANSWER: 035 (1.00)  
 a.  
 REFERENCE:  
 TS 3.3.1.2, QCFHP 0100-01  
 HIGHER  
 NEW  
 215004A203 ..(KA's)

ANSWER: 040 (1.00)  
 b.  
 REFERENCE:  
 QCAP 0200-10 Att D  
 MEMORY  
 NEW  
 223002K113 ..(KA's)

ANSWER: 031 (1.00)  
 b.  
 REFERENCE:  
 QCOS 1400-02  
 MEMORY  
 NEW  
 209001K410 ..(KA's)

ANSWER: 036 (1.00)  
 b.  
 REFERENCE:  
 Lesson plan LIC-0703 p.14 of  
 64  
 MEMORY  
 NEW  
 215005A302 ..(KA's)

ANSWER: 041 (1.00)  
 d.  
 REFERENCE:  
 QOM 1-6300-T06 and QOM  
 1-6900-03  
 MEMORY  
 NEW  
 239002K201 ..(KA's)

ANSWER: 032 (1.00)  
 d.  
 REFERENCE:  
 EPG B-6-49  
 HIGHER  
 NEW QGA 101 Provided  
 211000K503 ..(KA's)

ANSWER: 037 (1.00)  
 d.  
 REFERENCE:  
 QCOA 1300-01  
 MEMORY  
 NEW  
 217000A103 ..(KA's)

ANSWER: 042 (1.00)  
 c.  
 REFERENCE:  
 QCOP 0201-11 and 12,  
 lesson plan L-QGA100 p. 57  
 of 76  
 MEMORY  
 NEW  
 239002A307 ..(KA's)

ANSWER: 033 (1.00)  
 d.  
 REFERENCE:  
 Lesson plan LIC-0756 page 4  
 and 6 of 24  
 MEMORY  
 NEW  
 212000K602 ..(KA's)

ANSWER: 038 (1.00)  
 d.  
 REFERENCE:  
 M-50 sheet 1, QCOA  
 1300-01, QCOP 1300-02  
 HIGHER  
 NEW  
 217000A407 ..(KA's)

ANSWER: 043 (1.00)  
 c.  
 REFERENCE:  
 Lesson plan LIC-0600 ppg  
 76, 77  
 HIGHER  
 NEW  
 259002K307 ..(KA's)

ANSWER: 034 (1.00)  
 a.  
 REFERENCE:  
 QCAN 901(2)-5 C-15  
 MEMORY  
 NEW  
 215003A103 ..(KA's)

ANSWER: 039 (1.00)  
 a.  
 REFERENCE:  
 LIC-0203, QCOP 0203-01  
 MEMORY  
 NEW  
 218000.2.1 ..(KA's)

ANSWER: 044 (1.00)  
 b.  
 REFERENCE:  
 Lesson plan LF-7500  
 HIGHER  
 NEW  
 261000K402 ..(KA's)

ANSWER: 045 (1.00)  
 a.  
 REFERENCE:  
 Lesson plan  
 BWR/Components/Chapter 5  
 and QCGP 1-1 page 77  
 MEMORY  
 NEW  
 262001K501 ..(KA's)

ANSWER: 046 (1.00)  
 c.  
 REFERENCE:  
 TS 3.3.8.1, QCOA 6500-13,  
 QOA 900-8 G-12  
 HIGHER  
 NEW TS 3.3.8.1 provided to  
 applicants  
 262001A209 ..(KA's)

ANSWER: 047 (1.00)  
 c.  
 REFERENCE:  
 QCOA 6800-03 Att. A  
 MEMORY  
 NEW  
 262002K603 ..(KA's)

ANSWER: 048 (1.00)  
 c.  
 REFERENCE:  
 QOM 1-6300-T08, QCOA  
 2300-01  
 HIGHER  
 NEW  
 263000A101 ..(KA's)

ANSWER: 049 (1.00)  
 a.  
 REFERENCE:  
 UFSAR 9.5.6  
 MEMORY  
 NEW  
 264000K601 ..(KA's)

ANSWER: 050 (1.00)  
 c.  
 REFERENCE:  
 QCOS 6600-42 Att. C  
 HIGHER  
 NEW  
 264000A205 ..(KA's)

ANSWER: 051 (1.00)  
 c.  
 REFERENCE:  
 QCOP 1600-08  
 MEMORY  
 NEW  
 300000.2.1 ..(KA's)

ANSWER: 052 (1.00)  
 b.  
 REFERENCE:  
 Lesson plan LF-3700 page 15  
 HIGHER  
 MODIFIED  
 400000A401 ..(KA's)

ANSWER: 053 (1.00)  
 d.  
 REFERENCE:  
 TS 3.7.9  
 HIGHER  
 NEW No KA exists for the  
 SSMP system. System was  
 added to random selection  
 process, following discussion  
 with lead examiner, in  
 accordance with per ES  
 401-1, note 3. Generic K/A  
 2.2.22, Knowledge of limiting  
 conditions for operations and  
 safety limits. Proposed  
 worth: RO: 3.4, SRO: 4.1  
 2.2.22 ..(KA's)

ANSWER: 054 (1.00)  
 b.  
 REFERENCE:  
 QCOA 6800-03, QCOA  
 0280-01  
 HIGHER  
 NEW  
 201002K601 ..(KA's)

ANSWER: 055 (1.00)  
 b.  
 REFERENCE:  
 Lesson plan LF-0302  
 HIGHER  
 NEW  
 201003A103 ..(KA's)

ANSWER: 056 (1.00)  
 b.  
 REFERENCE:  
 Lesson plan LIC-0207  
 MEMORY  
 BANK  
 201006A405 ..(KA's)

ANSWER: 057 (1.00)  
 a.  
 REFERENCE:  
 M-15 sheet 1, M-47 sheet 1,  
 M-50 sheet 1  
 HIGHER  
 NEW  
 204000K103 ..(KA's)

ANSWER: 058 (1.00)  
 b.  
 REFERENCE:  
 QCAN 901(2)-5 A-7 Lesson  
 plan LIC-0700-5 pages 5 and  
 19 of 26  
 HIGHER  
 NEW  
 215002A202 ..(KA's)

ANSWER: 059 (1.00)  
 c.  
 REFERENCE:  
 M-39 sheet 1  
 HIGHER  
 NEW Steam Tables provided  
 219000K109 ..(KA's)

ANSWER: 060 (1.00)  
 b.  
 REFERENCE:  
 QCFHP 0100-03  
 HIGHER  
 BANK  
 234000.2.1 ..(KA's)

ANSWER: 061 (1.00)  
 b.  
 REFERENCE:  
 QCGP 1-1 page 72  
 HIGHER  
 NEW  
 241000A302 ..(KA's)

ANSWER: 062 (1.00)  
 c.  
 REFERENCE:  
 Lesson plan LIC-5300 page  
 41 of 49  
 HIGHER  
 NEW  
 245000K403 ..(KA's)

ANSWER: 063 (1.00)  
 c.  
 REFERENCE:  
 QOA 7000-01  
 MEMORY  
 NEW  
 272000K201 ..(KA's)

ANSWER: 064 (1.00)  
 b.  
 REFERENCE:  
 QCAN 901-3 G3 and lesson  
 plan LNF-5750 page 22 of  
 108  
 HIGHER  
 MODIFIED  
 290001K301 ..(KA's)

ANSWER: 065 (1.00)  
 a.  
 REFERENCE:  
 QCOS 0201-08, TS 3.4.9  
 HIGHER  
 BANK QCOS 0201-08  
 attachment B provided  
 290002K505 ..(KA's)

ANSWER: 066 (1.00)  
 b.  
 REFERENCE:  
 TS 3.4.10  
 MEMORY  
 NEW  
 2.1.11 ..(KA's)

ANSWER: 067 (1.00)  
 c.  
 REFERENCE:  
 QCGP 3-1  
 HIGHER  
 NEW QCOP 0202-13  
 Attachment B page 1 of 2  
 provided  
 2.1.14 ..(KA's)

ANSWER: 068 (1.00)  
 c.  
 REFERENCE:  
 OP-AA-108-101,  
 OP-AA-109-101  
 MEMORY  
 NEW  
 2.2.11 ..(KA's)

ANSWER: 069 (1.00)  
 b.  
 REFERENCE:  
 TS 2.1 Safety Limits. Lesson  
 Plan LF-0800  
 MEMORY  
 NEW  
 2.2.22 ..(KA's)

ANSWER: 070 (1.00)  
 a.  
 REFERENCE:  
 QCFHP 0100-01  
 HIGHER  
 NEW  
 2.2.30 ..(KA's)

ANSWER: 071 (1.00)  
 b.  
 REFERENCE:  
 QGA 200-5  
 MEMORY  
 BANK QGA 200-5 provided  
 2.3.11 ..(KA's)

ANSWER: 072 (1.00)  
 c.  
 REFERENCE:  
 RP-AA-400  
 HIGHER  
 MODIFIED  
 2.3.2 ..(KA's)

ANSWER: 073 (1.00)  
 d.  
 REFERENCE:  
 QCOA 1700-04  
 MEMORY  
 NEW  
 2.3.10 ..(KA's)

ANSWER: 074 (1.00)

d.

REFERENCE:

Lesson Plan L-QGAIN,  
QCOA 6100-03

HIGHER

NEW

2.4.8 ..(KA's)

ANSWER: 075 (1.00)

c.

REFERENCE:

QCOA 3800-03

MEMORY

NEW

2.4.24 ..(KA's)

(\*\*\*\*\* END OF EXAMINATION \*\*\*\*\*)

A N S W E R   K E Y  
M U L T I P L E   C H O I C E

001 c	026 b	051 c
002 a	027 d	052 b
003 b	028 c	053 d
004 a	029 a	054 b
005 c	030 d	055 b
006 d	031 b	056 b
007 d	032 d	057 a
008 b	033 d	058 b
009 d	034 a	059 c
010 a	035 a	060 b
011 d	036 b	061 b
012 b	037 d	062 c
013 b	038 d	063 c
014 c	039 a	064 b
015 a	040 b	065 a
016 c	041 d	066 b
017 d	042 c	067 c
018 c	043 c	068 c
019 c	044 b	069 b
020 a	045 a	070 a
021 a	046 c	071 b
022 a	047 c	072 c
023 d	048 c	073 d
024 c	049 a	074 d
025 c	050 c	075 c

(\*\*\*\*\* END OF EXAMINATION \*\*\*\*\*)